Threatened Species Lists as Tools of Environmental Governance in South Africa

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DECLARATION

I, Yolan Friedmann, declare that this research report is my own, unaided work. It is being submitted as a report, in partial fulfilment for the Degree of Master of Science in the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination in any other University.

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ABSTRACT

Formal environmental governance systems mostly comprise the policy and regulatory frameworks that determine natural resource access, ownership and benefit sharing. Outside of this framework, civil society groups and academics also develop systems and frameworks to support and guide decision-making around natural resource use and management. The environmental governance frameworks around the assessment and management of threatened species in South Africa provides the specific context for this report, which evaluates how the regulatory framework developed for threatened species listing and management in South Africa operates in comparison to the framework developed by scientists for this key aspect of threatened species conservation. The findings are contextualised within an examination of some of the global approaches to the development and application of threatened species lists and the overarching framework of environmental governance globally and in South Africa.

This report uses the South African Red Data List of mammals and the subset of mammals listed in the national list of Threatened or Protected Species (ToPS) list to investigate the different approaches taken to developing threatened species lists, and their supporting frameworks. To do this, the report includes a parallel evaluation of these South African species listing processes, and a critique of their strengths and weaknesses to inform a discussion around the possible nexus between science-based species lists and those designed with a regulatory function. An analysis of the institutional relationships underpinning the prevailing South African biodiversity conservation paradigm is also attempted.

Some recommendations as to how both listing processes can either be improved or aligned are finally made, along with suggestions for altering the institutional relationships that characterise these processes. These recommendations include effective consultative processes which build on existing bodies of knowledge and

share ideologies, perceptions, needs and issues; the development of sound, scientifically informed and widely communicated processes for developing the listing criteria; a mechanism to delist species based on these criteria; a re-evaluation of the current terminology used in the ToPS List and regulations; the development of possible enforceable regulations and policies which reduce conflict and administrative complications at the provincial level; and stimulating fresh debate around the practicality of producing both national and provincial lists. The findings suggest that a merger of the two listing processes and functions is not necessarily required as long as there is clear delineation between their intended purpose and fundamental composition.

These suggested recommendations are made to help inform future revisions of local threatened species lists by contextualising them within the current framework of thinking about environmental governance in South Africa and how this is developing. The overall aim is to improve the relevance, reliability and credibility of the assessment processes that are used for biodiversity research, planning, management and regulation.

Dedicated to my mother, Annette

and two fathers, Norman and Herbie

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ACRONYMS LIST

CBD	Convention on Biodiversity
CITES	Convention of Trade in Endangered Species of Flora and Fauna
CMS	Convention on Migratory Species
CoP	Conference of Parties
COSEWIC	Committee on the Status of Endangered Wildlife in Canada
DEAT	South African Department of Environmental Affairs & Tourism
EIA	Environmental Impact Assessment
ESA	Endangered Species Act (of the USA)
EWT	Endangered Wildlife Trust
IUCN	International Union for the Conservation of Nature
JPI	Johannesburg Plan of Implementation
KZN	KwaZulu-Natal Province
MDG	Millennium Development Goals
MEA	Multilateral Environmental Agreement
MoU	Memorandum of Understanding
NBSAP	National Biodiversity Strategy and Action Plan
NDF	Non-detriment Finding
NEMA	National Environmental Management Act
NEMBA	National Environmental Management: Biodiversity Act
NEMPAA	National Environmental Management: Protected Areas Act
NGO	Non-governmental Organisation
PHVA	Population and Habitat Viability Assessment
RDB	Red Data Book
SADC	Southern African Development Community
SANBI	South African National Biodiversity Institute
SAPBA	South African Predator Breeders Association
ToPS	Threatened or Protected Species
TSL	Threatened Species List
UNEP	United Nations Environmental Programme

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CHAPTER ONE – INTRODUCTION

1.1. Introduction

The motivation for this research report has many aspects. Firstly, the increasing use of species listing processes in science as well as the legislative framework for biodiversity conservation has created room for much needed analysis and debate over their value and role in stemming biodiversity loss. Secondly, South Africa has recently published a national list of species which are afforded legal protection (Department of Environmental Affairs and Tourism, 2007a and, 2007b). This is in addition to the lists of threatened species being developed by various organisations such as the South African National Biodiversity Institute and BirdLife South Africa, both of which are using the Red List criteria and categories of threat developed by the International Union for the Conservation of Nature. The interaction and nexus of these approaches to listing species, if any, also requires analysis. Thirdly, many people remain confused about the purpose, function and application of these different lists and they are thus widely abused and misunderstood. Possingham *et al*. (2002: 506) speak of the "current misuse of lists of species at risk of extinction" and warns that their "unthinking application carries risks of its own". The application of these lists as effective tools for conservation by many stakeholder groups may therefore not be appropriately or fully utilised. It is against this backdrop that the motivation for this research was prompted.

Fourth, and no less significant, is my personal interest in the application of threatened species lists for conservation due to my involvement in the conservation sector and my contributions to both processes of species listing in South Africa. Having worked for the Endangered Wildlife Trust (EWT), a biodiversity conservation non-governmental organisation since 1995, I have been deeply involved in various species conservation projects and continue to work at the forefront of the application of threatened species lists to conservation planning and priority setting. Through the EWT, I have also provided

commentary on the development of the South African legislative framework for biodiversity conservation, including but not limited to the National Biodiversity Act, the Threatened or Protected Species regulations and the lists of species resulting from these regulations. Moreover, I was the lead editor and project manager for the 2004 *Red Data Book of the Mammals of South Africa: A Conservation Assessment*, which included a conservation assessment of all 295 of South Africa's terrestrial and marine mammals, using the IUCN 2001 Red List criteria and categories of threat (IUCN, 2001). My role included convening the assessment workshops, collating the taxon data used in the assessments, participating in many species assessments and managing the peer-review process of all assessments. This gave me enormous insight into both the strengths and weaknesses of species assessments based on empirical data and used to determine population status and trends. This background, together with my participation as an Interested and Affected Party in the development of the national lists of Threatened or Protected Species, has stimulated a strong interest in undertaking a closer critique of the value of each process and resulting list. This includes examining both the development of the lists, as well as their application, and their value as tools of wider environmental governance and conservation in a country such as South Africa.

This first chapter will introduce the key concepts to be covered in this report, and will provide the background rationale for the report, as well as the context in which threatened species lists are situated and their role and purpose in the environmental governance framework. Specifically, the objectives of this report will be outlined along with the key questions which will be investigated, and the methods employed to provide responses to the investigative questions will be covered. Finally, this will be framed within the context of South Africa, to introduce both the importance of the country's biodiversity as well as the regulatory framework developed in response to the need to conserve its environment.

It is thus my intention, through this report, to create a platform for ongoing debate and discussion around the true role and purpose of threatened species lists, their meaning and applications and to make some recommendations based on this understanding as to how the processes for determining the lists and their content can be improved in the future. This analysis and the ensuing recommendations will be undertaken within the context of a review of the status of environmental governance in South Africa, and thus, it is intended that future iterations of these lists will be in line with addressing the broader issues of adapting our current environmental governance framework in South Africa to become more effective, inclusive and meaningful.

1.2. Background rationale for this report

The 20th and 21st centuries have been characterised by the greatest man-induced loss of biodiversity ever known, and species extinctions across the board, are said to be at their highest (UNEP, 2007). The Millennium Ecosystem Assessment (MA, 2005: 1) reports that "over the past 50 years, humans have changed ecosystems more rapidly and extensively than in any comparable period of time in human history...". This is despite there being an increase in recent years, of global and national regulatory systems and formal regimes to govern the management and utilisation of natural resources and control environmental impacts. In South Africa, the situation is no better and the 2006 South African Environmental Outlook reports on the rapidly declining state of South Africa's ecosystems and biodiversity (DEAT, 2006). Accordingly, as countries have become increasingly concerned with conserving biodiversity and maintaining ecosystem integrity, the use of threatened species lists to categorise threatened species, guide conservation priority setting and responses, monitor population trends and document species declines and possibly determine some kind of protection has increased. Likewise, South Africa has adopted a number of strategies and policies to address this worrying deterioration in our natural resource base.

The years since the 1992 United Nations Conference on Environment and Development in Rio have seen a number of published reports which measure the status and report on the decline of the planet's diversity of species. The most globally comprehensive of these includes the Global Environmental Outlook 4 (UNEP, 2007: 162) which states that "Species are becoming extinct at rates which are a 100 times faster than the rate shown in the fossil record".

The International Union for the Conservation of Nature (IUCN) also produces an annual global assessment of the status of species and reports that:

> "Fewer than 10 per cent of the world's described species have thus far been assessed to determine their conservation status. Of these, over 16 000 species have been identified as threatened with extinction. Of the major vertebrate groups that have been comprehensively assessed, over 30 per cent of amphibians, 23 per cent of mammals and 12 per cent of birds are threatened" (IUCN, 2006, in UNEP, 2007: 164).

These reports, along with reports such as those produced by the World Conservation Monitoring Centre, the Millennium Ecosystem Assessment (2005), the species list underpinning the Convention in Trade in Endangered Species of Flora and Fauna (CITES), the South African National Spatial Biodiversity Assessment (2004) and the South African National Environmental Outlook report (2006), utilise species data and assessments of the trends within taxa and populations at either global, regional, national or bioregional levels. These lists are used to measure biodiversity loss and quantify rates of species extinction with the intention of informing the development of effective policy instruments to stem this tide of biodiversity loss, within systems of environmental governance that address the need for long-term sustainability. The proliferation of tools that have therefore been developed to measure trends in the status of

populations or entire taxonomic groups, predict or estimate rates of extinction based on these trends and thereby assign a level of threat to the species, has resulted in the advent of Threatened Species Lists (hereafter referred to as TSLs) becoming a widely utilised tool for environmental governance and regulation. Increasingly, these lists are also being used in conservation priority setting and planning.

Current instruments of environmental governance are however, clearly unable on their own to halt biodiversity loss and that therefore simply having a TSL does not necessarily result in the conservation or improved status of those listed species (IUCN, 2006, in UNEP, 2007). Nor does it necessarily mean that the trends in species declines will be reversed as species may remain listed for many years without any improvement, and possibly even a decline, in their conservation status (<http://www.iucnredlist.org>). These outcomes depend more on how the TSLs are utilised, and by whom, what role they play in conservation priority setting and political agendas and for what purpose the TSLs are developed in the first place. The ability to enforce the regulatory system, or to incentivise voluntary compliance, is also a key feature of its success or failure.

TSLs are instruments included within the broader framework of a country's environmental governance system. Thus, the degree to which there may or may not be multi-party buy-in for these instruments, the degree to which their development involved negotiation and expert consultation, and the amount of reflective learning and adaptive development that goes into their continued transformation, are essential to understanding the role of such assessments from an environmental governance perspective. In essence, TSLs may be considered to be a cog in the wheel of an environmental governance regime, and their value and power to address the status of declining species will be determined by investigating how these instruments are positioned within an over-arching framework of environmental governance in a country.

1.3. Objectives and key concepts for investigation

To establish the theoretical framework for this research report, the first section of this report covers a discussion on some of the relevant current thinking around environmental governance as the framework in which threatened species listing and management is positioned. Environmental policies and regulatory frameworks are developed to effectively and appropriately conserve and manage natural resources, but the complexity of the arena in which natural resource issues are debated, taking into account social, economical, cultural, environmental, technical and political imperatives, means that a purely technical or regulatory approach to developing this framework seldom remains unchallenged. The key question therefore arises as to how to develop a robust governance framework that meets its conservation objectives in such a way that it is meaningful, effective and acceptable to the needs of a range of parties and sectors. Olsson *et al*. (2006: 1) refers to the diversity of stakeholders in a governance process as "managed social-ecological systems (SES), in which previous rules and social mechanisms may not apply". Ostrom (2005: 33) expands on the notion of the governance rules and suggests that "rules imply that a group of individuals have developed shared understandings". This may then suggest that governance provides the environment in which the instruments are developed in accordance with the rules of the game. The challenge lies in getting all players to understand, agree to and collectively design the rules and to apply the instruments fairly and appropriately. This concurs with the work of Ostrom (2009: 38) who refers to the robustness of effective social-ecological systems that are based on "rules (and norms) for resource access and conflict resolution that are broadly accepted and considered legitimate".

Such a process, is therefore not a once-off rule-setting procedure and effective governance requires a level of adaptation in which parties must regularly return to the drawing board to reflect on the successes and failure of the governance measures and through these feedback loops, develop new approaches which

address the obstacles encountered. Conde and Lonsdale (no date) recommend that stakeholders are crucial to the adaptation process to build a shared understanding of the problems. This, they say, takes time and is underpinned by the need to build trust and active participation, using a variety of dynamic tools and techniques. Ostrom (2005) further speaks of the challenges associated with designing rules to guide collective action and of the need for participants to invest time and energy in contemplating rules, monitoring them and enforcing them to ensure the desired behavioural change. This report therefore opens with a broad discussion on environmental governance, reflecting on some of the issues raised above, and then later uses this background to analyse the environmental governance systems in South Africa for biodiversity and specifically, species conservation through a comparison of the role of two different South African threatened species lists. The report later uses these lists as a platform to critically evaluate the different approaches to species conservation as examples of instruments of environmental governance and how they have been applied in South Africa.

Thus, the second part of this report deals with a full description of the rationale, motivation and need for developing threatened species lists, globally and within South Africa. It then moves onto the specifics of two key South African species lists and their background, and provides a critical evaluation of two key listing processes undertaken in South Africa in the past five years: the government gazetted lists of Threatened or Protected Species (hereafter referred to as the ToPS List), including the ToPS listing process and resultant species list and the process and results from the *Red Data Book for the Mammals of South Africa: A Conservation Assessment* (Friedmann and Daly, 2004).

The report identifies similarities and differences in the approaches used in the formation of these lists, the assessment and decision-making criteria employed in both, the rationale for each, their application and their resulting impacts.

Against this background, this report therefore examines in detail both the South African mammal Red Data Book as well as the ToPS list in the context of current thinking about environmental governance in South Africa and will address the following questions:

1. What are the fundamental themes in the current application of environmental governance in South Africa?
2. How do threatened species lists fit into this governance regime and how have they been developed (for example in accordance with or disconnected from global practices)?
3. Do these lists increase the regulatory responsibility for government, reduce it or spread the load amongst a more divergent group of stakeholders?
4. What do these lists say about the way in which environmental governance is developing and being applied in South Africa and do they suggest a divergence or convergence in approaches to regulatory policy- or decision-making?

The following sub-questions are also considered in order to contextualise threatened species lists as tools of environmental governance and to better understand how they may reflect the environmental governance regime in which they are situated:

1. Why do we engage in developing Threatened Species Lists and what was the primary purpose of each of the lists evaluated in this report?
2. Does their content (the listed species) differ and do the lists therefore differ in terms of credibility and relevance?
3. What is the legal standing of each and likewise, their scientific basis?
4. What could their individual weaknesses and strengths be?
5. Do they compliment or contradict each other?

6. What have been their impacts thus far and what could the impacts possibly be in time?
7. Who have been or are likely to be the primary users of these lists? What do they use them for?
8. What recommendations may arise for amending, revising and updating the lists and possibly changing the listing process/es?

The overall objective of this analysis is to try and understand more about the purpose, function and primary uses of TSLs, and to understand their role within the context of knowledge management and environmental governance in South Africa. The current report therefore includes an examination of the nexus between the process of listing species using empirical data for conservation assessment purposes only, and the listing of species to determine a conservation or regulatory response. This parallel evaluation of different listing process is undertaken within the context of current global approaches to the listing of threatened species, the application of such lists within the South African regulatory framework and the overall framework of environmental governance globally, and as applied in South Africa.

The rationale behind the various listing processes in South Africa, and the resulting use of these lists, is contextualised within the prevailing South African biodiversity conservation paradigm, with the ultimate aim being to assist in improving the relevance, reliability and credibility of the threatened species lists that are used for sustainable and equitable biodiversity management, conservation, research and planning.

1.4. Methodology

A multi-methods approach is used in this research. The report begins with a study of the current literature around environmental governance and adaptive governance, both globally as well as in South Africa. The initial method of

investigation is therefore, a review of the current environmental governance paradigm represented in a selection of published papers and book chapters. This will set the tone for a closer analysis of the positioning of tools such as threatened species lists within this paradigm and specifically, in the South African context. Specific themes which characterise systems of environmental governance form the focus of this report and are therefore highlighted in the literature review for later analysis and discussion. These include themes such as goal identification and consensus building; effective public participation and the role of civil society; information sharing and knowledge management; conflict resolution and adaptive governance and growth.

Following this assessment, the report then investigates the process of developing threatened species lists for both scientific and conservation purposes as well as for regulatory purposes. An analysis of the current literature and thinking around threatened species lists and their value and role is also undertaken, to consider the role of lists drafted for a regulatory purpose as well as those designed for scientific and conservation purposes. Using two key examples of threatened species lists in South Africa, a detailed comparison and analysis of the similarities and / or differences between the lists will be undertaken. The key items for critique and analysis comprise the *Red Data Book for the Mammals of South Africa* (Friedmann and Daly, 2004) as well as the South African government's list of Threatened or Protected Species (ToPS) (Republic of South Africa, 2007). These two lists have been chosen as they represent the most recent efforts to list a group of threatened taxa in South Africa under the two different approaches of applying scientific assessment criteria and developing a list for regulatory purposes only. Analysis of the ToPS list also offers opportunities to contribute to some of the early formal critique and reviews which should hopefully inform a revision process aimed at appropriate and relevant improvement and adaptation.

The analysis of these two lists covers their process of development, criteria for their categories of threat, their outcomes and their subsequent uses or functions and effectiveness as tools for the conservation and / or management of the species listed. This then sets the framework for the rest of the report that builds on this understanding and interrogates the process of listing threatened species and how these lists function within a system of environmental governance.

These chapters form the framework for an analysis of the use of threatened species lists as tools of environmental governance in South Africa which covered in Chapter Five. Three case studies are analysed in this chapter, to provide deeper insight into the role and effectiveness of local threatened species lists. These case studies cover issues such as trophy hunting, damage-causing animal control and threatened species conservation, which are three key themes in utilising threatened species lists for wildlife conservation, management and the regulation of utilisation and persecution. Additional sources of information and documentation that inform and guide this analysis include government reports and communications, archived emails and website communications (newsletters and list serves), popular publications and anecdotal information.

In addition to reviews and analyses of written documentation, expert opinion is also sought from some of the key stakeholders and informants who were involved in the process of developing both lists as well as those currently involved in applying and implementing them. These stakeholders were selected purposively based on their expertise, their representation of important stakeholder groups and my prior knowledge that they would be willing to respond to my questions. The interviewees selected represent important sectors in the conservation community including government, parastatal and provincial authorities, academic and non-governmental organisations. They were chosen both for their direct involvement in both Red List development, as well the process followed by the South African government in developing the ToPS list,

and implementing the associated regulations that go with them. Six key stakeholders in the analysis of the role and effectiveness of the lists in their various forms were approached. General questions were drafted for each stakeholder focussing on the themes of this report, such as the role of TSLs in environmental governance, the role of public participation in drafting both lists and the role of information and knowledge sharing in generating the content of the lists. The stakeholder's responses on the application of these themes, using the lists as a focal point, were also interrogated.

The stakeholders were interviewed telephonically in order to ensure a timely and detailed response and the snowballing technique was employed in the discussions to allow for additional detail to be volunteered and for personalised input from each respondent. General questions asked of all stakeholders to initiate the discussion included questions around the processes employed to develop the Red List of Threatened Species as well as the South Africa Threatened or Protected Species lists, the strengths and weaknesses of each, the use of the results in improving the conservation status of the listed species, the role of all stakeholders in the various processes and the effectiveness and robustness of the public participation process. The interviews and engagements were done in an ethical manner and respondents were informed of their rights to confidentiality, anonymity and / or provided the chance to decline to comment. An ethics protocol and approval was obtained from the University of the Witwatersrand.

The results of the literature review, the threatened species analysis and the stakeholder interviews converge in a discussion in the final chapter that draws conclusions together of how threatened species lists function in the prevailing environmental governance paradigm in South Africa, identifies where weaknesses exists, recommends how these may be remedied and suggests where a stronger focus on the themes in environmental governance globally may

inform a more robust application of the same in Africa. The opinions and perspectives obtained from respondents aid in informing a set of recommendations on how to develop a more robust, more effective and more generally acceptable manner of listing species in South Africa.

The study of threatened species listing is a new field of study in South Africa and this research report aims to begin to stimulate debate and discussion. The study does therefore not aim to provide definitive answers as to how the processes should function. It is intended to provide a platform for ongoing discussion by collating a range of information, ideas, opinions and commentary on the dual listing processes in South Africa as the basis of supporting an adaptive framework for environmental governance in South Africa through reflection and ongoing learning. It is intended that this report unpacks the way in which tools of environmental governance currently operate in South Africa, to support improved future iterations of the lists and to align them more with practical conservation outcomes such that they become effective instruments of environmental governance.

1.5. The South African context

The broad context of the research in this report is the South African environment, and associated environmental governance regime. To set the scene it is therefore important to provide a broad description of this environment and the biodiversity at the heart of the instruments to be analysed later in this report. South Africa has been ranked the third most biologically diverse country in the world, based on the degree of species variety and endemism (Driver *et al.*, 2005). Whilst occupying only two percent of the world's terrestrial surface, South Africa contains nearly ten percent of the planet's plants (over 24 000 species recorded) and seven percent of its reptiles (288 species recorded), birds (more than 800 species recorded), mammals (close to 300 species) and 5,5% of the world's known insect species (50 000 species have been recorded in South Africa, but an estimated further 50 000 have not yet been

described) (EWT, 2002 and Republic of South Africa, 2005). South Africa ranks as the fifth richest country in Africa and the 24th richest in the world in terms of reptile, mammal, bird and amphibian endemism and there are over 10 000 species of marine species in South African waters, of which 12% are endemic to South Africa (DEAT, 2006). The country has three globally recognised biodiversity hotspots: the Cape Floristic Region; the Succulent Karoo and Maputaland-Pondoland-Albany hotspot; and its Cape Floristic Region that may be the smallest of the world's six floral kingdoms yet it contains the highest density of plant species (CAPE, 2008).

South Africa has invested heavily in this natural wealth with tourism being one of the fastest growing sectors in the country, contributing 8.3% or R83 billion to the country's Gross Domestic Product in 2006 (South African Tourism, 2006) and with a significant proportion of the population relying directly on natural resources for their livelihoods and wellbeing (Wynberg, 2002). In the past 20 years or so, South Africa has paid significant attention to the need for improved biodiversity monitoring, inventorying and conservation through its adoption of global and national environmental policies and standards. The South African government is today party to a wide variety of multilateral environmental agreements and conventions, many of which are covered later in this report. These agreements have set the framework for the country's very progressive environmental legislation and regulatory framework, that aims to improve the monitoring, conservation and management of its natural resources and specifically, its biodiversity. South Africa has also, through its government agencies and its civil society networks including its many conservation non-governmental organisations and academic institutions, developed a variety of tools and mechanisms to measure and track the trends in biodiversity decline at the species level. Among these tools are the Red Data Lists of threatened species that have a long history in the country, and the recently gazetted government list of Threatened or Protected Species (Republic of South Africa, 2007). It is these

two instruments which form the basis of this investigation into the application of TSLs as instruments of environmental governance in South Africa.

Having provided a brief overview of the key components of this report, the rationale for its undertaking and having situated it within the of context of South African biodiversity and specifically, threatened species conservation as a component of the broader framework of environmental governance, the next chapter will focus in more detail on the concept of environmental governance and will provide a brief analysis of the current literature covering this theme.

CHAPTER TWO – ENVIRONMENTAL GOVERNANCE OVERVIEW

This chapter describes the concept of environmental governance and offers an overview of the literature and reflects on some of the current discourse on governance of the environment, along with some of the associated strengths, weaknesses and challenges.

Governance, in its broadest sense, is defined as a set of rules, structures or instruments which are developed for collective implementation by a group of interdependent parties whose activities and impacts are mutually felt (Sampford, 2002). Young (1994: 15), for example, notes that "Governance involves the establishment and operation of social institutions (i.e. the rules of the game that define social practices, assign roles and guide interactions amongst the occupants of those roles) capable of resolving conflicts...". Sampford (2002: 80) builds on this to develop his own definition in which governance is "the combination of ethical standard setting, formal rule making and institutional design by which organisations attempt to ensure that they live up to the values by which they justify themselves to the community in which they belong." This chapter will analyse in greater detail what is meant by environmental governance. While not canvassing all of the environmental governance literature, this research focuses on some of the various governance regimes for biodiversity conservation that may be developed and applied, as well as what the current thinking globally is, in this arena.

Governance of the environment and our natural resources is essential and Dietz *et al.* (2003: 1907) suggest that without "effective governance institutions at the appropriate scale, natural resources and the environment are in peril from increasing human population, consumption, and deployment of advanced technologies for resource use." In developing and applying governance systems to resolving environmental problems and natural resource conflicts, the state has historically been the primary instrument of resource regulation and policy

development. With the continued decline in the state of the planet's ecosystems and species, however, the effectiveness of state-centred environmental governance regimes and their strengths and weaknesses have begun to be questioned. In addition, the general leaning towards a realisation of the interconnectedness of social, environmental, economic, cultural and political systems has led to an increasing involvement of traditionally non-partisan parties in determining the distribution and management of natural resources in recent years. This has resulted in a much needed convergence of empirical science and knowledge management with socio-economic concerns and political agendas, resulting in more holistic decision-making and integrated policy development. The focus has thus shifted from formal institutional arrangements and the enforcement of strict legislation and policy regimes, to holistic problem solving and conservation management plan implementation (Rosenberg, 2007).

At the heart of this shift in focus lies the acceptance that environmental issues and changes are social issues and that the political economy of modern environmental management is socially constructed through ongoing negotiations around land and natural resource use, property rights, socio-economic imperatives and environmental sustainability (Aram, 1997). The very nature of this shift from command-and-control regulatory systems towards a cooperative approach for regulation development and policy negotiation is embedded in the term 'governance' as a *process* or in fact, governance *regimes* instead of government as an institution, where governance is not just about government regulation but includes a variety of role-players in achieving and implementing a codified set of widely accepted societal norms and standards. The inclusion of a complex multiplicity of independent role-players in developing a cohesive management regime in response to certain collective problems, is referred to by McGinnis (2005), Ostrom (2001, 2005, 2008) and others as polycentric governance. McGinnis (2001: 1) credits the term polycentric governance with having been coined in 1961 by Ostrom, Tiebout and Warren who define it as

being “the traditional pattern of government in a metropolitan area with its multiplicity of political jurisdictions” (Ostrom *et al*., 1961, in McGinnis, 2001: 1). By implication, polycentric governance is the process of otherwise unrelated units of society collectively developing appropriate mechanisms for resolving conflict or management challenges. To illustrate, McGinnis (2001: 23) further offers us the European Union as an example of such a management system that comprises otherwise independent units (in this case States). Ostrom (2008) talks about these small units nested within larger systems as being fundamental to polycentric governance and according to Ostrom and Mwangi (2009: 38), these units operate at “multiple and nested spatial scales” with some degree of overlap between the various resource users.

The strength of such polycentric governance systems is that they are able to adapt to complex, dynamic, biophysical systems using different responses appropriate to the particular resource system and associated issues (Ostrom, 2001). At the heart of such governance systems is the development and cooperative association of multiple governance units which are fluid in composition and cooperation, and which are thus well suited to flexible adaptation in response to impacts and forces. As McGinnis (2005) puts it, it is the governance system that facilitates the problems solving-process rather than simply the cumbersome institutions which are developed and often relied on to resolve all problems for all communities.

Given the heterogeneous nature of multi-party, highly inclusive governance systems, this form of management by necessity involves complex interactions not only between the specific parties but also between their respective sectors or interests. As McGinnis (2005) points out, as much as the systems for environmental governance are developed to conserve *biological* diversity, the argument for polycentric systems of governance, is that they preserve *cultural* and *institutional* diversity in the process of generating alternative ideas and

management options. Governance systems therefore need to be adaptive by nature, allowing for an element of feedback, local knowledge infusion, reflexive learning and adaptation to the changes that inevitably come with complex, socially-constructed systems of environmental governance (Ostrom, 2001). Folke (2006) explains that it is precisely due to these interactions that parties *will* evolve and change, which requires systems of environmental governance to be responsive and flexible to emerging needs over time. Adaptive governance is therefore underpinned by the need to "manage by change rather than simply to react to it" (ibid: 255), which also suggests that change is an accepted and crucial part of the management process, and uncertainty and surprise are not exceptions but certainties in effective governance. This is a marked shift from command-and-control systems which are based on a steady state, predictability and the need to prevent and quash change. These systems are more "about resisting disturbance and change, to conserve what you have." (ibid: 256). Dietz *et al.* (2003) further add that because humans will find ways to evade governance measures, governance must involve rules and policies that evolve, further stressing the importance of an adaptive framework for environmental governance.

Despite this trend, Prakash (2007) informs us that the state-centeredness of global governance remains mostly intact today, with the state still taking centre stage as a lead actor in enforcing regulatory compliance. This opinion may also be extrapolated to apply to environmental governance which is usually developed and applied as an element in the overall suite of general governance and administrative policies in a country. Thus, given that the state may indeed remain dominant in governance of the environment today, but within the modern trend towards shifting paradigms around negotiating resource management regimes, it suggests that a tension may be developing at the interface of these otherwise contrary approaches. In South Africa, this is largely

true, despite our move towards a more participatory framework of policy development, as will be demonstrated later in Chapter Four.

Environmental governance in the modern world involves greater participation of local and global communities whose rights to resource access, control and benefit sharing, and whose individualistic competing cultural, social, economic and physical frameworks create preferences for different regulatory systems or norms and standards of resource use. Policy development in this new framework involves extensive engagement of multi-parties at all levels of policy development, in an arena that now includes socio-economic, cultural and political agendas tempered by empirical science and ecological theory. This trend emulates what Rosenberg (2007: 93) refers to as "bottom-up participatory approaches", covering all aspects from visioning to legislation, and from implementation and litigation to revision. This kind of regulation is developed in a participatory framework that includes feedback loops and attempts to create mutually defined benefits for all. It may not, however, come without its price and Prakash (2007) warns us of the possible transaction costs payable by authorities who may cede autonomy in return for cooperation but may find that the other actors do not fulfil their obligations in terms of compliance and implementation.

Likewise, in legislators unskilled in consultative processes, effective public consultation may present significant challenges which can result in what they perceive to be a breakdown in process and regulation development (DEAT, 2008, pers. comm.) Attempts to find the “middle ground” (Anonymous, EKZN Wildlife, 2008, pers. comm.) and where to draw the line to avoid endless, circular debates, presents significant challenges for bureaucrats for which they may find themselves under-skilled and unable to effectively manage. This may explain the reluctance of many states to cede too much control in their regulatory systems, for the lack of trust in the ability or the desire of these emerging role-players to responsibly exercise their rights, as well as their responsibilities towards

equitable and sustainable resource management. It does not however detract from the global shift away from the strict management of *ecology*, to the negotiated co-management of all encompassing *socio-ecological* systems and instead suggests an urgent need for ongoing skill and capacity building in the integration of multiple inputs into policy development.

This modern approach towards developing holistic governance systems for the socio-ecological management of natural resource systems therefore poses substantial new challenges. Lebel *et al.* (2006) investigated the attributes of emerging systems of environmental governance by evaluating key case studies from the Resilience Alliance which focussed on sustainability problems. Their insights were drawn by asking which attributes of governance function in society to enhance the capacity to manage resilience, and in the process they revealed the value, but also the difficulty of multi-party participation in building trust and in developing a shared understanding as Ostrom (2005) has encouraged. The relationship between "polycentric and multilayered institutions" was also viewed as key to creating a platform on which knowledge and action can be harmonised and result in improved adaptation within a multi-sectoral framework. They also confirmed that authorities that embed resource management regimes within a framework of just and equitable socio-economic distribution and benefit sharing, enhance the benefits for greater sections of society, with greater levels of acceptance and support. Thus modern frameworks of environmental governance are characterised by ongoing attempts to manage the complex intersection at which the needs of a variety of users of ecological goods and services converge, within the context of often competing ecological, social, economic, cultural and political imperatives (McGinnis, 2005; Sampford, 2002; and McEldowney, 2007).

Not only are the role-players within the framework of environmental governance changing, but the role of the actors within different governance systems differs according to the scale of the systems (globally and nationally). At the global level, the role of quasi-government and non-government actors in international

political decision-making has become increasingly important, demonstrated by the sharp increase of the number of these stakeholder groups participating in global events such as the United Nations Conference on Environment and Development (UNCED) in 1992. Otherwise known as the Rio Earth Summit, this was at the time, the best attended conference ever held with over 10 000 on-site journalists and 2 400 representatives of non-governmental organisations participating. This marked increase in civil society participation in an international convention and its various tenets, was indicative of the global shift towards participatory decision-making, multi-sectoral input and the integration of equity, benefit sharing and sustainability as emerging issues in the socio-ecological ecological debate.

Within some of these emerging frameworks of environmental governance, it is not just the role-players that have changed but also the rules. Sampford (2002), for example, tells us that regimes of environmental governance do not only feature the standard legislation and regulatory measures but also instruments of good governance such as access to and freedom of information, declarations of interest, public scrutiny and access to judicial review. In addition, non-formal governance tools include sectoral codes of conduct, compliance incentive schemes, environmental accreditation schemes, voluntary compliance measures and sustainability reporting all of which aim to improve procedural transparency, participatory decision-making and improved compliance. Sampford (ibid: 80) further points out that these days the "organisations that take a major part in environmental governance regimes include state-based, NGO, corporate, media, activist, educational and scientific bodies" indicating a very different make-up of the playing field than was previously experienced in the determination of state-based regulatory systems.

Where the state remains the central, dominant figure in the decision-making context, this hampers effective environmental governance (ibid). States are never the single player in effectively solving problems and cannot fully represent

all interests. Further, states seldom have the capacity, resources or the political will to fully implement and comply with all aspects of the international conventions and agreements to which they are party, and the national regulatory systems they may develop in response (Dietz *et al.*, 2003). The role of other parties in the development and implementation of environmental governance regimes may be challenging due to the nature of multi-party participatory processes, but offers much in the development of frameworks that may be more effective and implementable in the long run. Big business has even got a role to play despite the fact that large corporations often enter the dialogue driven by self-interest and using funded scientific reports and position papers to sway policy discourse in their favour (Prakash, 2007). Good examples of where industrial players have attempted to negatively influence policy debates and push their own interests, for example, lie in the activities of the fossil fuel industry trying to shape the discourse around climate change away from that which may disadvantage their commercial interests, and the multinational biotech food producers trying to sway the genetically modified foods debate towards the opportunities and rather the costs presented by their products. Similarly, scientists and academics may offer vastly differing positions on issues as a feature of the uncertainty which characterises ecological debate, and seldom will science or civil society present a unified front.

Thus a key challenge presented by a multi-disciplinary approach to decision-making is the fact that the different disciplines and stakeholder groups usually approach the process from the confines of their individual paradigm and views of the world and will look for different outcomes and regard different parameters as necessary tenets of effective governance regimes. According to Sampford (2002), modern governance, nationally and internationally, must involve an interplay of the combined perspectives of economics, politics, ethics, enforcement and compliance. Above all, any system of governance, environmental or otherwise, must also have at its heart, the tenets of

accountability and fairness, in order to address the needs and rights of all stakeholders where feasible.

According to Aram (1997), herein lies the ongoing challenge of environmental governance: governance systems need to be adapted to manage the ongoing struggles of state-society relationships, characterised by the need for effectively meeting the dual aspirations of accountable regulatory systems as well as social equity and inclusivity. Given that the biggest challenge facing environmental, and for that matter, any governance regime is its implementation, in the face of a lack of supranational regulatory institutions with the power to enforce governance regimes, obtaining buy-in from disparate groups for complying with the regime remains central to the development of effective environmental governance regimes into the future.

With multi-party regulation development, accountability for the success or failure of the regime also becomes widespread. But what does it mean to be accountable? Wallington and Lawrence (2008: 8) suggest that "accountability refers to a specific set of social relations institutionalised in practices of account-giving" and "an obligation to explain and to justify conduct to some significant other. For these social relations to qualify as public accountability, the account-giving must be done in public; that is, it must be open, or at least accessible, to citizens." Thus decision-making and policy development must be based on publicly accessible, transparent and scrutinise-able rationales and likewise, the public must engage in participative questioning, information evaluation and compromise-based solution generation, if the needs of a multi-disciplinary and culturally diverse society are to be catered for within the complexity of negotiated environmental governance. Above all, it also behoves communities to not only participate in the *development* of integrated policy solutions but almost more important, in their *implementation* and *enforcement*, if effective environmental governance is to be achieved in its entirety.

The degree to which the role of governments varies from playing an overall dominant role in decision-making to a mediating and determining role in which government carefully considers the various values, datasets, socio-economic imperatives and political ideologies, and develops an integrated policy framework, varies enormously. Australia for example, has recently 'experimented' with environmental governance systems which involve the transfer of responsibility for natural resource management from Federal and State governments to community-based regional bodies as part of a policy shift to devolve responsibility for natural resources from government to communities (Wallington and Lawrence, 2008). This kind of shift in thinking and the application of participatory governance regimes instead of top-down government driven regulation, does not stop with the change in policy but should be seen as the beginning of a new process of learning by integrating these policy shifts into a broader framework of adaptive governance. The ability to engage, reflect, learn, understand and adapt to emerging issues are key features of a system of governance that adapts to the needs of the masses it serves instead of one which determines policies and then tried to force compliance onto that static framework. Adaptive governance implies an acceptance of the need to learn and to do better. Scholz and Stiftel suggest five challenges to achieving adaptive governance: "representation; decision process; scientific learning; public learning; and problem responsiveness" (Scholz and Stiftel in Cockerell, 2007: 375). This further demonstrates the dynamic nature of adaptive governance and the need for participants to acknowledge and accept the long-term nature of this strategy. Adaptive governance does not involve a single decision, it is a process, characterised by reflective learning and participatory engagement, without a clearly defined beginning or end. It involves a process of applying governance to systems' management that allows for uncertainty, incomplete information and risk to become integral components of the process of dynamic decision-making and learning.

In this chapter, some of the concepts of environment governance, adaptive governance and polycentric governance have been examined. These systems are not without their challenges and this chapter has touched on the multifaceted nature of the issues, and the dynamics that are at play in managing such complex biophysical systems. It has included a synopsis of the current discourse around these concepts and issues, thereby setting the scene for a deeper analysis of specific tools of environmental governance and their role in furthering biodiversity conservation aims which is undertaken in Chapter Four.

CHAPTER THREE – THREATENED SPECIES LISTS

This chapter focuses on introducing specific instruments of biodiversity conservation as a component of environmental governance. The instruments of this research are the threatened species lists, designed to improve the conservation of and to reduce the decline in threatened species. These instruments, however, are embedded as tools in both the regulatory toolbox for biodiversity conservation, as well as academic and science-based approaches. As such they are examples of a form of interface in which the complex multi-party interactions mentioned in the discussion in Chapter Two may be located. Specifically, two forms of TSLs recently developed for improved biodiversity conservation will be evaluated to offer insights into the process of development and intended application of these lists to position them within the environmental governance framework of South Africa.

3.1. Red Data Books and Lists

Red Data Books were first conceptualised in 1963 by Sir Peter Scott (Friedmann and Daly, 2004), as an easily understood, and widely applicable way of measuring and objectively quantifying the rate of extinction and thus the degree of threat facing a particular species. Today, the International Union for the Conservation of Nature (IUCN) Red Data Lists (the terminology has moved away from implying the physical entity of a 'book') are developed to identify and document those species most in need of conservation attention and to provide a global index of the state of degeneration of biodiversity (IUCN, 2007). The process of listing species using the IUCN's Red List system has been refined and considerably improved over the years and today the Red Data Categories and Criteria are widely regarded as providing the most scientifically robust method of assessing a species' extinction risk and assisting a category of risk. Today, the goals of the IUCN's Red List Categories and Criteria are several and include:

- to provide a system that can be applied consistently by different people;

- to improve objectivity by providing users with clear guidance on how to evaluate different factors which affect the risk of extinction;
- to provide a system which will facilitate comparisons across widely different taxa; and
- to give people using threatened species lists a better understanding of how individual species were classified. (IUCN, 2001).

Red Data assessments utilise empirical data based on a species' population size and trends, distribution (areas of occupancy and extent of occurrence), rate of decline, mature individuals, degree of fragmentation and so on. The Criteria and Categories were designed for application at the global level but have been adapted to include applications at national or regional levels (Ginsberg, 2001; Gärdenfors, 2001). The IUCN is quite clear about the intended role and application of these lists, stating implicitly that the assignment of a category of threat to a species "...is not necessarily sufficient to determine priorities for conservation action..." (IUCN, 2001) and that likewise, taxa which have not been assessed should not be considered to be non-threatened. The IUCN further stresses that "...a taxon may require conservation action even if it is not listed as threatened." (ibid: 4). Further, assessment under the IUCN Red List system is based on a species being fully described, with adequate, documented datasets on the species' threats and trends. The IUCN Red List system is therefore clearly meant to be a scientifically-based assessment tool and not an absolute measure of the trends within the entire spectrum of biodiversity, nor a single-minded determination of where conservation attention is or is not required. Furthermore, unless a country adopts the IUCN Red List system to develop its own national lists of threatened species, or unless a country has legislation in place to give legally binding protection to any of the Red List species occurring within its borders, the IUCN Red Data Lists do not necessarily imply any legally enforceable protection for the species or an increase in its national conservation importance or priority.

3.2. Global applications of Threatened Species Lists

Be that as it may, as countries have responded to the global ecological crisis and increasing biodiversity loss by assessing and monitoring trends within the populations of threatened taxa, IUCN Red Data Lists have become used worldwide for a number of purposes apart from simply the assessment of a species' global status and risk. In fact, Ginsberg (2001) informs us that the IUCN's development of the regional listing criteria, was partly in response to the desire of many national and regional authorities to develop or utilise similar systems to assess the status of species within their political boundaries. Possingham *et al.* (2002) suggest that there are four ways in which threatened species lists are currently used, regardless of their origin or developmental process. These include determining priorities for conservation and resource allocation, informing the designation of protected areas, constraining development and resource utilisation and for reporting on the state of the environment. These applications of TSLs may not necessarily all be undertaken by national authorities alone, but depending on the nature of the national listing process, the regulatory framework and the criteria selected for different listing processes, many parties including NGOs and academic institutions may become involved in developing TSLs. It is therefore the application and purpose of the TSL that says more about its value, credibility and role as a governance tool than simply an examination of the validity of the listing process or responsible parties.

All TSLs have some basics in common. They all have categories of listing, criteria by which species are assessed and assigned a listing category, and a purpose or application of these listings which should impact on the future status of the species positively (De Grammont and Cuarón, 2006). The study undertaken by De Grammont and Cuarón (2006), for example, focused on an analysis of 25 threatened species categorisation systems in 20 countries on the North and South American continents to evaluate their suitability in assessing species risk of extinction and as tools for species conservation. In so doing, they concluded and

indeed, recommended, that "governments [should] use three types of lists: (1) threatened species lists constructed following a sound categorization system, (2) lists of species of conservation priority, and (3) lists that serve as normative tools (e.g., Convention on International Trade in Endangered Species of Wild Fauna and Flora)." (ibid, 14). It is therefore suggested that it is suitable to combine both Possingham *et al.*'s (2002) suggested applications of TSLs, with those suggested by De Grammont and Cuarón (2006) to arrive at three broad applications of TSLs, namely: to assess extinction risk, to guide conservation priority setting (which can include protected area establishment, increased funding support, or through public awareness and education) and to fulfil the role of a normative instrument for regulating biodiversity utilisation and halting decline.

The first application of a TSL, to objectively quantity extinction risk, is fully applicable to IUCN's Red List system, which requires empirical evidence on which to base an objective assessment of a species' risk of extinction, either globally or regionally. This kind of assessment does not necessarily take into account other factors which may have bearing on the conservation of the species such as socio-economic drivers, political agendas or the possible lack of empirical data on the species and uncertainty. Nor do these lists necessarily determine conservation priorities and resource allocation, which is quite explicitly stated by the IUCN as not being the primary objective of their listing system, which is to determine and assess *conservation risk* only.

The second suggested application of TSLs relates to lists primarily developed to determine *conservation priority* which are found more commonly in developing countries where the degree of information required to fully assess the conservation status of species may be lacking (De Grammont and Cuarón, 2006). It is often in these countries too that the greater need lies in carefully allocating limited resources to address the key or often, indicator species which may be at greatest risk. These lists may be developed using very different assessment

procedures and criteria and often take into account broader factors such as social, economic and political importance and role of the species, the anticipated return on investment and conservation effort and societal values in general.

The third and final form of TSL recommended by De Grammont and Cuarón includes those TSLs most often developed by countries to legislate and regulate the utilisation and conservation of biodiversity. These 'official' lists may be developed by governments with no correlation to the unofficial species conservation assessments (often developed by non-governmental organisations and academic institutions), or they may be aligned and integrated depending on relevant national policies around species listing, and the criteria used by both lists. In the case of the government-developed lists, species which find themselves on these lists are usually there for broader management, political, social and economic reasons, and not only as they face a risk of extinction, and hence a comparison of the conservation effectiveness of these different approaches to species listing depends to a large degree on their application rather than just their development.

One therefore needs to consider the impact of an official TSL, developed for its normative value and used to enforce biodiversity conservation legislation, versus the potential greater or lesser benefit to a species of being listed purely for its declining conservation status and possible risk of extinction. One may argue that these different approaches to threatened species listing may not necessarily be mutually exclusive, but given that the criteria and applications of the different lists differ substantially in most cases, it is seldom that these approaches converge to form one single national list, and when this has happened, De Grammont and Cuarón (2006) warn us of the complications of combining these different criteria and approaches, citing confusion over the roles of the lists and inadequate understanding of the importance of these lists to identify threatened species as opposed to guiding regulation compliance only. The data, for example,

required to empirically assess the conservation status of a species with an extremely limited distribution range and population size may see it qualify for listing in a Red Data List, but not necessarily on a conservation priority list if the species requires unrealistic resources for its conservation, is not endemic to the country and has little value as an indicator species or cultural value to the nation. Furthermore, if the same species is not threatened by measurable anthropogenic factors, it will unlikely find itself on a national TSL designed for regulatory and legislative enforcement. Thus, it becomes clearer that different forms of listing threatened species in a country result not necessarily from confusion or a divergence of opinion over what constitutes a threatened species, but more from the application of TSLs under different circumstances, by different stakeholder groups and for different purposes.

From this analysis, the following list of possible applications of TSLs can be developed, broadly divided into the three functions of TSLs:

1. TSLs which purely cover **extinction risk assessments** for species, often based purely on empirical data on the species, its habitat and its threats:
    - asses extinction risk;
    - inform reports which measure trends in biodiversity loss and species decline for example State of the Environment Reports;
    - highlight gaps in knowledge and identify areas for further monitoring, investigation and research; and
    - raise public awareness and generate support and / or funding for threatened species conservation.
2. TSLs which determine **conservation priority setting**, usually determined by species and ecological data, combined with socio-economic imperatives, cultural values, conservation cost analyses and political agendas:
    - guide planning processes for protected area expansion; and
    - guide conservation planning and priority setting;

3. **Normative Tools** to regulate conservation of listed species, usually based on a national regulatory framework that legislates over biodiversity loss and anthropogenic impacts on species:
    - afford legal protection for a species based on its threats; and
    - regulate utilisation and development which impacts on listed species.

The use of TSLs to assist with broader conservation planning or to curb development and land use change by using listed species as indicator species for larger ecosystems or biome conservation is problematic. Possingham *et al.* (2002) suggest that due to the nature of TSLs often focussing on larger, more charismatic species, their role as broader ecosystem indicators may often be inappropriate if the species is indeed threatened but may be less of an indicator of healthy and functioning ecosystems than perhaps an alternative species such as an invertebrate which is not listed due to lack of empirical data or sound knowledge. The value of TSLs to secure areas for conservation, however, can still not be underestimated as, in South Africa we have seen that conservation corridors for dispersing African Wild Dogs or Black Rhinoceroses have been secured whereas these areas may not have been secured if championed by the cause of a declining insect, no matter what the biological case for this species, and its habitat may have been. Thus, the use of threatened species for land use planning and protected area expansion may be a reality and indeed have benefit, but the development of TSLs to serve this objective would be fraught with complications and contestations.

Despite the different approaches to developing TSLs with different applications, is there an argument to try to align the different lists and create some kind of possible nexus between objective, empirical assessments and regulatory listing processes and conservation priority setting? Farrier *et al.* (2007) explored the complications of using TSLs developed purely for assessing conservation risk to trigger a conservation or regulatory response and recommended instead the

need to integrate a broader range of considerations into conservation priority setting and planning along with threatened species assessments and conservation needs. This implies the need to both integrate other issues but also, to cautiously apply threatened species assessments taking into account their possible weaknesses. Such weaknesses include by necessity the value-laden nature of these lists which Farrier *et al.* (ibid) suggest comes about as a result of the increased research, knowledge and available data on charismatic, highly visible species, the lack of knowledge of inaccessible species, invertebrates and taxa including fungi and the natural bias in favour of scientists' personal taxonomic interests. Likewise, for regulatory TSLs, Farrier *et al.* (ibid) warn of the danger of anthropocentric values heavily influencing an authority's decision to list or not list a species based on the need to balance the interests of the public and the community's willingness to set aside resources for the species' conservation. Conversely, this may include a community's intolerance of the presence of certain species, for example in the case of predators which may be considered by a farming community to be vermin and not in need of protection.

An analysis of the use of TSLs globally therefore reveals that in response to the globally declining state of biodiversity, most countries undertake some form of species assessments and TSL development, that these differ in their applications which may broadly be divided into three different functions, and that it is challenging, and perhaps inappropriate to try to merge these functions which may jeopardise the ability of the list to properly fulfil any one of its intended applications properly. Likewise, the presence of more than one national TSL may give rise to confusion and misapplication if not well understood and properly applied. Thus it would seem that the appropriateness and successful application of any form of TSL in a country is best determined by evaluating the TSL's intention and purpose, its process of development and its outcomes, all within the prevailing conservation paradigm and context of environmental governance in that country. Attention now turns to an evaluation of two key TSLs in South

Africa and a comparison of their development, outcomes and application in the broader conservation context.

3.3. *Red Data Book for the Mammals of South Africa*

In South Africa, Red Data Books have been produced for various groups of taxa including birds, insects and large and small terrestrial mammals since 1976[1], with one of the most recently published Red Data Lists being the *Red Data Book for the Mammals of South Africa: A Conservation Assessment* (Friedmann and Daly, 2004). This publication was produced as a result of the need to update and review the previous Red Data Book for South African mammals, which was published in 1986 by Raey Smithers (Smithers, 1986), but which only covered terrestrial mammals and had also employed, the, by then, outdated IUCN Red List Criteria and Categories (IUCN, 1994).

a) Process of development

The 2004 South African mammal Red Data Book vastly expanded on the contents of its predecessor and included assessments all of the 295 marine and terrestrial mammals (including many sub-species) in South Africa and assigned a category of threat to each, according to the most recent version (version 3.1, 2001) of the IUCN's Red List Categories and Criteria. This extensive list of assessed mammals was produced for various reasons: it aimed to provide a benchmark for future measurements of the deterioration or improvement in the status of the listed species; highlight the species facing the greatest risk of extinction; stimulate public interest in, and support for conserving these species; guide conservation priority setting; attract funding support for conservation action for the most threatened species and inform decision-making with regards to development, utilisation or any other threat which may lead to further decline in these species.

[1] Meester, J.A.J. South African Red Data Book - Small Mammals; S African NSP Rep.: Pretoria, 1976.

The process was driven by civil society with the Endangered Wildlife Trust (EWT), a South African based non-governmental organisation managing the process, raising the funding for the two year project and editing and publishing the end result. The species assessments were undertaken by a large group of biologists and nearly one hundred people participated by contributing taxon datasheets, assessing species or reviewing assessments. The final product was peer-reviewed by local and international stakeholders as well the IUCN's Red List office in Cambridge, United Kingdom. The criteria used for assessing each species were the IUCN's 2001 version 3.1. Red List Criteria and Categories (Appendix 1) that deal with empirical data pertaining to the status, distribution, habitat and trends within individual species or taxa only, and excludes other factors such as socio-economic concerns or political objectives thereby giving this list the primary objective of assessing local extinction risk only.

b) Results of the mammal Red Data Book

The final product stemming from the South African mammal Red Data Book project was a comprehensive assessment of all of South Africa's 295 terrestrial and marine mammal species including some sub-species. Of these 295 assessments, 10 species were listed as Critically Endangered, 18 as Endangered and 29 (*sic*) as Vulnerable, bringing the total number of mammals considered to be *threatened* to 57 or 19% of the total (Table 1). Details of these listings are provided in Table 2.

Table 1: Summary of nationally assigned IUCN Red List Categories per order (Friedmann and Daly, 2004: 700).

Order	Species Considered	Critical	Endangered	Vulnerable	Near threatened	Least concern	Data deficient	Extinct
Artiodactyla	33	0	2	5	1	25	0	0
Carnivora	38	0	2	2	7	24	3	0
Cetacea	42	0	2	4	1	12	23	0
Chiroptera	50	2	2	6	18	19	3	0
Hyracoidea	3	0	0	1	0	2	0	0
Insectivora	33	5	4	5	4	1	14	0
Lagomorpha	7	1	0	0	0	6	0	0
Macroscelidae	7	0	1	0	0	4	2	0
Perissodactyla	6	1	1	2	0	2	0	0
Pholidota	1	0	0	1	0	0	0	0
Primates	7	0	1	2	0	4	0	0
Proboscidea	1	0	0	0	0	1	0	0
Rodentia	66	1	3	1	7	46	8	0
Tubilidentata	1	0	0	0	0	1	0	0
	295	**10**	**18**	**29**	**38**	**147**	**53**	**0**

Table 2: Summary of nationally assigned IUCN Red List Categories per category of threat (Friedmann and Daly, 2004: 698-699).

	Common name	Scientific name
Critically Endangered		
1.	Black Rhinoceros – arid ecotype	*Diceros bicornis bicornis*
2.	De Winton's Golden Mole	*Cryptochloris wintoni*
3.	Juliana's Golden Mole	*Neamblysomus julianae (Pretoria subpopulation)*
4.	Ongoye Red Squirrel	*Paraxerus palliatus ornatus*
5.	Rendall's Serotine Bat	*Neoromicia rendalli*
6.	Riverine Rabbit	*Bunolagus monticularis*
7.	Rough-haired Golden Mole	*Chrysospalax villosus*
8.	Short-eared Trident Bat	*Cloeotis percivali*
9.	Van Zyl's Golden Mole	*Cryptochloris zyli*
10.	Visagie's Golden Mole	*Chrysochloris visagiei*
	Common name	***Scientific name***
Endangered		
1.	African Wild Dog	*Lycaon pictus*
2.	Antarctic "True" Blue Whale	*Balaenoptera musculus intermedia*
3.	Cape Mole-rat	*Georychus capensis* (KZN sub-population)
4.	Damara Woolly Bat	*Kerivoula argentata*
5.	Four-toed Elephant-shrew	*Petrodromus tetradactylus*

6.	Gunning's Golden Mole	*Neamblysomus gunningi*
7.	Hartmann's Mountain Zebra	*Equus zebra hartmannae*
8.	Indian Ocean Bottlenose Dolphin	*Tursiops aduncus* (migratory sub-population)
9.	Marley's Golden Mole	*Amblysomus marleyi*
10.	Oribi	*Ourebia ourebi*
11.	Robust Golden Mole	*Amblysomus robustus*
12.	Samango Monkey	*Cercopithecus mitis labiatus*
13.	Sclater's Forest Shrew	*Myosorex sclateri*
14.	Southern Elephant Seal	*Mirounga leonina*
15.	Swinny's Horseshoe Bat	*Rhinolophus swinnyi*
16.	Tonga Red Bush Squirrel	*Paraxerus palliatus tongensis*
17.	Tsessebe	*Damaliscus lunatus lunatus*
18.	White-tailed Rat	*Mystromys albicaudatus*
	Common name	***Scientific name***
Vulnerable		
1.	Angolan Wing-gland Bat	*Cistugo seabrai*
2.	Black Rhinoceros	*Diceros bicornis minor*
3.	Blue Duiker	*Philantomba monticola*
4.	Bontebok	*Damaliscus pygargus pygargus*
5.	Botswana Long-eared Bat	*Laephotis botswanae*
6.	Bryde's Whale	*Balaenoptera brydei*
7.	Cape Mountain Zebra	*Equus zebra zebra*

8.	Cheetah	*Acinonyx jubatus*
9.	De Winton's Long-eared Bat	*Laephotis wintoni*
10.	Giant Golden Mole	*Chrysospalax trevelyani*
11.	Giant Rat	*Cricetomys gambianus*
12.	Grant's Golden Mole	*Eremitalpa granti*
13.	Indian Ocean Bottlenose Dolphin	*Tursiops aduncus*
14.	Indo-Pacific Humpback Dolphin	*Sousa plumbea*
15.	Juliana's Golden Mole	*Neamblysomus julianae*
16.	Large-eared free-tailed bat	*Otomops martiensseni*
17.	Lion	*Panthera leo*
18.	Maquassie Musk Shrew	*Crocidura maquassiensis*
19.	Pangolin	*Manis temminckii*
20.	Peak-saddle Horseshoe Bat	*Rhinolophus blasii*
21.	Roan Antelope	*Hippotragus equinus*
22.	Sable Antelope	*Hippotragus niger niger*
23.	Samango Monkey	*Cercopithecus mitis erythrarchus*
24.	Sperm Whale	*Physeter macrocephalus*
25.	Suni	*Neotragus moschatus zuluensis*
26.	Thomas' House Bat	*Scotoecus albofuscus*
27.	Tree Hyrax	*Dendrohyrax arboreus arboreus*
28.	Yellow Golden Mole	*Calcochloris obtusirostris*

c) Applications of the mammal Red Data Book

The primary objective of the *Red Data Book for the Mammals of South Africa* was to provide an assessment of the degree of threat or extinction risk for each mammal species resident in the country. It thus fulfils the primary function of providing a substantive assessment of extinction risk, as per the first TSL objective cited in Chapter 3, section 3.2 of this report.

The South African mammal Red Data Book can also be measured against the two other possible applications of a TSL, namely the use of TSLs to guide conservation priority setting and to inform normative rules for legislating biodiversity conservation and utilisation. In terms of the former, the mammal Red Data Book contains much more than simply the species assessments and includes basic recommendations for conservation action for each listed species. These recommendations do not follow a strictly objective formula or set criteria, as the actual species assessments do, and were included as subjective opinions or responses by participants to the threats identified during the species assessment process. Nonetheless, the publication does include these recommendations and identified conservation needs. The degree to which they all may or may not have been acted on is not the subject of this report but in the case studies below, the outcomes or impacts of some recommendations will be examined in greater detail.

With regards to the latter function of TSLs, within the context of the South African regulatory framework, the Red Data assessments of species do not seem to inform any normative regulation setting and are not legally binding, although they may be used to inform or guide the development of such listing instruments by suggesting or recommending which species are threatened to start with. They may also inform or guide the listing of species under the Convention of Trade in Endangered Species of Flora and Fauna (CITES) as well as guide a country's motions to up-list or down-list a CITES listed species, but this too is not

formalised within any legislation or regulation in South Africa and is often applied subjectively if at all, as will be demonstrated in the case studies in this report. Whilst Red Listed species usually form part of the specialist studies or assessments in scoping reports and environmental impact assessments (EIAs) for development and land use change applications, their inclusion in these reports is also not regulated or legislated for, no matter how much it may be considered to be part of any acceptable scoping report or submission for an EIA. The use of Red Listed species in EIAs may also be problematic as, when "biodiversity studies in EIAs ... commonly focus on Red Data Book species, charismatic, or commercially important species... the functional component of biodiversity is largely neglected, and effects at the genetic level are seldom if ever addressed" (Wynberg, 2002: 236). Thus the role of using Red Data listed species to inform EIAs and development applications is useful but is incomplete as a biodiversity management tool in its entirety. Either way, the use of empirical species assessments in regulatory tools remains a subjective and informal process in South Africa.

Red Data Lists are therefore usually considered to be informal lists, with no legislated powers of enforcement in their application, despite their scientific credibility and objectivity as a measure of species extinction risk in South Africa and their usefulness as an important component within the compendium of biodiversity management tools in South Africa.

d) Critique of the mammal Red Data Book

The development of this TSL involved high levels of stakeholder participation, with more than 90 scientists submitting taxon datasheets and reviewing the assessments over a period of approximately 18 months. All 295 species accounts and assessments underwent rigorous peer-review in which external reviewers (based on the IUCN Red List Programme's use of Red List Authorities for different taxa), often not even in South Africa, evaluated the quality of the datasets and

tested the reviews against the Red List criteria to ensure that these assessments complied with and were on par with the international benchmarks set by the Red List Office in Cambridge. However, the process was not without its flaws and species finding their way into, or out of various categories of threat, may have done so for reasons apart from pure science.

Assessor subjectivity and data bias cannot be ruled out as having played a role in the assessment process and empirical science is always subject, in its application, to the user's interpretations and/or opinions. Whilst listing a species in the upper categories of threat, namely Critically Endangered, Endangered and Vulnerable implies a fairly robust application of the criteria, the same cannot be said for the application of lower categories, and species which fall into categories such as Data Deficient or Near Threatened may be influenced by assessor bias or differences in interpretation of the data and/or the IUCN criteria. For example, the fact that very few *carnivora* and no *artiodactyla* were considered to be Data Deficient cannot mean that we have sufficient information on these taxa, but suggests perhaps, that the assessors were reluctant to give a Data Deficient listing in favour of a Least Concern listing instead. The reverse may be said for the groups *insectivora* and *cetaceans* which had proportionally much higher numbers of species in the Data Deficient category. Whilst this may imply that one group of assessors is correct or inaccurate in their application of the assessment criteria, it may also, suggest a leaning in favour of one category over another in the absence of sufficient data to support a higher listing.

As much as the peer-review process may assist to address inappropriate listings, it must be noted that reviews are usually undertaken by peers within the same group of taxonomic experts and not across taxon specialists, thus, the very same level of objectivity cannot be said to be applied across taxa as within them. The value laden approach to the assessment process to which Farrier *et al.* (2007)

refer therefore cannot be ruled out as playing a role, no matter how small, in these or possibly other Red Data species lists.

Be that as it may, the IUCN Red List categories and criteria remain among the most respected and effective threatened species assessment tools and, according to Lamoreaux *et al.* (2003: 215) and also "one of the most effective sources of information for conservation planners". In line with this, the criteria, assessment process and review procedures for the development of the *Red Data Book for the Mammals of South Africa* was extensive, thorough and based on the application of one of the most sound and widely applied species assessment processes in the world, and this species list may therefore be seen as a solid example of a TSL designed to assess a species' the risk of extinction within the boundaries of a specific country, in this case, South Africa.

3.4. The South African government's Threatened or Protected Species List

a) Process of development

Completely separate from the process to develop the mammal Red Data Book, the South African government gazetted a list of Threatened or Protected Species (hereafter referred to as the ToPS List) as part of the broader Threatened or Protected Species regulations on the 23rd of February 2007, and amended this list on the 14th of December 2007 (DEAT, 2007a; 2007b). This species list and the associated regulations which include a list of restricted activities related to the listed species, were drafted under Chapter 4, Part 2, Section 56 of the National Environmental Management: Biodiversity Act (No. 10 of 2004) (NEMBA) which stipulates that the Minister of Environmental Affairs and Tourism may publish a national list of species that are threatened or in need of special protection.

This section of the Act is also in line with South Africa's obligations as a signatory to the Convention on Biological Diversity which states, in Article 7, that contracting parties shall, as far as possible, "Identify components of biological

diversity important for its conservation and sustainable utilisation...” (a) and “identify processes and categories of activities which have or are likely to have significant adverse impacts on the conservation and sustainable use of biological diversity...” (b). Furthermore, Shinn (2004: 531) notes the “…increasing trend to increase the protection of species and enhance conservation measures by legalistic or legislative means.” The reasons for this are, he suggests, that conservation sometimes requires legal enforcement and that this also raises the profile of the issues with the public and the relevant authorities.

The categories of threat defined in the Biodiversity Act utilise the same names as those used by the IUCN, namely Critically Endangered, Endangered and Vulnerable, with the additional category of Protected Species being added for those species of high conservation value or national importance. However this is where any similarity with the IUCN system ends and the criteria used to define these categories and the process to assess species is very different. Section 56 of the Act defines these categories as follows:

> *(a)* critically endangered species, being any indigenous species facing an extremely high risk of extinction in the wild in the immediate future;
> *(b)* endangered species, being any indigenous species facing a high risk of extinction in the wild in the near future, although they are not a critically endangered species;
> *(c)* vulnerable species, being any indigenous species facing an extremely high risk of extinction in the wild in the medium-term future, although they are not a critically endangered species or an endangered species; and
> *(d)* protected species, being any species which are of such high conservation value or national importance that they require national protection, although they are not listed in terms of paragraph *(a)*, *(b)* or *(c)*.

Box 1: Definitions of the categories of threat in Section 56, Part 2 of the National Environmental Management: Biodiversity Act, Act 10 of 2004 (South African Department of Environmental Affairs and Tourism, 2004).

The use of similar terminology for categories derived from different criteria and assessment processes can be extremely problematic and confusing, as will be demonstrated later on in this report. Despite the complications that this may present, it may not however, be unusual for TSLs to borrow terminology from each other. De Grammont and Cuarón (2006: 14) in fact note that "Categories differ among the different categorization systems and although at times the same name is used, it cannot be assumed that the same name confers the same level of extinction risk (i.e., categories may not be comparable or compatible)." This is certainly true for the ToPS List which has borrowed the IUCN terminology for their categories of threat but applied a very different set of criteria to these categories and defined them very differently.

In fact, whilst the different categories of listing and various restricted activities may be defined in the Act, nowhere in any gazetted legislation or published policy or documentation is the formal process by which species were elected for the list and the criteria applied to generate this listing clearly defined. The process employed in this iteration of the ToPS list may have been communicated in the planning workshops, public meetings and informal communications produced by the national Department of Environmental Affairs and Tourism which oversaw the process of developing the lists (DEAT, 2008, pers. comm.), but this process was never formally documented or developed into a policy or guideline. According to all respondents interviewed during the research for this report, this remains today a source of contention and disagreement.

The purpose of the government's ToPS list is primarily regulatory with the intended function being to list species in danger of extinction or unsustainable decline primarily induced or aggravated by the impacts of what the Act refers to as "restricted activities" (Republic of South Africa, 2007: Section 57). These activities include all those which have a *direct,* measurable impact on a listed

threatened or protected species which may result in its decline, for example hunting, shooting, harvesting, plucking and picking.

The DEAT, in drafting their list of threatened or protected species, thus interpreted the Act to mean that only species that are affected by restricted activities under Section 57 should be included in Section 56 (the list), an interpretation which was, as will be expanded upon on, the cause of much heated argument, debate and outcry in the months during which draft and final lists were developed. The best explanation of the listing process employed by the DEAT is located in the Department's own informal communications to stakeholders including their specially developed "Species Listing Newsletters" and "Guiding Notes on Comments" for stakeholders to comment on the (then) proposed species lists. The DEAT Species Listing Newsletter, edition 2 phrases it as such:

> "The Biodiversity Act Listing is a legal instrument, which will be used to regulate 'restricted activities' to be carried out with a listed threatened or protected species. The criteria and assessment process applied to listing species in terms of the Act, is completely different to (*sic*) the assessment process followed in the Red Data Listings…, unless such a Red Data species is impacted on by a "restricted activity", which excludes habitat destruction, it will receive no protection by listing it as either a threatened or protected species." (DEAT, 2005: 3).

Thus the listing of species in the ToPS regulations has two elements to its process: a substantive element which pertains to the conservation status of a species (although this is subjectively applied) and a regulatory or procedural aspect which deals with the threats posed to the species by virtue of what the Act refers to as 'restricted activities' (see Figure 2). The Act does not however, have any definitional standards for classifying species as Critically Endangered,

Endangered or Vulnerable and is vague and subjective in defining the criteria for these categories (the definition of terms such as “extremely high”, “high”, “medium-term” and “near future” remains open to a wide range of interpretation). Further, whilst the definition of the various restricted activities is quite clear in the Act and in this regard is objective, the threatened nature of the species at risk from these restricted activities is not clearly explained and the criteria to define which species were considered as being eligible for a threatened assessment to start with are not stipulated.

'restricted activity'-

(a) in relation to a specimen of a listed threatened or protected species, means-

(i) hunting, catching, capturing or killing any living specimen of a listed threatened or protected species by any means, method or device whatsoever, including searching, pursuing, driving, lying in wait, luring, alluring, discharging a missile or injuring with intent to hunt, catch, capture or kill any such specimen;

(ii) gathering, collecting or plucking any specimen of a listed threatened or protected species;

(iii) picking parts of, or cutting, chopping off, uprooting, damaging or destroying, any specimen of a listed threatened or protected species;

(iv) importing into the Republic, including introducing from the sea, any specimen of a listed threatened or protected species;

(v) exporting from the Republic, including re-exporting from the Republic, any specimen of a listed threatened or protected species;

(vi) having in possession or exercising physical control over any specimen of a listed threatened or protected species;

(vii) growing, breeding or in any other way propagating any specimen of a listed threatened or protected species, or causing it to multiply;

(viii) conveying, moving or otherwise translocating any specimen of a listed threatened or protected species;

(ix) selling or otherwise trading in, buying, receiving, giving, donating or accepting as a gift, or in any way acquiring or disposing of any specimen of a listed threatened or protected species; or

(x) any other prescribed activity which involves a specimen of a listed threatened or protected species;

Box 2: Definitions of restricted activities in Chapter 1, Section 1 of the National Environmental Management: Biodiversity Act, Act 10 of 2004 (South African Department of Environmental Affairs and Tourism, 2004).

Additional evidence of the vagueness of this listing process and lack of concrete criteria is gained from the website developed for the ToPS Lists, an extract of which is captured in Figure 3.

Chapter 4, Part 2 of the Biodiversity Act provides for listing of species as threatened or protected. If a species is listed as threatened, it must be further classified as critically endangered, endangered or vulnerable. The Act defines these classes as follows:

How the lists are drawn up

The initial process of listing species was led by the Department of Environmental Affairs and Tourism (DEAT). No specific criteria were developed for the listing of species and the lists were based on expert opinion. Ad hoc expert groups, which assisted in the compilation of species lists, were constituted from the roster of experts on the stakeholder database developed by DEAT. The ad hoc expert groups drafted lists on:

1. *Mammals;*
2. *Birds;*
3. *Plants;*
4. *Reptiles and Amphibians;*
5. *Fishes; and*
6. *Invertebrates.*

Box 3: Explanation of the ToPS listing process and criteria. (<http://www.speciesstatus.sanbi.org/threatened.aspx> 2008).

There was much public angst and confusion over the threatened species listing process and draft lists which resulted in extensive public hearings, meetings and workshops to clarify how the DEAT had interpreted the Biodiversity Act and applied the criteria and definitions in the Biodiversity Act to the listing of threatened or protected species. Several public communiqués were published and a newsletter on the process was sent to all registered stakeholders. A document was compiled by the South African National Biodiversity Institute (SANBI) covering the majority of the concerns of civil society members and academics which were drafted in a series of public workshops in 2004 and 2005 and delivered to the DEAT. Legal opinion was even sought as to the interpretation of the Biodiversity Act with regards to the listing of species only according to the relevant of listed restricted activities.

The basis of much of the concern and confusion lay in the use of similar terminology in the categories of threat facing a species in both the ToPS list as well as the Red Data listing process, which therefore, (according to many respondents) implies compliance with the IUCN's categories and criteria, when in fact the prevailing criteria and basis for listing a species pertained to the nature of the threats facing it based on the DEAT's interpretation of what the Biodiversity Act defines as restricted activities. The fact that habitat loss and decline in habitat quality are not considered to be restricted activities, precluded many species which would otherwise be listed as threatened (using for example, criteria used by the IUCN, both globally as well as regionally or nationally) from being listed in the ToPS list. Thus, despite the DEAT claiming to have undergone extensive public consultation, this consultation assumed a common understanding and agreement of how and why species would be listed and began at the point of selecting species for listing only, rather than beginning with a participatory interpretation of the Act and the process of *how* species would be selected and listed to start with.

b) Results of the ToPS List

Of the mammals listed in the ToPS regulations (as amended 14 December 2007), two are listed as Critically Endangered, nine as Endangered and 14 as Vulnerable Species, as demonstrated by Table 3, which offers the listing of all the mammals listed in the ToPS list.

Table 3. Mammals listed in the ToPS regulations in the categories of threatened species (Republic of South Africa, 2007).

	ToPS Listing Category	Mammal Common Name
	Critically Endangered	
1.		Riverine Rabbit
2.		Rough-haired Golden Mole

	Endangered	
1.		Robust Golden Mole
2.		Tsessebe
3.		Black Rhinoceros
4.		African Wild Dog
5.		Red Squirrel
6.		Mountain Zebra
7.		Gunning's Golden Mole
8.		Oribi
9.		Four-toed Elephant Shrew
	Vulnerable	
1.		Giant Rat
2.		Giant Golden Mole
3.		Samango Monkey
4.		Lion
5.		Roan Antelope
6.		Tree Hyrax
7.		Bontebok
8.		Pangolin
9.		Suni
10.		Large-eared Free-tailed Bat
11.		Juliana's Golden Mole
12.		Leopard
13.		Blue Duiker
14.		Cheetah

c) Applications of the ToPS List

With the primary function of the ToPS list being to regulate the activities around listed species, it is clearly designed to fulfil the objective of being a regulatory or normative tool. It is not designed to provide an objective assessment of the

conservation status of species or taxa and has no intention of determining conservation priority setting goals. These applications are not mentioned anywhere in the regulatory framework, nor in the regulations drafted to guide implementation of the list. As a normative tool, this list is intended to provide authorities with the necessary instruments to enforce legislation pertaining to anthropogenic activities relating to listed species and not necessarily the actual decline in the status of the species. Thus, a species threatened by habitat destruction or pollution will not feature on this list as habitat loss is not legislated against under this piece of legislation. Broader, indirect threats such as habitat loss and pollution are considered to be dealt with elsewhere in South African legislation, for example in the listing of threatened and protected ecosystems in Section 52 of the National Environmental Management: Biodiversity Act, Act 10 of 2004 (DEAT, 2004) and in the Environmental Impact Regulations which fall under the over-arching National Environmental Management Act (NEMA) (Act 107 of 1998 as amended). The value of the ToPS list, as currently interpreted by the DEAT, therefore lies purely in the ability of authorities to enforce the legislation governing the use and interaction of human beings with these listed species insofar as the role of 'restricted activities' is concerned.

d) Critique of the ToPS List

The eligibility for species to be listed on the ToPS list, and the assessment criteria and approach is very different from that of the IUCN's Red List criteria and assessment process, despite the choice of the same terminology for the categories. This is perhaps the most widely agreed to criticism of this list, as the use of the same categories suggests to most people that the assessment process and criteria will overlap. Yet, as has been demonstrated, they are largely distinct from each other and have no point of formal integration at all. Respondents to a series of questions posed around the choice of terminology for these categories all concurred that this was the greatest source of confusion. Not only in the development of the lists and in trying to generate a common understanding for

what the categories mean, but in the implementation of the ToPS lists, there exists confusion at all levels, from senior management, to field staff, in what exactly is meant by (for example) the term Endangered in the ToPS list versus Endangered in the national or global Red List. Had the ToPS List employed other titles for its categories of threat, the vast difference in what the categories actually *mean* may have been better understood and accepted by the various stakeholder groups. Given that academics, members of the public and NGOs may however, have a different impression of what Critically Endangered and Endangered means, based to some degree on familiarity with the IUCN's categories of threat, the use of the same terminology with different criteria posed a big challenge for creating a common understanding and acceptance of what exactly *this* listing means for the listed species.

Stakeholders from both sides of the spectrum fought the process suggested by the DEAT to populate the ToPS list and fought for the listing of species which they either wanted on or off the list. Many invertebrate scientists for example, argued the case for listing of 'their' species which are considered to be threatened, though not necessarily by any restricted activities. Counter to this was the ongoing argument by some landowners and farmers who fought to have the Black-backed Jackal and Caracal removed from the list of Protected Species due to their ongoing conflict with these supposedly abundant, and destructive species. It is therefore suggested that a different choice of terminology for the categories of threat may have avoided much of this debate and public angst.

In speaking to six of the key stakeholders who participated in the process of drafting, or commenting on the list of ToPS species, there was consensus that inadequate attention was paid to generating a common understanding of, and agreement on the framework around listing ToPS species, including consensus on interpretation of the framework legislation (the National Environmental Management Biodiversity Act, Act 10 of 2004), the process of applying it to the

listing of ToPS species, the process of selecting species and developing the list according to the limitations of the restricted activities criterion and the way in which the lists, and the regulations, are to be implemented.

The lack of clearly defined assessment process created the biggest challenge. Whilst the civil society got to participate and submit comments and nominations for listing, or down-listing species, as is required in the very enabling structure of South African law that facilitates public participation, the rationale behind the decisions taken, and the final list, remains misunderstood and to a large degree, disputed. Due to this lack of formal policy framework and operational guidelines for selecting species, the ToPS list employed subjective criteria without consensus or a clear understanding of how it was developed, or will be revised in the future. Whilst the definitions of what these restricted activities indeed are, may be clear in the Biodiversity Act, the definition of what constitutes a 'high risk' or an 'extremely high' risk of extinction, or 'national importance' or 'conservation value' is unclear, subjective and open to different interpretations and personal bias. Remembering that the ToPS list has two components, namely the assessment of a species' status coupled with the relevant impact of restricted activities, it is the former component which remains to be adequately addressed in the current criteria and assessment process.

Thus future revisions of the list will likely follow this same pattern of confusion and disagreement unless iterations of the ToPS regulations or amendments to the Biodiversity Act address this issue by detailing the process of exactly how a species becomes considered for listing on, or down listing off, the ToPS list to begin with. It was clear, in the consultations undertaken for this report, that grave concern exists amongst respondents for future iterations of the list unless this issue of revisiting the development and construction of the lists is undertaken, with due concern being given to engaging with a wide spectrum of stakeholders in a meaningful process of public participation.

Due attention must also be paid to the *quality* of the consultative process, which should support the principles of transparency, effective communication and collective engagement (McGinnis, 2005). These principles characterise sound systems of adaptive, environmental governance which also accommodate differentiated and sometimes even conflicting rights (Hatfield-Dodds *et al*., 2007). Interviews with some members of the DEAT for this report reveal that they view the public consultative process on the contents of the ToPS list to have been almost too extensive, as it simply allowed opposing opinions to remain pitted against each other with stakeholders assuming that consultation implies an acceptance of their opinion. Interviews with stakeholders on the other side of the process from the DEAT, including those from NGOs, parastatal and provincial authorities and civil society groups, reveal that the consultation was ineffective, due to it not being open to negotiated outcomes and due to the main fact that it began with an assumption that there was already consensus on the interpretation of the Biodiversity Act and how it applies to listing threatened species. It is at this point that the process appears to have become compromised, as the DEAT entered into what they perceived to be an adequate consultative process on the contents of the list only, but was not willing to engage on the interpretation of the Act with regards to species listing, and the associated criteria for listing species. They also refused to consider whether or not the only criterion for listing species should indeed be the degree of impact of 'restricted activities' or whether or not it was possible to integrate the Red List criteria and process with the development of the ToPS List. It seems that by not engaging in a meaningful process of public participation throughout the entire process of developing the ToPS listing process, engagement on the contents of the lists only was destined to be problematic.

Finally, the ToPS list does not allow for listing of sub-species. In the case of Juliana's Golden Mole, the listing of the whole species as Vulnerable may be problematic for the more threatened Pretoria sub-population but in the case of

the Black Rhinoceros, the sub-species *Diceros bicornis minor* which is listed as Vulnerable in the Red Data Book, gets a higher listing in the ToPS list (Endangered) as a result of being listed as the entire Black Rhinoceros species including its more threatened sub-species *Diceros bicornis bicornis*. Therefore, the lack of sub-species listing may not necessarily be better or worse for species, but remains an issue for continued debate. If the ToPS list is to increase protection for threatened species impacted on by anthropogenic factors, it may well be appropriate to accommodate sub-species under greater threat or at least, to not down-list a species where its sub-species may be facing a greater impact than the whole species itself.

In support of these issues, Grammont and Cuarón (2006) clearly recommend that in any TSL, risk categories and criteria should be unambiguous and clearly defined. Threat categories should also use only explicit definitions with no subjective elements and should, ideally indicate the probability of a species becoming extinct over a given time under prevailing conditions. The ToPS list does not make provision for indicating a change in the status of listed species and a move from one category of threat to another has no objective, explicit criteria or rationale. Thus, over time when the list is revised, decisions over shifting species from one category to another are likely to be contentious and subjective and more indicative of political pressure or social prejudice than defendable, measurable changes in the status of species.

3.5. Comparison of ToPS and RDB Lists

There are therefore significant differences between the two TSLs under investigation in terms of the approaches taken, processes used, their criteria and categories' definitions and their applications, if measured against the three broad TSL applications determined above.

a) Process of development of both lists

Perhaps the biggest difference between the ToPS and Red Data Book lists lies in the criteria used to develop them, or at least, in the *nature* of these criteria, despite the use of the same terminology. Not only that, but the nature of the criteria are different in that the Red Data List criteria are clear, unambiguous, objective and scientifically sound. The criteria for the ToPS list are however, subjective and vague and in fact provide no definitional standard for classifying species in these categories beyond what is implicit in the terms 'Critically Endangered", "Endangered" and "Vulnerable" and the degree to which the restricted activities defined in the legislation impact on these species.

The process of populating the ToPS list involved significant public input and participation, as the process was governed by the participatory framework defined in the National Environmental Management Act (Act 107 of 1998) and as exemplified in Chapter 8, Part 2, Section 100 of the Biodiversity Act (DEAT, 2004), even though this has been shown to have been inadequate in its spectrum and quality. This was exacerbated by the confusion and disagreement around the development of the draft lists which resulted in protracted and extended public participation, but which did not necessarily resolve the conflict. To deal with the dissent, public workshops were held and newsletters were disseminated to explain and gain buy-in for and acceptance of the listing process and criteria. NGOs such as the Endangered Wildlife Trust (EWT) and private legal consultancies such as Bowman Gilfillan hosted meetings with the DEAT and other stakeholders (two such meetings were held in March and May 2005) to attempt to mediate when conflict arose and disagreements over the listing process and the draft species list flared up. Thus there was indeed public participation, but this was mostly to resolve conflict and to address the angst, confusion and disapproval which could possibly have been avoided to start with.

Contrary to this, the degree to which the mammal Red Data Book was publicly scrutinised and commented was less than that of the ToPS list. Only invited specialists and taxonomic experts, albeit a large number of them, participated, by submitting data, reviewing the assessments and / or assisting in the assessment process. This was due to the processes being different in that the IUCN Red List process requires a rigorous evaluation of empirical data against the evaluation criteria only, and does not include value-laden judgements or unpublished anecdotal accounts by non-experts. The Red Data Lists are also peer-reviewed to test the application of the listing criteria, the completeness of the data and the validity of the data sources. Thus, the quality and extent of the public participation and scrutiny of these lists differs vastly – perhaps influenced to some degree by the intended role and application of these lists in the environmental governance paradigm.

b) Comparison of the results of both lists

A comparison of the categories of threat assigned to South African mammals in both lists, as fully demonstrated in Table 4, reveals the following:

- The Red Data Book lists 10 Critically Endangered mammals, the ToPS Lists has 2;
- The Red Data Book lists 18 Endangered mammals, the ToPS Lists has 9;
- The Red Data Book lists 28 Vulnerable mammals, the ToPS Lists has 14;
- Only 20 mammals have the same listing in both the Red Data Book and the ToPS Lists;
- No cetaceans are listed in the ToPS List; and
- The ToPS List does not take into account the assessment and listing of sub-species.

Table 4: Comparison of the final mammal listings in the Red Data Book (Friedmann and Daly, 2004) and the ToPS Lists (South African Department of Environmental Affairs and Tourism, 2007).

	Common Name	Scientific Name	RDB assigned status (2004)	ToPS assigned status (2007)
1.	African Wild Dog	*Lycaon pictus*	Endangered	Endangered
2.	Angolan Wing-gland Bat	*Cistugo seabrai*	Vulnerable	
3.	Antarctic "True" Blue Whale	*Balaenoptera musculus intermedia*	Endangered	
4.	Black Rhinoceros	*Diceros bicornis minor*	Vulnerable	Endangered
5.	Black Rhinoceros – arid ecotype	*Diceros bicornis bicornis*	Critically Endangered	Endangered (no sub-species)
6.	Blue Duiker	*Philantomba monticola*	Vulnerable	Vulnerable
7.	Bontebok	*Damaliscus pygargus pygargus*	Vulnerable	Vulnerable
8.	Botswana Long-eared Bat	*Laephotis botswanae*	Vulnerable	
9.	Bryde's Whale	*Balaenoptera brydei*	Vulnerable	
10.	Cape Mole-rat	*Georychus capensis* (KZN sub-population)	Endangered	
11.	Cape Mountain Zebra	*Equus zebra zebra*	Vulnerable	Endangered
12.	Cheetah	*Acinonyx jubatus*	Vulnerable	Vulnerable
13.	Damara Woolly Bat	*Kerivoula argentata*	Endangered	
14.	De Winton's Golden Mole	*Cryptochloris wintoni*	Critically Endangered	
15.	De Winton's Long-eared Bat	*Laephotis wintoni*	Vulnerable	
16.	Four-toed Elephant-shrew	*Petrodromus tetradactylus*	Endangered	Endangered

17.	Giant Golden Mole	*Chrysospalax trevelyani*	Vulnerable	Vulnerable
18.	Giant Rat	*Cricetomys gambianus*	Vulnerable	Vulnerable
19.	Grant's Golden Mole	*Eremitalpa granti*	Vulnerable	
20.	Gunning's Golden Mole	*Neamblysomus gunningi*	Endangered	Endangered
21.	Hartmann's Mountain Zebra	*Equus zebra hartmannae*	Endangered	Endangered
22.	Indian Ocean Bottlenose Dolphin	*Tursiops aduncus* (migratory sub-population)	Endangered	
23.	Indian Ocean Bottlenose Dolphin	*Tursiops aduncus*	Vulnerable	
24.	Indo-Pacific Humpback Dolphin	*Sousa plumbea*	Vulnerable	
25.	Juliana's Golden Mole	*Neamblysomus julianae (Pretoria subpopulation)*	Critically Endangered	Vulnerable (no sub-species)
26.	Juliana's Golden Mole	*Neamblysomus julianae*	Vulnerable	Vulnerable
27.	Large-eared free-tailed bat	*Otomops martiensseni*	Vulnerable	Vulnerable
28.	Leopard	*Panthera pardus*		Vulnerable
29.	Lion	*Panthera leo*	Vulnerable	Vulnerable
30.	Maquassie Musk Shrew	*Crocidura maquassiensis*	Vulnerable	
31.	Marley's Golden Mole	*Amblysomus marleyi*	Endangered	
32.	Ongoye Red Squirrel	*Paraxerus palliatus ornatus*	Critically Endangered	Endangered
33.	Oribi	*Ourebia ourebi*	Endangered	Endangered
34.	Pangolin	*Manis temminckii*	Vulnerable	Vulnerable

35.	Peak-saddle Horseshoe Bat	*Rhinolophus blasii*	Vulnerable	
36.	Rendall's Serotine Bat	*Neoromicia rendalli*	Critically Endangered	
37.	Riverine Rabbit	*Bunolagus monticularis*	Critically Endangered	Critically Endangered
38.	Roan Antelope	*Hippotragus equinus*	Vulnerable	Vulnerable
39.	Robust Golden Mole	*Amblysomus robustus*	Endangered	
40.	Rough-haired Golden Mole	*Chrysospalax villosus*	Critically Endangered	Critically Endangered
41.	Sable Antelope	*Hippotragus niger niger*	Vulnerable	
42.	Samango Monkey	*Cercopithecus mitis erythrarchus*	Vulnerable	Vulnerable (no sub-species)
43.	Samango Monkey	*Cercopithecus mitis labiatus*	Endangered	Vulnerable (no sub-species)
44.	Sclater's Forest Shrew	*Myosorex sclateri*	Endangered	
45.	Short-eared Trident Bat	*Cloeotis percivali*	Critically Endangered	
46.	Southern Elephant Seal	*Mirounga leonina*	Endangered	
47.	Sperm Whale	*Physeter macrocephalus*	Vulnerable	
48.	Suni	*Neotragus moschatus zuluensis*	Vulnerable	Vulnerable
49.	Swinny's Horseshoe Bat	*Rhinolophus swinnyi*	Endangered	
50.	Thomas' House Bat	*Scotoecus albofuscus*	Vulnerable	
51.	Tonga Red Bush Squirrel	*Paraxerus palliatus tongensis*	Endangered	
52.	Tree Hyrax	*Dendrohyrax arboreus arboreus*	Vulnerable	Vulnerable

53.	Tsessebe	*Damaliscus lunatus lunatus*	Endangered	
54.	Van Zyl's Golden Mole	*Cryptochloris zyli*	Critically Endangered	
55.	Visagie's Golden Mole	*Chrysochloris visagiei*	Critically Endangered	
56.	White-tailed Rat	*Mystromys albicaudatus*	Endangered	
57.	Yellow Golden Mole	*Calcochloris obtusirostris*	Vulnerable	

From this comparison of the final listings of mammals in both the Red Data Book as well as the ToPS Lists, it is evident that the fact that the ToPS List does not accommodate sub-species accounts for the fact that many of the sub-species assessments in the Red Data Book list are listed at the lower category should their sub-species be listed lower, for example, the Pretoria sub-population of Julian's Golden Mole *Neamblysomus julianae (Pretoria subpopulation)* and the arid-ecotype Black Rhinoceros *Diceros bicornis bicornis* which are numbers 25 and five, respectively in the list above. This results in the lower number of species listed in the higher categories of threat than if sub-species had been taken into account and listed separately. This may have serious consequences for the role of this list in terms of determining or guiding conservation priority setting and for increasing levels of protection for more threatened sub-species.

The Pretoria sub-population of Julian's Golden Mole is, for example, assessed as Critically Endangered in the Red Data Book, primarily due to its small population size, limited distribution and the ongoing threat of habitat destruction and fragmentation. This listing may be the sub-species' last defence in the face of ongoing development and urban encroachment which threaten its habitat and may encourage some greater level of conservation attention. If the listing afforded to this sub-species in the ToPS Lists was however, used to guide

conservation action, the Vulnerable assessment granted to it may not serve it well.

c) Applications of both lists

By unpacking the three broad applications of TSLs further, into their constituent parts, a more in-depth discussion on the value, merits and role of each list under these sub-criteria, can be held.

Table 5: Comparison of the applications of the Red Data Book (Friedmann and Daly, 2004) and the ToPS lists.

Application of TSLs	RDB	ToPS
1. TSLs which assess species extinction risk:		
1.1. To asses individual species extinction risk;	√	
1.2. To inform reports which measure trends in biodiversity loss and species decline for example State of the Environment Reports;	√	
1.3. To highlight gaps in knowledge and identify areas for further monitoring, investigation and research;	√	
1.4. To raise public awareness and generate support and / or funding for threatened species conservation;	√	√
2. TSLs which determine conservation priority setting:		
2.1. To guide planning processes for protected area expansion;	√	
2.2. To guide conservation planning and priority setting;	√	
3. Normative Tools to regulate conservation and use of listed species:		
3.1. To afford legal protection for a species, nationally		√

	or through conventions such as CITES;		
3.2.	To regulate utilisation and / or development which impact on listed species:		√

Table 5 is not absolute as one could argue that Red Data Listed species may indeed inform choices of species listed under CITES or other normative tools. This approach, of formally using Red Data Lists to inform the development of legislated species lists has been applied in Canada in their Committee on the Status of Endangered Wildlife in Canada (COSEWIC) List of Species at Risk but De Grammont and Cuarón (2006) note that the compromise made by trying to combine two applications, and therefore two different sets of assessment criteria and selection processes is that the criteria required to objectively assess extinction risk gets compromised *in lieu* of the list being primarily used for conservation priority setting or for regulation. Despite what the Canadians have implemented, in South Africa there are no formal requirements for normative processes and instruments to consider Red Data Listed species and likewise, it is not common in other countries or regions that regulatory processes and instruments guide conservation priority setting, due to the lack of scientific criteria that often inform these lists. This lack of direct link between the lists presents a number of challenges, not the least of which include public confusion over the role and application of each list, the 'true' listing of a threatened species, the lack of clearly understood and objectively applied criteria to regulatory lists and the lack of cohesion between academics and broader stakeholder groups and authorities who draft normative lists of threatened species.

Furthermore, the species listed in the ToPS List may well inadvertently raise public sympathy, support or attention simply by virtue of their association with the terminology such as "Critically Endangered" even if these terms have a different meaning in this list. This possible cross-over of outcomes and impact of

this list is however, represented by the smaller tick in point 1.4 in Table 5. To elucidate some of these issues, the work of Garnett *et al.,* (2003) is useful. These authors undertook an analysis of funding resources allocated to various Red Data Listed species in Australia, and showed that species with a higher risk of extinction or a poorer conservation status, received the greater share of funding. In terms of threats, over-exploited species also received greater amounts of funding, despite the fact that this did little to improve their status (Garnett *et al.* (2003). The fact that species with a great risk of extinction were proven to receive more funding and conservation attention, indicates a greater public interest in supporting these species and the value of Red Data Lists for increasing financial and public support as well as guiding conservation priority setting.

Despite the IUCN's insistence that Red Data Lists should not be used to determine conservation priorities, these findings, along with the finding in the same study that species listed as Data Deficient receive little to no support, even if they may in fact be threatened, proves that very often Red Data Lists are indeed used to raise awareness, increase funding support and to determine conservation priorities. Therefore, in the case of the South African mammal Red Data Book, the listing of the Pretoria sub-population of Julian's Golden Mole as Critically Endangered may certainly have had an impact on this species as regards stimulating conservation action, support, research, funding and public awareness. However, the listing of the entire species of Julian's Golden Moles as Vulnerable on the ToPS List may not afford the taxon any great level of enforceable protection, and may even cause confusion in the eyes of the public who, without a sound understanding of the different listing processes and criteria, may question what the 'true' status of this taxon is.

According to Possingham *et al.* (2002) threatened species are also often used to halt or alter developments if the said development is shown to pose a significant threat to the species. However, listing of a species by the government in the ToPS List in South Africa, does not by default mean that the presence of these

species in an area threatened by development will necessarily prevent the development from proceeding. Instead, it is more likely that the presence of threatened species assessed and listed in a Red List of sorts (global or national) will hold more water, as this kind of decision will be taken by the relevant competent authority who needs to consider far more information pertaining to the status of the species than would be included in the ToPS list, including (for example) the trends in the population, the degree of endemism and possibly genetic distinctness, the socio-economic and political imperatives and so on. Again the case for the Pretoria sub-population of Julian's Golden Mole may be used as an example, as this highly threatened subspecies (listed as Critically Endangered in the Red Data Book) was one of the driving factors in the ongoing attempts of academics, NGOs and members of the public to halt a proposed development on the north slope of the Silverton Ridge, east of Pretoria, and although it may not have been the single force for halting this development, the presence of this subspecies and in fact, the fact this area is one of the remaining habitat types suited to this subspecies, certainly played a role in raising the conservation importance of the area to those involved. Due to the lack of inclusion of the subspecies in the ToPS list however, this subspecies is assessed as part of the whole population / species of Julian's Golden Mole and is assigned the status of Vulnerable only.

In summary, a clear distinction which differentiates these lists from each other lies in the almost reverse conditions which apply to each list's development and their application. In *developing* the lists, the Red Data Book can be said to have followed a far more rigorous, objective, scientifically sound and credible format, using empirical data and quantifiable assessment criteria based on globally acceptable stands. The ToPS list on the other hand was developed based on a largely misunderstood process, with subjective, vague criteria of what constitutes a threatened species to start with and a distortion of the final outcomes due to the impact of value-laden input from certain stakeholder groups.

Conversely, in the *application and use* of the lists, the reverse situation is almost true. The application of the Red Data Lists holds little legal power and has limited legal jurisdiction in South Africa, leaving the fate of many of the listed species in the hands of the academic community, the interested public, NGOs and concerned authorities and their potential impact on increasing conservation action and support for species which may be highlighted by this process. It is not however a formal requirement that increased conservation priority or attention be given to any Red Listed species and thus, one could question the value of Red Data Lists in terms of increasing conservation action and biodiversity protection for listed species. Conversely, species listed on the ToPS List receive increased protection by virtue of the regulatory framework that requires permission to be granted for any 'restricted activity' and form of anthropogenic impact, or prohibits these activities completely and thus, this list may be said to hold greater potential for arresting the decline of listed species should the implementation of this list and its associated regulations indeed be effective.

This chapter has provided an overview of the role and application of TSLs in South African, and specifically, two forms of TSLs recently developed for improved biodiversity conservation. The chapter offered insights into the process of development and intended application of these lists and positioned them within the environmental governance framework of the country. Detailed comparisons were drawn between the lists and critique was offered in order to set the context and scene for Chapter Four, which will now examine what these various listing processes and outcomes tells us about the development and implementation of such biodiversity conservation instruments in South Africa within broader and wider environmental governance framework(s).

CHAPTER FOUR – ENVIRONMENTAL GOVERNANCE AND THREATENED SPECIES LISTS

Chapter Four builds on the work covered in preceding chapters in that it brings together the concept of environmental governance, discussed in Chapter Two, and the process used to compile threatened species listings in South Africa as discussed in the previous chapter. The linkages, moreover, between how these TSLs act as instruments of a broader governance framework, are also demonstrated. The global context in which such instruments have been designed to function as governance tools will also be explored, with some key examples in other countries being provided. Case studies are also given providing examples of how TSLs are currently being applied as instruments of environmental governance in South Africa. Finally, this chapter will include an institutional mapping of the current positioning of some of the role-players in the current environmental governance framework that has relevance for species listing in South Africa, with an opportunity being provided later in this report to suggest alternative models for this institutional mapping. This will then provide the backdrop to examine the local environment, and to analyse both the development and current status of environmental governance with reference to species listing in South Africa.

4.1. Threatened species lists as tools for environmental governance: global overview

The transition from strict regulatory environmental management systems to a paradigm of participative, multi-party and integrated environmental governance has led to the proliferation of public participation tools and instruments to address these multi-factorial problems (Muller, 2007). Along with these developments has been the parallel transition of threatened species lists from simple, largely subjective lists which hosted a limited selection of (usually charismatic) well-studied species only, and which held a predominantly academic interest to a select stakeholder group, with assessments relying on the

experience and common sense of experts (Rodrigues, 2006) to the development of a variety of rigorous species listing processes and species lists *types*, which serve different functions and may be developed in very different ways from their predecessors.

The application of TSLs as instruments for regulating and legislating for species conservation dates back as far as the 1966 US Endangered Species Preservation Act which made provision for a national list of endangered species to be drafted. This legislation has expanded in focus and scope over the years and resulted in the 1973 enactment of the US Endangered Species Act (ESA) which afforded greater levels of protection to *threatened* (and not just *endangered*) species, and which regulated activities pertaining to these species at the federal level (Goble *et al.,* 1999).

Despite many countries using their own form of threatened species listing processes and criteria, there has been an increasing move in recent years towards adapting or at least integrating the IUCN's Red List criteria and system into national species listing processes. At the 2004 IUCN World Conservation Congress, a resolution was passed by the IUCN members entitled "The uses of the IUCN Red List of Threatened Species" (IUCN, 2005) which calls upon governments to make use of the data in the IUCN Red List of Threatened Species when considering species that may need to be afforded 'special conservation measures'. The resolution recognises that simply using the IUCN Red List to establish a national TSL or guide decisions as to which species will be listed and what regulatory decisions are made, may not be adequate and that other information pertaining to threatening processes and national priorities may need to be included. This was especially done to ensure that prohibitions on trade and restrictions on utilisation that may compromise local human rights do not automatically get implemented if a species is globally Red Listed. The resolution notes, however, that the IUCN Red List holds high value for informing decisions

regarding which species should be considered for regulatory instruments such as the listing of species in CITES, the Convention on Migratory Species (CMS or the Bonn Convention) or other regional or national regulatory tools, and is an attempt to bring together the biological, social, economic and political imperatives which converge at the interface of developing regulatory measures for threatened species conservation.

The resolution further notes the value of the IUCN's Red List for assessing trends in the status of species, and for suggesting indices for tracking progress towards achieving targets such as the 2010 Biodiversity Target to reduce the decline in biodiversity loss by 2010. Finally, despite the acknowledged limitation in using the IUCN's Red List for conservation priority setting, the resolution notes the role of the Red List in *contributing* towards conservation priority setting processes and in suggesting new areas for increased biodiversity research. The passing of this resolution may not only have been a call for an increased uptake of the use of the Red Data List to support national species listing processes, but may also have been an indication of the fact that this process was already in motion in many countries and required formalisation.

Miller *et al.* (2007: 684) undertook a survey to assess the extent to which IUCN criteria have been used in various official national listing efforts. The survey was sent to 180 government-designated national focal points for the Convention on Biological Diversity with the following results:

> "Of the respondents, 77% had developed national threatened species lists. Of these, 78% applied a version of the IUCN criteria, and 88% plan to produce future threatened species lists. The majority of this last group (83%) will use IUCN criteria. Of the countries that have or will develop a threatened species list, 82% incorporated their list or the IUCN criteria into national conservation strategies".

It would therefore seem that indeed the IUCN resolution has been acted upon to some degree, either as a result of the resolution or perhaps this work preceded the motion and was a stimulus for it. The degree to which the IUCN Red List criteria and listed species are, however, incorporated into national lists, still varies in different countries.

Today, the United States employs a system not unlike that used in South Africa for listing threatened species. The over-arching framework legislation is the ESA which precludes individual states from developing conflicting legislation but which allows states to develop and enforce stronger legislation (if required) to protect threatened species in their jurisdiction, and which encourages the enactment of federal-state cooperative agreements to conserve threatened species (Goble: 1999). Section four of the ESA stipulates the criteria and procedures for establishing threatened species lists and Section nine lists the prohibited activities including 'commerce in and taking of' these species (Goble, 1999: 46). Thus, ESA is a piece of legislation that facilitates the listing of species and the regulation of anthropocentric impacts on these species, and thus raises its TSL to the level of an instrument of environmental governance which covers the need for species assessment and measurement, regulation and enforcement.

Australia also uses threatened species lists to regulate and enforce conservation measures for threatened species. It differs from the United States in that the management of biodiversity is devolved, to a large degree, to the states and territories which have enacted local legislation in this regard (Goble, 1999). This is despite the existence of the Australian Endangered Species Protection Act of 1992 which has not assumed overall jurisdiction over endangered species conservation. The result is both increased as well as decreased protection for threatened species in the different territories, depending on the local legislation in place. Western Australia, for example, has three categories of vulnerability as opposed to the single classification in national legislation yet in the Northern

Territory, for example, there are no specific provisions for endangered species at all, creating local regulations for threatened species conservation which may be quite different.

The Canadian government enacted the Wild Animal and Plant Protection and Regulation of International and Interprovincial Trade Act in 1992 which governs the management of endangered species insofar as the movement of these species goes, but not as far as their *in situ* conservation is concerned (Goble, 1999, 58). Some of Canada's provinces have enacted local legislation for endangered species conservation, but this is inconsistent in terms of coverage and conservation impact. In Canada, the federal government cannot supplant state legislation and can only act on inter-provincial and external relations. In Australia however, should the states and territories fail in their conservation duties towards endangered species, the national government could indeed over-ride local regulations.

Thus, the development and application of TSLs in the United States follows a very top-down approach, allowing states to enact their own regulations only in line with national standards and requirements. In Canada, the situation is almost the reverse, with a strong bottom-up approach being employed in listing and conserving threatened species in that provinces determine what their categories, criteria and final lists will look like and with no authority of national government to over-ride them if deemed necessary. Australia employs a negotiated process of allowing territories and states to determine their own TSLs and regulatory responses, but these territories and states run the risk of being over-ridden if their local regulatory processes are deemed by national government, to fail in their duty to protect and conserve listed threatened species.

South Africa's modern environmental legislation has been developed in accordance with a system similar to that used in the United States. National

legislation takes precedence over provincial legislation with the national list of threatened species taking precedence, but provinces may still enact their own legislation to regulate the implementation of national legislation and to, if necessary, strengthen and increase their regulatory functions. This is a shift from the system prior to the implementation of the National Environmental Management: Biodiversity Act (No. 10 of 2004) where, much like the present case in Australia, South African provinces used to develop their own TSLs, with no requirement to comply with any national standards, lists or regulations.

Thus in the case of TSLs in South Africa today, provinces can create their own provincial lists of threatened or protected species, as long as these comply with and *add* to the species listed in the national list. This allows provinces to determine which species may be of special importance in their regions, such as extralimital species, and those which may be more locally threatened and therefore require greater regulatory intervention. There is therefore a plethora of provincial regulations, ordinances and acts which are applicable to biodiversity conservation in the provinces and include, as examples, the Nature and Environmental Conservation Ordinance 19 of 1974, the Mpumalanga Nature Conservation Act 10 of 1998, the Limpopo Environmental Management Act 7 of 2003 and the Western Cape Nature Conservation Laws Amendment Act 2000 (Kotze, 2006). The Limpopo Environmental Management Act has, for example, a list of Specially Protected Wild Animals and Protected Wild Animals in Limpopo in Schedules Two and Three, respectively. The possible confusion and the additional administrative burden that this may create will be investigated further on in this report.

4.2. Environmental governance in South Africa

To understand the context within which environmental governance is located in South Africa, we need to explore the cascading nature of linear agreements or conventions which direct our national approach to regulation setting. This

includes the global environment dominated by a number of multilateral environmental agreements (MEAs) to which South Africa is a signatory and which guide national decision-making, responses and regulations. Sampford (2002: 82) suggests that "MEAs have been the primary vehicle through which co-operation on global environmental issues has been achieved" and thus, whilst these agreements and conventions may not directly dictate the national regulation and listing of threatened species in South Africa, they do contribute towards setting the tone for the overarching framework of environmental governance which has been developing in the country since the early 1990s and informing the content of local environmental management regimes.

These global agreements and regimes largely inform and influence the current set of norms, standards, regulations and policies in South African environmental legislation and, as Vogler and Jordan (2003, 141) put it, "environmental regimes seek not just to establish formal commitments from governments, but also to reach down to… alter the behaviour of organisations and individuals". To illustrate, Vogler and Jordan (2003: 142) further note that "… [the] Agenda 21 process … spawned countless 'mini' Agenda 21s in towns and cities across the world…" and Adger (2003: 193) states that "designing international level agreements will only succeed if they can be implemented at something called 'the local level'. This suggests that indeed, the advent of national TSLs in countries such as South Africa in recent years, has come about in response to our commitment to and participation in a variety of global agreements and conventions which influence the trends in the broader framework of environmental governance being developed.

South Africa is responding to the declining state of both global and local biodiversity and ecosystem health, and there have been many policy and institutional responses in recent years. The country is a signatory to many MEAs which deal with threatened species including, to name but a few, the Convention

on Biological Diversity (CBD) which was signed by South Africa in 1993 and ratified by same in 1995; the Convention on International Trade in Endangered Species of Fauna and Flora (CITES) which affords varying degrees of protection from the threat of unregulated trade to more than 30 000 listed species of animals and plants; the Convention on Migratory Species which seeks to gain multi-party cooperation in affording protection to listed migratory species; the United Nations Convention to Combat Desertification which South Africa signed in 1995, and ratified in 1997; and the Convention on Wetlands of International Importance (the Ramsar Convention).

In the context of identifying and listing species under threat, the former three MEAs have the most significance. South Africa is also member of the Southern African Development Community (SADC) and has signed protocols on water, forest and wildlife conservation and law enforcement. As a member of the United Nations, South Africa is party to the Johannesburg Plan of Implementation (2002) and the Millennium Development Goals (MDG), which has, as MDG Seven, the need to ensure environmental sustainability. Finally, as a signatory to the CBD, South Africa is supposed to be working towards achieving the target set by the CBD in 2002, and reaffirmed at the World Summit on Sustainable Development (WSSD) also in 2002, to *reverse* the loss of biodiversity by 2010. This target, commonly known as the 2010 Biodiversity Target, was adapted at the subsequent 2006 Conference of the Party meeting to *halt* and since then, to *reduce* the loss of biodiversity, perhaps as a sign of the impossibility of meeting the original target given the continued rate of global biodiversity loss and species decline.

South Africa therefore has a suite of international agreements and conventions to which it is a Party and which require the country to institute locally specific, national norms and standards, and regulations for improved environmental governance and if the country fails to implement the procedural requirements and act on these MEAs, it will be failing in its institutional obligations. Therefore,

within this framework, the South African government has embarked on a process of cascading these obligations to assess, monitor and address species decline, into a suite of national legislation and regulations for biodiversity conservation. This process would suggest a top-down starting point for the development of local regulations and policies, which may be correct – to some degree. How the *local* regulations are further developed and implemented, and what processes are employed along the way, is not determined by external agreements and is instead, a feature of the environmental governance framework at the local level.

South Africa's legislative framework for environmental management and biodiversity conservation has therefore undergone profound changes in the past decade. At the very highest level, the Constitution of South Africa (Act 108 of 1996) which creates the overall framework for environmental, and all governance in South Africa, protects the right of every individual to a healthy environment and sets the tone for a highly enabling legislative framework which ensures public participation in and the enforcement of environmental rights for all. The Constitution of South Africa established three spheres of government: national, provincial and local. National parks, land reform, national botanical gardens, water and forest resources and fisheries are managed as national competencies, while nature conservation (including biodiversity management) and environmental management are considered to be concurrent national and provincial legislative competencies. The Constitution further "... sets up a system of cooperative governance and entrenches the right of citizens to information and to participate in decisions on matters affecting their lives" (DEAT, 2004: 7). Governance across South Africa has thus many role-players and is designed to be a highly participative process of engagement and transparent decision-making.

Much has been achieved towards creating a participatory and democratic, development policy framework for integrated natural resource management in South Africa. The National Environmental Management Act (Act 107 of 1998), for

example, stipulates the requirement for public participation in decision-making and regulation development, the establishment of public-private partnerships and the facilitation of biodiversity conservation under private or community management. It is within this progressive paradigm of holistic environmental governance that there has been much advancement towards policy development situated at the nexus of empirical science, socio-economic imperatives, public opinion, the sustainability agenda, cultural value systems and strict regulation development. In highlighting this shift in South Africa from a strict protectionist approach to nature conservation, to a more participatory, integrated process of negotiated natural resource regime development, Wynberg (2002: 233) indicates that:

> "...changes to the conservation and management of biodiversity in South Africa have come about predominantly through democratization, but also by the international paradigm shifts about ways in which our natural heritage can and should be conserved and used. No longer is biodiversity an issue confined to a handful of die-hard conservationists and wildlife enthusiasts. Its critical importance to farming methods and communities, to indigenous peoples and their livelihoods, and to human rights, political dispensations and global trade issues, are now well recognized. Biodiversity has moved from the realms of 'saving the rhino' to affect us all by encompassing politics, culture and economy".

The management of natural resources as concurrent legislative competencies of both national and provincial government in South Africa means that national legislation may be promulgated to create an overarching framework for biodiversity conservation, including species conservation and management, but that provincial legislation can and often is developed to determine local regulations, as long as they are not in conflict with the national legislation which

is binding across all other local legislation. The national DEAT is mandated through the National Environmental Management Act (NEMA, Act 10 of 2004) to fulfil the role of developing the national, overarching framework for biodiversity and threatened species legislation, but allows for provinces to enact their own provincial threatened species lists and associated regulations through their provincial ordinances as long as they do not conflict with NEMA or any of the associated national statues. The DEAT therefore acts as a coordinator by providing framework guidance and overarching legislation. These concurrent competencies, created as a result of South Africa's decentralised legislative structure, are, however, also a source of fragmentation with national legislation being promulgated, whilst the plethora of provincial legislation and ordinances for biodiversity conservation are still largely in existence. This results in what Kotze (2006) refers to as vertically fragmented planning frameworks for regulating biodiversity and can frustrate efforts for more effective polycentric governance approaches. With regards to TSLs, for example, this organisation creates an element of confusion and additional administrative burdens, and respondents to questions posed for this research indicated particular concern regarding the confusion in developing and implementing various TSLs at different levels, due to the need to still understand and be able to enforce different lists and regulations across various provinces, all in accordance with the national list and regulations.

In South Africa, national legislation has been promulgated to govern national competencies such as water (National Water Act, Act 36 of 1998), forests (National Forests Act, Act 84 of 1998), marine resources (Marine Living Resources Act, Act 18 of 1998), national parks (National Environmental Management: Protected Areas Act, Act 57 of 2003) (NEMPAA) and biodiversity conservation and management (including species), which is governed by the National Environmental Management: Biodiversity Act, 2004 (Act 10 of 2004) or NEMBA. The ability of provinces to enact locally specific regulations in line with

overarching national pieces of legislation is not an unusual system however, and the Endangered Species Act in the United States of America similarly allows for states to enact their own threatened species legislation and regulations, as was shown, as long as they do not conflict with the overarching ESA.

Notwithstanding various organisational designs for decentralised effective environmental governance efforts have also been made to 'streamline' certain functions. In 2004, the South African National Biodiversity Institute (SANBI), for example, was established through the NEMBA (Act 10 of 2004), to serve as a technical body for centralised monitoring and reporting on the status of biodiversity (DEAT, 2006). The Act specifies that SANBI will monitor, assess and report on the status of biodiversity in the country and thus the onus of undertaking species assessments for the purpose of extinction risk assessment and conservation priority setting has subsequently become the mandate of SANBI on behalf of government. Given that the DEAT produced the current ToPS list, with SANBI acting like any other stakeholder in this process, this presents an anomaly within the dispensing of mandates and competencies to list threatened species, and the role of the DEAT and SANBI in future revisions of the list requires urgent addressing if the governance of this process is to be improved and be more transparent.

Private and communal ownership and management of natural resources in South Africa is also acknowledged as a key tenet of environmental governance throughout the suite of national and provincial legislation and regulations that NEMBA has spawned. This is further supported through an overarching framework which encourages natural resource and biodiversity stewardship by non-governmental stakeholders, through, for example, biodiversity management plans and threatened species management plans registered under NEMBA (Act 10 of 2004) and protected area management plans registered under the

NEMPAA (Act 57 of 2003), all of which can involve and be implemented by other stakeholders.

No platforms for formalising NGO involvement in developing biodiversity legislation have yet been established (Wynberg, 2002) although, through the rigorous public participation and wide consultative processes required for legislative and regulatory development and review, NGO involvement has increased in recent years. Further, due to the nature of natural resource management in South Africa, where much of our natural resources and biodiversity lies in the private ownership or management by communities and civil society, and where many millions of people rely on having direct access to natural resources for their livelihoods or personal wellbeing, the participation in natural resource debates and dialogue is becoming increasingly more rigorous and natural resource debates are increasingly becoming infused with socio-economic perspectives.

To sum up therefore, the nature of the environmental governance framework which South Africa is striving to develop is exemplified in the following statement from the 2006 South African Environmental Outlook:

> "Components of good governance include citizen participation, accountability, transparency, and absence of corruption... sustainable development must be a shared responsibility. Moving towards sustainability cannot be solely a government responsibility. Civil society, industry, and business all have key roles to play if we wish to approach a future of greater sustainability. It is important for all South Africans to understand that we have joint responsibility for protecting our environmental resources." (DEAT, 2006: 17).

The policy-based instruments and compliance tools designed to regulate natural resource utilisation in South Africa, whilst aiming to alter ground-level action and

individual responses, have been framed within the context of the overarching tools of environmental governance to which South Africa has agreed. This implies a level of multi-party participation, transparency, equitable benefit distribution, information sharing, negotiated decision-making and reflexive learning. The politics of the environment locally, is thus grounded within the framework of the international obligations to which we are party, and modern trends of governance (Vogler and Jordan, 2003; Adger, 2003). Therefore, it can be said that the development and implementation of threatened species lists in South Africa is a locally constructed strategy embedded within the framework of South Africa's global obligations and commitments, and the governance trends described above.

It is evident that the environmental governance framework in South Africa has moved forward in recent years to become more participative, transparent, decentralised and inclusive, yet it remains a highly fragmented framework in need of ongoing reform (Kotze, 2006). The emerging legislative framework certainly provides for a more modern approach to environmental governance, but the effectiveness of this framework may be tested and its possible immaturity may become apparent in practice, which will be explored in the case studies in Chapter Five. Effective participation by a diversity of stakeholders for example, requires the implementation of solid processes to process information and manage conflict, and the flexibility of regulators and the regulatory system to accommodate the possible disparity of issues and needs. Furthermore, the ability of all stakeholders to participate in and support the system remains a key point at which the strength and effectiveness of the governance system will be tested.

From the discussion thus far, the initial questions posed in Chapter One have partially been addressed with this analysis of the current state of, and developments in the environmental governance framework in South Africa. This chapter has covered the overarching themes of South Africa's governance

framework and highlighted the move towards decentralising regulatory processes and accommodating participatory decision-making within the broader context of overarching national 'core' competencies, which in turn emanate from globally significant obligations and agreements. What remains to be explored at this point, are the key questions of the place and role of TSLs within this framework, and what they say, as key indicators, about the application of environmental governance in South Africa.

4.3. Threatened Species Lists as tools for environmental governance in South Africa

As an instrument for local (national) biodiversity conservation, do South African TSLs reconcile local strategies with global imperatives and how have they evolved as instruments of environmental governance? Effective governance is measured equally by the processes employed in the *development* of instruments of regulation and compliance as well as in their implementation. How different TSLs fulfil their mandate and achieve their objectives through the implementation of their recommendations or enforcement of their regulations is an essential component of assessing their effectiveness and value as instruments of environmental governance, and often provides relevant information for learning and change through the feedback loops which are desirable in adaptive systems. This section will provide an analysis of how two key South Africa TSLs, the South African mammal Red Data Book and the ToPS list, may or may not be achieving their intended purposes and, using case studies, will highlight some of their potential strengths and weaknesses.

It is suggested that the development of a threatened species list like the ToPS lists, and its implementation, represents a dichotomy of approaches to environmental governance, in that the ToPS list's *development* involves the merger of socio-economic, political, empirical data and biological imperatives, within a participatory, but possibly subjective framework of holistic governance.

Yet its *implementation* falls back on strict command-and-control regulation through the enforcement action of governmental authorities. On the other hand, the reverse process may be said for Red Data Lists where their *development* is governed by strictly regulated norms and standards, taking into account *only* empirical biologically-based data to quantify extinction measurable risk in the near future, and largely ignoring socio-economic or political agendas. Yet their use, application and relevance is contextualised within the broader, unregulated framework of socio-economic imperatives and political will and often becomes relegated to being a tool for the scientific community's self-interest only. Figure 1 demonstrates these almost reverse processes by way of an institutional map which depicts the formal nature of the environment in which Red Data Lists are developed, yet the informal environment of their application in determining conservation action. The opposite framework for developing and implementing the ToPS list is also depicted, along with the interplay of relationships between the stakeholder groups in both development and implementation.

In South Africa, the concurrent competencies for nature conservation that have been afforded to both provincial and national government, through the Constitution, require that the ToPS regulations need to be implemented at the level of the provinces by the provincial conservation authorities or departments. which has resulted in serious challenges for implementing the ToPS. The role of provincial authorities in developing their own provincial lists of threatened or protected species, even if in addition to the ToPS list of species, appears to create confusion at ground level, as they are governed by different regulations. This causes confusion amongst the field staff who have to implement the lists and regulations who become confused as to which list and which legislation applies and how many permits are required (S. Hughes, pers. comm. 2008). Currently, provincial authorities have to issue permits based on provincial lists as well as the ToPS regulations, which suggests that much bureaucracy and administration could be avoided if one national list existed for the entire country.

Most respondents interviewed for this report felt that a single national list, with possible exemptions for certain provinces that do not have the same species issues as others, would be preferable. There is no consensus on this issue as yet, but it suggests the need for a process of wide consultation and stakeholder engagement to determine the feasibility and viability of this suggestion.

Other challenges include relics of a previous political dispensation which saw three of South Africa's provinces still operating 'Boards' instead of provincial conservation departments under the DEAT (KwaZulu-Natal, Western Cape and Mpumalanga), resulted in a delay in implementing ToPS of almost a year whilst legal opinion was sought as to whether or not the same rules apply to these Boards. This is a key point in highlighting a prevailing weakness in environmental governance in South Africa: the relationship between the competencies and authorities in the provinces and the national department needs to be clarified, and until such time as it is, the implementation of national legislation and regulations may be delayed in their roll-out at the provincial and local level.

Further issues relating to the provincial application of the ToPS list includes a lack of adequate buy-in for the initial process of ToPS development among the provincial authorities as well as the lack of capacity to effectively implement the regulations, which was expressed by all respondents. Many provinces feel that they are being *told*, through a top-down approach, what to do and how to implement the regulations without being adequately consulted or included in the decision-making process. This flies in the face of what Rosenberg (2007, 93) referred to the "bottom-up" approach taken by effective systems of environmental governance and thus, to address the broader issues of developing meaningful environmental governance that is participative and acceptable, addressing the needs of the provinces to implement these regulations through effective consultation and participatory decision-making is crucial.

The roll-out of the legislation and regulations is thus as important a feature of assessing the role of an instrument such as a TSL in environmental governance, as the process of developing it was. The enforcement of the regulations and the management of transgressions of the ToPS regulations will, for example, therefore reveal much about the importance and relevance of environmental governance and natural resources in general, and the effectiveness of the systems designed to sustainably manage them.

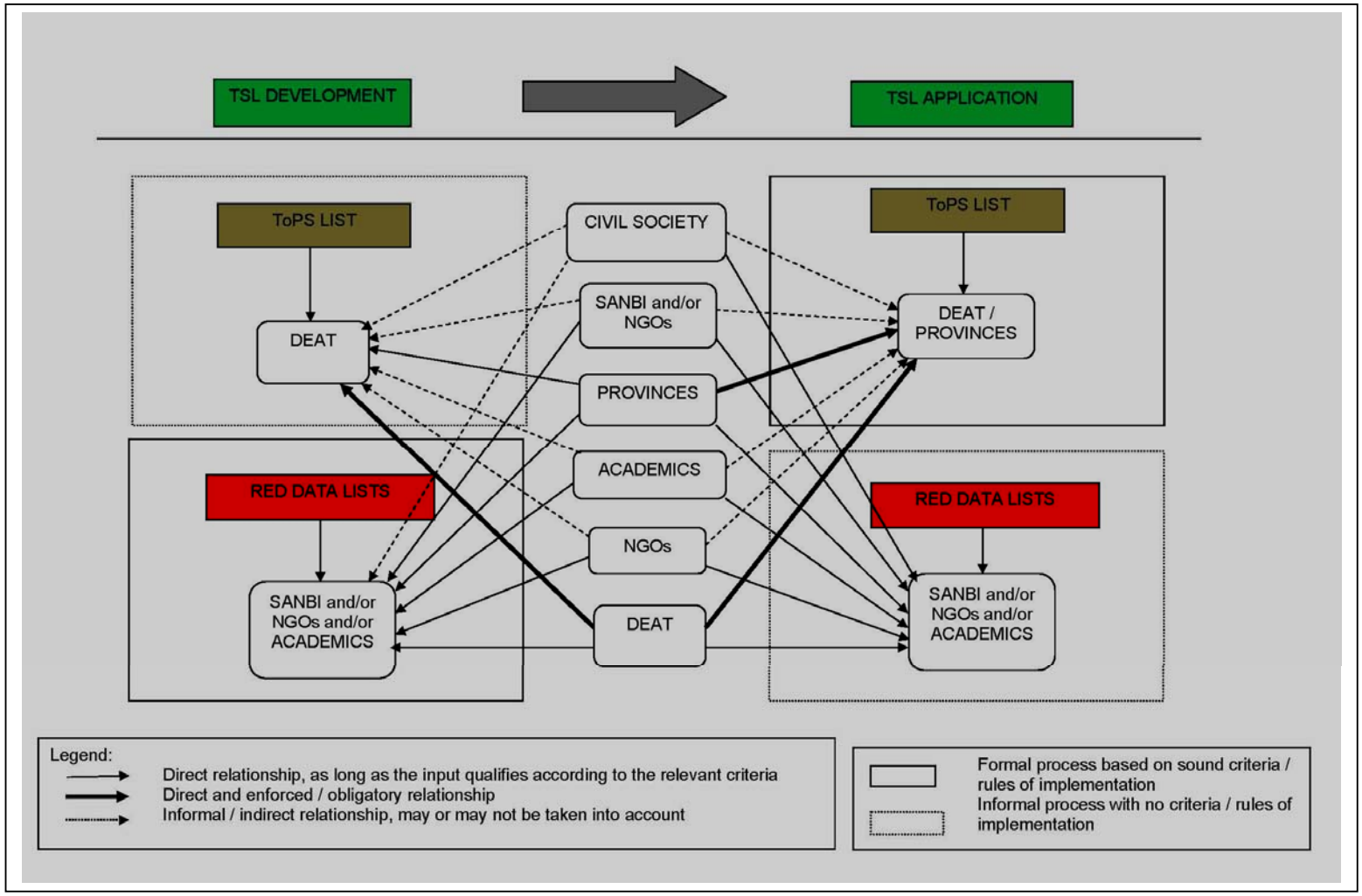

Figure 1: Institutional map of the relationships between various stakeholder groups / institutions in the development and application of South African TSLs.

4.4. Case studies

Key case studies are now presented to assist in exploring how modern shifts in thinking about environmental governance and species listing may reflect in the content, and application of the current TSLs in South Africa, taking into account not only what is in the list, but also what is *not* included. Questions asked and answered will include: What the inclusion or exclusion of specific species may suggest about an interaction or playoff between empirical science, political will and socio-economic agendas, as well as the degree to which pure science influenced these decisions alone, versus the role of other agendas. Specifically, the last-minute delisting (from the ToPS list) of species such as the emotionally-charged (to some) Black-backed Jackal and Caracal will be examined to determine the impact of competing agendas. The implementation of the ToPS list with regards to Lion and Leopard hunting will also be examined. Finally, the role of the Precautionary Principle in dealing with issues in which empirical data may be inconclusive and subordinate to competing frameworks of thinking will be examined. These case studies will be brought together into a cohesive body of evidence to indicate how TSLs are being applied as instruments of environmental governance in South Africa, and what they may reveal about the effective implementation of our regulatory system.

4.4.1 The case of Canned Lions

To provide insights into some of the pitfalls of implementing the ToPS List in South Africa, the Lion (*Panthera leo*) offers an opportunity to evaluate the initial acceptance and credence given to this regulatory instrument. At the early stages of developing the regulations around threatened or protected species, the South African Minister for Environmental Affairs and Tourism convened a Panel of Experts to draft a report entitled the "Panel of Experts on Professional and Recreational Hunting in South Africa" which was submitted to the Minister in October 2005. This report served to inform the content of the draft Norms and Standards for the sustainable utilisation of large predators, which were

subsequently incorporated into the ToPS Regulations which came into force on the 1st of February 2008. The regulations effectively ban the hunting of a Lion in captivity and on a property where a captive Lion has been released for a period of less than 24 months. The Lion breeding community in South Africa challenged this aspect of the regulations which have "serious implications for the breeders, [and] require ... a ban on the hunting of captive bred "listed large predators" which would include lions" and they organised themselves to establish an organisation called the South African Predator Breeders Association (SAPBA) in May 2006 to "co-ordinate and express the viewpoint of the industry as a whole" (van Heerden, 2006).

The result of this challenge was a legal battle in which the members of SAPBA lodged a legal dispute against the Minister which is, at this time, still pending a court date. In countenance, a number of NGOs, including the Wildlife Action Group, the SAN Wild Trust, the International Fund for Animal Welfare, Animal Rights Africa and the Campaign Against Canned Hunting voiced their concerns over the hunting of captive-bred Lions being allowed at all, and lobbied actively for government to ban this practice outright (Environment News Service, February 20, 2007). The enactment of the ToPS regulations on the 1st of February 2008 was therefore met with a wide variety of responses as some sectors saw it as an obstacle to the practice of canned hunting and others saw it as not being stringent enough. And although little time has passed since the regulations came into effect (eight months at this time) already it seems as if the power of certain pressure groups may be impacting on the enforcement of these regulations.

On the 19th of March 2008, a statement was published in *The Hunting Report*, an international newsletter for hunters, entitled "Captive Lion Hunts are OK Through 2008" (http://www.huntingreport.com/worldupdate.cfm?articleid=358). The statement mentions that any hunts booked in South Africa for a captive lion "will be

honored (sic) irrespective of the outcome of the ongoing law suit over these hunts." It further states that the Professional Hunters' Association of South Africa confirms that hunters "can rest easy with booked hunts for captive lion this season." Although this report was not verified by the DEAT, which in fact denied knowing anything about it when approached, it certainly alludes to a possible 'bending' of the rules and a lack of stringent, objective application of the regulations in some areas. If this statement is correct, it renders the ToPS list and regulations weak and essentially ineffective should certain groups of stakeholders hold the power to influence their enforcement in the absence of any formal amendments to the regulations or the list. If this statement is incorrect, it also suggests a weak system of governance in which people bend the rules to suit certain parties without being penalised or brought to bear. Consultation with the DEAT suggests that this statement may be false but this cannot be verified (DEAT, pers comm., 2008). This also suggests a weakness in governance, as it implies a brazen disregard for the regulations, poor communication and lack of remedy and penalty. At the time of going to print, this statement was still on the web site.

This case study reveals worrying aspects of a governance system which should accommodate stakeholder input and public opinion, but which should remain steadfast in the implementation of its promulgated regulations even in the face of minority group pressure. Further, transgressions and flagrant disregard for the legislation must be addressed with relevant parties being held accountable for these actions. Sound governance systems make room for opposing views to be accommodated, but this is within the negotiation process and should not accommodate or tolerate disregard for regulations and policies which will otherwise render it a meaningless and ineffective system of governance and regulation. Above all, the rules and norms put in place during the process of developing governance systems must be adhered to if they are to support the building of trust and to be resilient to the pressures of social groups and political

changes. The ability of a governance system to be effective and sustainable relies on its resilience to these forces which aim to sway it from the norms and rules which underpins its development (Ostrom, 2005 in McGinnis, 2005) and thus if the South African environmental governance regime is built on transparency, accountability and effective enforcement, this case study reveals a worrying trend.

4.4.2 Leopard *(Panthera pardus)*

The listing of the Leopard (*Panthera pardus*) in both the ToPS list and the Red Data Book provides interesting insights into the differences in approach and the strengths and failings of both processes and resulting lists. In the Red Data Book, the Leopard is listed as Least Concern. This is despite the lack of sound data on the distribution or population status and trends of this species in South Africa, which could suggest a Data Deficient listing instead. It is however, in line with the assessments undertaken for the group *carnivora* which resulted in only three of the 34 terrestrial carnivores assessed, being listed as Data Deficient (Friedmann and Daly, 2004). Due to the nature of the database which was used to develop the mammal Red Data Book, which captures population estimate data in fields and offers the options of population sizes below 50, below 250, below 2 500 or below or above 10 000 mature individuals only, the South African Leopard population size was estimated to be less than 10 000 mature individuals remaining in the wild. This is despite the acknowledgement in the publication that the estimate was based on poor information due to the difficulty in censusing the species, hearsay and personal belief (ibid). This listing was to result in unforeseen consequences for the conservation of the Leopard in South Africa, as a result of how this listing was later used to inform conservation and species utilisation decisions.

In 2004, the South African government, through the DEAT, submitted a proposal to the 13th meeting of the Conference of Parties (CoP) to the Convention on

International Trade in Endangered Species of Fauna and Flora (CITES) to increase the annual quota for hunting Leopards in South Africa from 75 to 150. This proposal was accepted at the CoP, despite South Africa not having undertaken a non-detriment finding (NDF) for the species, as is required by CITES for quota increases. The DEAT states that "the proposal to the 13th CoP to CITES was based on information provided in the taxon datasheet for Leopard in the *Red Data Book of the Mammals of South Africa* as well as information received from the various provinces relating to projected population numbers based on suitable habitat available within the province and reports relating to Leopard sightings and conflict with farmers and communities" (Daly *et al.*, 2005: 17). This increased quota raised a furore amongst the academic and conservation community as it was widely felt that the population estimates and trends for Leopards were inaccurate or at least, poorly understood. Not only that, but the DEAT admitted that they had read the population estimate to mean that there *were* 10 000 Leopards in South African and not, as it was intended to be read, *less than* 10 000 mature individuals remaining. An alternative interpretation of this figure could have been that there are perhaps around 2 501 mature individuals remaining given that the alternative options in the Red Data Book database was to either select less than 2 500 or less than 10 000 mature individuals remaining. This does not in any way imply that there ARE indeed 10 000 individuals but is simply an estimate of the very broad range in possible population sizes, qualified in the same publication by the comment that the data are uncertain and are *estimates* only. However the interpretation of the listing and criteria resulted in a dramatic increase of 100% of the hunting quota for this species, suggesting that interpretation of data is often more critical than the data itself and that careful consideration of how data should be applied is crucial.

This in turn resulted in the DEAT and a wide group of stakeholders and experts, convening a Population and Habitat Viability Assessment (PHVA) workshop for the Leopard in 2005 where population and trend estimates, biological data,

ecological information and threat assessments were collated, and used to generate population models using a variety of scenarios, including but not limited to the CITES quotas of 75 (previous), 150 (revised) and a few options in-between. The population of Leopards in South Africa at that time was, by consensus, estimated to be approximately 4 250 adults, a figure which was used for all the baseline and scenario models (Daly *et al.*, 2005) in the PHVA. One of the many recommendations made in the final report of the PHVA was that any "increased off-take (should an increased CITES quota be implemented) can only be sustained in four of the [sub]populations and in the smaller populations even a slight increase in individuals taken vastly increases the possibility of local extinction" (Daly *et al.*, 2005: 14). It would thus appear that simply basing a decision to double the CITES quota on the Red Data Book assessment and its easily misunderstood estimates for the South African Leopard population, and not undertaking an NDF as was supposed to have been done, was perhaps an inappropriate application and utilisation of the Red Data List assessment. The listing of the Leopard in the Red Data Book is in itself not a formal listing with direct implications for legally enforceable conservation action or management decisions. In this case, however, it was used to inform a decision which *does* have legal and formal regulatory status and so one may suggest that it is the *use*, or *misuse* of the data, or the interpretation of the listing, that has been inappropriate rather than the assessment itself.

On a different note, when the South African government developed the ToPS list, the Leopard was assessed as being Vulnerable due to the predominant threats facing this species being those which comply with what the Biodiversity Act lists as being restricted activities, namely hunting and various forms of direct and indirect persecution. This may spell good news for the Leopard and indeed may address the significant threat posed by unregulated off-take of this species, but it does beg the question of how the Leopard came to be considered for eligibility on this list, if the Red Data status of the species informs this list and yet it is not

listed as a threatened species in South Africa's Red Data Book for mammals. There is therefore the contradictory listing of this species in South Africa, with the listing system that utilises empirical, objective, peer-reviewed data and criteria listing it as Least Concern, a status which has no legal standing but has unfortunately been used to inform a regulatory decision which does; and an ambiguous and largely misunderstood listing process with subjective criteria which lists the species as Vulnerable and therefore subjects it to enforceable regulation.

The fact that both lists have different purposes and applications may mean that the different listing for the same species is not in itself a problem. It may however result in public confusion as to the 'true' status of the species. If, however, academics and authorities understand the different purposes, applications and assessment criteria of these lists, a different listing for the same species should not be problematic. It is therefore, again noted that a significant challenge exists with the use of the same terminology for categories of threat in the different lists, but based on different meanings, criteria and listing processes. If South Africa does not move towards an integrated, single list of threatened species in the future, careful consideration must be given to changing the terminology of the ToPS list to reduce confusion. The US Endangered Species Act uses the terms "endangered", "threatened" and "candidate" species (Goble, 1999: 47) and perhaps South Africa should considered migrating to revising its terminology for the categories of threats in its national TSL in the future.

In terms of environmental governance in South Africa, this case, study, however, is indicative of the inconclusive and poorly defined relationship between Red Data lists, the framework surrounding regulatory decisions such as increasing utilisation quotas for species on CITES and the development of the national ToPS list. The Red Data List assessment for the Leopard clearly did not play a role in its assessment as Vulnerable in the ToPS list, yet it was the major contributing factor

in the government's proposal to double the size of the CITES quota. The lack of an NDF being done for the Leopard is indicative of failure to meet obligations to higher systems of governance, and the application of selected pieces of data to suit certain arguments is dangerous. Regardless of whether or not the Leopard may or may not have benefitted from the interaction or lack of interaction between these assessments, the relationship between different assessment processes and listings in South Africa needs to be addressed and formalised, and processes which lead to decisions being made need to be more robust and rigorous in their development. If extinction risk assessments such as the Red Data listing assessments are to be used to inform regulatory lists, then the entire suite of data used for these assessments must be applied, for all listed species, including, in this case, the notes regarding inconclusive data and vague population estimates.

4.4.3 Black-backed Jackal *(Canis mesomelas)* and the Caracal *(Caracal caracal)*

By far the most controversial aspect to the development of the ToPS List was the proposed inclusion of the Jackal *(Canis mesomelas)* and the Caracal *(Caracal caracal)* in the category of Protected Species in the list. This was proposed by the government in light of the fact that whilst neither species may be considered to be threatened *per se*, both are heavily persecuted in South Africa due to the perception that they are livestock killers, and thus they are heavily impacted on by what the regulations have stipulated are "restricted activities". In this case, the restricted activities most often applied to these species include "hunting, catching, capturing, ... killing ... by any means, method or device whatsoever, including ... pursuing, driving, lying in wait, luring, alluring, discharging a missile or injuring with intent to hunt, catch, capture or kill...damaging or destroying..." (Republic of South Africa, 2007). In the Biodiversity Act (No. 10 of 2004), the definition of a Protected Species states that the species must be of national importance or must be of high conservation value. Herein lies the controversy.

Farming communities, unions and landowner groups rallied together to have these species removed from the draft lists, stating that neither was under any threat, that neither was of significant national importance and that their need to 'control' these species was greater than the need for regulatory control over any impacts on the species or any individual animals. The concept of either jackals or Caracal, whom many farmers believe to be vermin, possibly being listed as threatened or protected, was outrageous to many and was simply not going to be tolerated. This incident highlighted the subjective nature of what a species of "national importance" or of "high conservation value" is, and to whom this value is relevant or applicable.

The lack of empirical, objective listing criteria was exposed in what became an emotional debate, heavily influenced with value-laden and emotionally-charged suggestions of the value of these species, and their possible or perceived impact in certain communities. The debate that ensued for some months around this issue became a matter of anthropocentric values and needs being pushed ahead of the relevant application of the regulations in the Act. It is also suggested that this debate was made worse than it need to have been, simply due to the use of emotive terminology such as "threatened" or "protected" which some farming communities believe should never be associated with species such as the Black-backed Jackal or Caracal. Perhaps, it is suggested, if terminology such as "controlled" species had been substituted, the issue may have been viewed differently, but to most farmers, the idea of either the Caracal or the jackal being "threatened" or "protected" was inconceivable. The final decision to list or not list these species as protected under ToPS, and thereby regulate human activities impacting on these species, therefore lay in the balancing act of several other considerations apart from the empirical assessment of whether or not these species qualify in terms of the ToPS criteria and definitions for listing a species in the Act. This is itself not a problem and forms part of a healthy system of governance development and adaptation. However, the last minute removal of

both of these species from the ToPS List, for no defensible, reasonable and scientifically sound reason, exposed the entire listing of species on the ToPS list to the influence of vocal pressure groups and cultural bias. Aram (1997: 554) informs us that "the hard work of environmental governance occurs as parties contest the premises of local resource regimes. Struggles for regime control are anchored in differing cultural, political, and knowledge claims and differing problem definitions. Conflicts between competing preference systems confront interested parties with the need to renegotiate local resource regimes".

This case study thus reveals some of the weaknesses in implementation of environmental governance in South Africa, in that the contestations of certain parties influenced the outcomes of the ToPS list and the susceptibility of the process of listing a species on ToPS due to extreme public influence. Adaptive governance and the management of polycentric systems requires a great deal of skilled negotiation and re-negotiation to manage the unending process of change (McGinnis, 2005) and the interface at which disparate views and opinions find themselves converging, but the strength of a regulatory system will ultimately lie in its resilience to pressure, subjectivity and sectoral bias (ibid). As in the case of the Lion, Caracal and jackal, species that find themselves on or off a TSL, must have been subjected to the same levels of rigorous scrutiny and final decisions must be defensible, transparent and balanced. In the absence of sound criteria and reasonable decision-making, our regulatory systems and the entire framework of governance will remain weak and open to criticism.

Here it is important to reflect on the definitions and discussion on the term governance, offered in Chapter Two. Governance is not simply a finite set of rules or regulations that dictate how management systems will be applied, but rather, governance is a process of participative regulatory development, institutional design and negotiated decision-making, with ongoing reform, reflective feedback and adaptation. This is a key part of the process of *ongoing*

governance and cannot occur *outside* of the formal process, for the benefit of a select few and with no transparency and accountability. The implementation of the regulations developed, and decisions taken, is fundamental to the concept of governance which does not end with the promulgation of laws and policies. It was Young (1994: 15), who states that "Governance involves ... the rules of the game that define social practices, assign roles and guide interactions...". The need to manage the interactions of role-players and their social dynamics is a key feature of the ongoing process of implementing a sound system of governance. Consistency is essential, as is the need to be accountable to all stakeholders for decisions taken, including adaptations made in the future which should form part of an open 'lessons learned' process and not as a result of undue pressure causing system collapse. Folke (2006) informs us of the need for environmental governance systems to be adaptive and reflexive in nature, to allow for ongoing learning as needs change and issues emerge. It is, however, questionable that this was the motivation for delisting the jackal and Caracal and the inconsistencies in applying the listing process to the Leopard, thus leading to concern for the resilience of these processes to subjectivity and social pressure. Lebel *et al.* (2006) unpacked the attributes of emerging systems of environmental governance and revealed the value, but also the difficulty of multi-party participation in building trust and developing a shared understanding of the issues, thus highlighting the challenges that trust building can pose in the public participation process.

This process of trust building and cooperation, cannot however, be compromised by non-disclosure of information, subjective decision-making and poor enforcement, but if these incidences occur within the broader process of "unending change and re-negotiation" described by McGinnis (2006, 13), as part of a dynamic, adaptive resource regime, they may well become key contributors to the future improvement of the overall governance of the South African environment. The discussion Chapter Five will discuss the implications of these

case studies for critiquing environmental governance implementation in South Africa and offer insights as to what learning opportunities emerge from the early development and application of TSLs as instruments of environmental governance in South Africa.

CHAPTER FIVE – GENERAL DISCUSSION AND CONCLUSION

This report has thus far covered some of the key tenets of environmental governance and the concepts involved in the development and implementation of an environmental governance framework that is polycentric and adaptive in nature. Environmental governance has been positioned within the broader framework of governance as a concept and specifically, the South African framework for environmental governance has been described and analysed within the context of the global trends towards developing and implementing environmental governance frameworks, and the role and positioning of TSLs as instruments of an overarching environmental governance regime.

5.1. General discussion

The ToPS and IUCN Red Data Lists clearly have important roles to fill as instruments of environmental governance in South Africa, albeit if perhaps through different functions and objectives at present. There are also different strengths and weaknesses in each list, including the processes of developing them and the way in which they are being applied. Procedural and technical weaknesses in the current lists have been covered and this discussion will therefore focus on issues around the future development of these TSLs so that they may be better aligned or at least made complimentary, within the boundaries of legislation and science and such that they may better address the challenges facing effective governance and improved protection of our environment.

In this report thus far, several key findings emerge. These include the need for sound systems of environmental governance to be inclusive, participatory, transparent and underpinned by negotiated decision-making (McGinnis, 2005; Hatfield-Dodds *et al*., 2007; Ostrom, 2008). The regulatory system within this framework must be adoptable and stakeholders must be accountable for

objective implementation and internal enforcement (Hatfield-Dodds *et al*., 2007). Good governance is furthermore adaptive by nature, characterised by ongoing attempts to manage the complex intersection at which the needs of a variety of users of ecological goods and services converge, within the context of contested rights and often competing, ecological, social, economic, cultural and political imperatives (Ostrom, 2005, 2008; Ostrom and Mwangi 2009; Hatfield-Dodds *et al*., 2007). The concluding discussion in this report will build on the findings in previous chapters and the analysis of the various TSLs in South Africa as instruments of environmental governance, to present the key findings on what these tools say about the state of environmental governance in South Africa, and to offer recommendations for ongoing improvement of the South African regulatory framework for environmental governance in South Africa

Measuring success or failure

The development of policies and regulations must be in line with the objectives of the legislation they serve and must be driven towards achieving clearly defined targets and objectives. But how is the effectiveness of regulatory instruments such as TSLs to be measured? How do we measure the success or failure of a normative threatened species listing instrument such as the ToPS list and regulations as well as that of an informal, but largely empirical TSL such the Red Data List?

Historically, governments have measured policy success or failure by bureaucratic outputs in terms of laws generated, legal cases pursued, budgets allocated and spent and regulations and permits enforced (Rosenberg, 2007). But the challenge of moving political institutions towards measuring success by environmental outcomes requires a significant shift in thinking and a level of regulatory reform (Hird, 2008). This requires legislators who value results and impacts instead of outputs and milestones and measures of what exactly constitutes positive environmental change. As was demonstrated with a science-

based assessment process such as the IUCN Red List system, changes in numbers of species listed may not be as a result of environmental changes but instead, may be due to improvements in knowledge and assessor capacity. Political institutions will therefore have to invest more in developing capacity with the skills to determine, and establish suitable measures of environmental change instead of simply employing more and more bureaucrats trained in enforcement and compliance. It is suggested that the emphasis of government departments towards a bureaucratic framework of implementation only will result in measures of policy success being strictly relegated to the roll-out of regulations, permits and other tools of enforcement.

Enforcement of ToPS

Due to its nature as a normative tool for enforcing environmental regulations, the ToPS list and regulations are easily measurable and should technically be enforceable due to the unambiguous nature of the regulations around restricted activities. However, enforcement of any piece of legislation will always come back to the political will, and capacity to enforce, which we have seen is lacking at the provincial level. Dietz *et al.* (2003) suggest that if adequate capacity to monitor and enforce are available, command-and-control approaches to governance may work, but in the absence of adequate capacity, innovative mechanisms to encourage changes in behaviour and self-governing structures to ensure compliance need to be developed. If the enforcement infrastructure is not geared towards upholding the law and applying the most stringent measures of compliance, and without broad-based buy-in from society at large, the legislation will remain a 'paper policy' and no matter how sound in theory will remain toothless in practice. If the situation facing the enforcement of the ToPS regulations for Lions is to set a precedent for the rest of the regulations, it seems that the regulation of activities around threatened species has a long way to go in South Africa. National enforcement and compliance cannot be guaranteed if

local capacity is weak and if stakeholders do not accept the regulatory framework and therefore will devise means to undermine it.

The lack of consensus on the ToPS list contents and development, as well as the interpretation of the role of the ToPS list under the Biodiversity Act is further rendering it weak, as many stakeholder groups who are key to implementing it, remain confused about its application and strongly disagree with its contents. As has been demonstrated, one of the key weaknesses in this list, and in its ability to be a powerful tool in the armoury of instruments for environmental governance, is the confusion and strong disagreement around the categories of threat and inclusion or exclusion of certain species, as well as a lack of consensus on how the list should be applied.

It has been demonstrated that the political economy of natural resource access and ownership are largely contested (Hatfield-Dodds *et al*., 2007) resulting in ongoing debate around where the final authority over decision-making for ownership, control and rights to natural resources lies. McGinnis (2005), for example, suggests that polycentric systems of governance allow and in fact encourage community stakeholders to resolve conflicts over natural resources instead of, or before, needing an authoritative decision from a government structure who may have this power. These bottom-up (ibid) forms of governance allow for greater inclusion of socio-economic needs to be integrated with ecological requirements. In trying to integrate socio-economic concerns with natural resource debates, caution must however, be applied to ensuring that we do not tip the balance and subject natural resource imperatives to an unfair bias in favour of anthropogenic values, as may have been the case in the dropping off the ToPS list of the Black-backed Jackal and the Caracal. The needs of people have become an integral aspect to developing environmental policy in a governance framework, but it must be recognised that people's needs change over time and are not always uniform or based on commonly acceptable values

(Ostrom, 2005; Dietz *et al*., 2003). Jiggins and Steyaert (2007) even suggest that people may not always agree on the definition of what is problematic as different values may inform different perceptions and needs. Thus, the trade-off for short-term human needs, standards, values and concerns cannot be the ongoing sustainability of the ecosystems and species which underpin the very need for environmental policy and regulation to ensure their long-term survival (Gertner, 2009).

Impact of Red Data Lists

Red Data Lists, whilst not having a formalised link to regulatory lists such as the ToPS list or other enforceable policies, have been demonstrated to play a key role in suggesting indicator species for threatened ecosystems, informing the content of regulatory TSLs, guiding decisions around species utilisation and management, and being used, albeit in an unregulated manner, in the development of scoping and environmental impact assessment reports for land use changes and development applications. Red Data Lists are also often used as primary sources of information for the public on threatened species for television programmes, popular publications and school projects, which use these lists as reference points for broader issues. The raising of public awareness of threatened species through the Red Data Lists, has almost encouraged a fascination for many species and raised their public status to that of a celebrity. Whether or not this will be enough to stem the tide of extinction is not evident (the reported extinction of the Yangtze River Dolphin early in 2008 proves that species at the highest category of threat are still not safe from actually becoming extinct) but the public awareness and support for conservation measures for these species is a clear indication of their influence.

Another key feature of Red Data assessments, which usually involve a more in-depth understanding of a species and some kind of acknowledgement of the broad spectrum of threats facing it, is that they usually suggest on the one hand,

areas of increased research and investigation. Therefore whilst Red Data Lists do not regulate the causes of species decline, unless through their contributions as sources of data they inform other regulatory lists and decisions, they may contribute to the conservation of threatened species by highlighting research needs and recommending actions and areas of concern. On the other hand, as Shin (2004) notes, regulatory lists such as the ToPS list, may actually hamper such research and necessary conservation through their increased protection which renders research and investigation less possible. In South Africa, the increased administrative burden for conservation and research activities and projects to obtain the necessary permissions under the ToPS regulations, has, according to many respondents, made their work more difficult, more arduous and more bureaucratic.

Institutional capacity

Strategic Objective number two of South Africa's National Biodiversity Strategy and Action Plan (NBSAP) is to ensure "Enhanced institutional effectiveness and efficiency [to] ensure good governance in the biodiversity sector" (Republic of South Africa, 2005). At the heart of institutional effectiveness lies the need to improve government and parastatal competencies, delivery and accountability, across the full range of competencies required of their positions. It is clear that, within the framework of modern environmental governance systems, legislators and scientists need to be skilled in a broad range of negotiation, social, information management, analytical deliberation and conflict resolution skills (Dietz *et al*., 2003). They need to effectively engage with disparate groups of stakeholders and be open to a variety of (sometimes) opposing views and divergent needs to build consensus (ibid). Further, in enabling and supporting authorities to implement regulations, the capacity, both skills-based as well as resource-based, must be significantly ramped up in Africa. Half of the key respondents in this report felt that the lack of field knowledge and experience in the current cadre of legislators was a significant weakness in their ability to

understand the issues and accordingly, determine effective policies and regulations.

In South Africa, the South African National Biodiversity Institute (SANBI) has been established with its mandate to "monitor and report regularly to the Minister on the status of the Republic's biodiversity; [and] the conservation status of all listed threatened or protected species and listed ecosystems" (Republic of South Africa, 2004, Chapter 2, Section 11). As a predominantly science-based organisation, SANBI may well go a long way towards establishing the nexus of science and bureaucratic policy development but will still need to adapt to the changing face of stakeholder groups that are no longer scientists of politicians only, but which include, these days, communities and civil society, industry, and a host of other non-traditional parties in the environmental sector.

Participant capacity

Ongoing capacity building across all sectors of society is necessary for good governance as it enables and supports active and meaningful participation in the regulatory framework. Just as the active participants in a democratic society need to be active learners who engage in the politics of society, participants in the effective roll-out of sound environmental governance need to be actively engaged in the discourse of political ecology and natural resource management.

Good governance is thus a process that evolves over time as society matures and learns to drive the process of participative decision-making and consensus building from within. Can an emerging system of environmental governance ever be immediately successful if it is contextualised within an essentially immature state of modern governance which is still developing throughout our society as a whole? Role-players such as scientists, civil society, NGOs and politicians in South Africa are interacting on a relatively new and untested stage, in which they all hope to participate in and influence the emerging systems of governance, so it

stands to reason that much development, through trial and error and head bumping will ensue for some time to come. It is important that in these times of growth and adaptation, that feedback loops are in place to learn and develop from past decisions and to continually build the capacity in our stakeholder groups to participate meaningfully, effectively and equitably.

Stakeholder inputs must not be allowed to unduly alter the outcome of instruments of governance so that they emerge different from the origins of their intent. Instead, their influences must enhance the ability of these instruments to be effective tools of governance. This suggests a large burden of accountability and responsibility borne by society which is able to embrace and accept this important role. Will the ebb and flow of negotiation and inclusive decision-making, however, be countered by the control and command forces of strict regulatory enforcement ever settle by mutual consensus, or will it remain a murky area in which seemingly contradictory approaches towards environmental sustainability contend for dominance over each other? It is suggested that there is no simple answer to this question and that it may never be finally answered, requiring instead a permanent dynamic interplay of social interactions, informed opinions and policy amendments as our society adapts and matures, and the discourse of environmental governance progresses in accordance.

Knowledge management

If some of the primary objectives for drafting threatened species lists are to identify species in danger of extinction, document trends in species decline, and/or to provide or inform a regulatory framework to legislate against activities which may cause a further decline in species populations, then the role of sound data acquisition and information management and analysis becomes crucial. Vogler and Jordan (2003, 145) note that “the production of authoritative scientific knowledge is of primary importance to the development of global environmental governance” and that this information is often most forthcoming

from knowledge-based networks of scientists and civil society players. Jiggins and Steyaert (2007: 575) also suggest that knowledge can "play a large and constructive role in changing relationships, understanding and practices". Dietz *et al.* (2003) further note that information must be congruent with the needs of decision-makers in terms of quality, quantity and timing. Further, the emerging field of socio-ecological learning in which humans are positioned *in* the environment and not apart from it, requires a level of integration of social, cultural, economic and political knowledge systems with empirical science (Folke, 2006). Despite the scientific credibility of the IUCN's Red Listing system, it remains that one of its long-standing criticisms is indeed its reliance on sound, quantifiable species data and an accurate assessment of their threats and trends. Even though the system has been adapted over time to accommodate degrees of uncertainty and to apply necessary precaution, it has not however yet adapted to integrate the complexities of human-physical systems and the associated uncertainty that is inherent with incomplete science (Dietz *et al.*, 2003).

Due to the evolving nature of our knowledge systems and data quality, changes in the status of species on these lists over time, have further been proven to result more often from a change in the status of our knowledge on that species rather than in a change in the species' status and hence, the issue of knowledge acquisition, access and application is central to the listing process (Lamoreux *et al.*, 2003). In fact, the list of Australian species assessed as having gone extinct has shown several changes in the last 20 years, not because species have reappeared but more to do with "changes in knowledge about the species' status, and changes in taxonomy" (Keith and Burgman, 2003: 41). One therefore has to balance the possible indication of increasing losses of biodiversity and declining species suggested by increasing numbers of species listed on the TSLs, with the suggestion that changes in the lists may indicate changes in our knowledge and understanding of biodiversity data.

Related to data management and analysis, is the fact that users apply different paradigms and competing reference points when 'selecting' or analysing data, and often people will select data which supports a particular view, as was proven in the case study of the Leopard. Further, different societies will give difference levels of credence to the inclusion of indigenous knowledge in determining if a species has national importance or cultural value, which may influence its status on a list of threatened or protected species, as indicated by the Caracal and Black-backed Jackal case studies. Data acquisition can also be heavily influenced by certain stakeholder groups, for example industry, which pays for research which may assist them in obtaining results which may benefit their objectives. In a governance system which attempts to integrate and balance socio-economic and political objectives, one may end up with an imbalance in the playing fields for competitors, in that economic arguments may outcompete the scientific or social imperatives (for example the case of the economic argument for canned Lion hunting versus the welfare and conservation arguments). Different value systems may also find themselves competing in a perhaps unbiased but uneven competitive environment, when the voices of some groups may ring louder than others depending on their levels of organised mobilisation and capacity. The variance in capacity, and the influence that this has on understanding the listing process and applying the listing criteria appropriately, was demonstrated in the case studies and hence there is an ongoing need for capacity building for knowledge generation and institutional rigour in applying criteria and systems.

Finally, the ongoing balancing act of ensuring environmental sustainability and addressing the pressing socio-economic needs in a country like South Africa where natural resources and indeed many species are considered in terms of their contribution towards poverty alleviation, cannot be overlooked (Republic of South Africa, 2005). The reluctance to list species which may be key to generating an income in some communities but which may also be highly threatened, as in the case of abalone (which despite its radically reduced population size in South Africa, and unsustainable harvesting levels, is not listed

on the ToPS list at all), is as a direct result of the need to primarily address economic and social upliftment issues. Thus the issue of data acquisition and knowledge management, although integral to threatened species assessments, is seldom an issue of empirical science only, but must and does include a wider variety of information sources, datasets, knowledge management and human values.

Shared goals?

It is evident that it cannot be assumed that advocates for different listing processes necessarily share the same vision for the role and purpose of TSLs. Political institutions historically considered the role of TSLs to have regulatory functions as opposed to serving conservation objectives, and scientists have often been accused of not understanding the need for enforceable regulations. In the debates around the development of the ToPS list, this point was hotly debated as the government authorities stressed the need for instruments which are legally enforceable, and thus whilst habitat loss may account for the decline in many threatened species today, it does not necessarily constitute a contravention of the law (DEAT, 2007, pers. comm.). Consensus on the role and function of listing processes is therefore a crucial component of achieving broad-based stakeholder buy-in. Many respondents for this report felt that this consensus was never reached as to the interpretation of the Biodiversity Act and that the DEAT's emphasis on only listing those species that are threatened by restricted activities was an incorrect interpretation of the legislation. Much work therefore still needs to be done to achieve an alignment in thinking as to the role of the lists, be they similar, overlapping or even very different. Only then can the appropriate approaches to developing and populating the lists be pursued.

Role of civil society

Key to the development and implementation of modern instruments of environmental governance is the role of civil society which largely happens

through the actions of non-governmental organisations (NGOs). NGOs provide the vehicle through which members of civil society organise themselves and formalise their input and participation in policy development and implementation. It is not a requirement for members of the public to participate through an NGO, and in South Africa, participation in policy development by the individual is accommodated, although it is perhaps less easy. The role of NGOs in global conservation policy development and decision-making has increased substantially since the 1990s (Gemmill and Bamidele-Izu, 2002) and this is true within the South African context too. Today, NGOs are not only considerable stakeholders in the global environmental governance process, but are seen as active participants in driving improved cooperation and public participation in, and mobilising support for policy implementation. Gemmill and Bamidele-Izu (2002: 1) further identify five major roles that NGOs play in global environmental governance including:

> "(1) collecting, disseminating, and analyzing information; (2) providing input to agenda-setting and policy development processes; (3) performing operational functions; (4) assessing environmental conditions and monitoring compliance with environmental agreements; and (5) advocating environmental justice".

In both the development of the ToPS List as well as the mammal Red Data Book, NGOs and civil society played a key role, in varying degrees. Much of the information gathering and collation for the Red Data Book was undertaken by academic and science-based organisations, as was the dissemination of the information to members of the public. Through their function to act as watchdogs for regulation enforcement and compliance, the advocacy and monitoring role of many NGOs is an essential feature of environmental governance. In the 'canned lion hunting' saga, NGOs such as SAN Wild and the Wildlife Action Group played a significant role in raising public awareness of the

ToPS list and regulations, and by applying pressure to government to address this issue. The role of government in these same five areas is no less important, however, and it is suggested that it is within this area that the role of both government and civil society can come together to achieve a common objective. The South African government, through the DEAT and SANBI, has a crucial role to play in setting the scene for establishing the regulatory framework for threatened species conservation, but the success of these measures will be largely determined by the input and contribution of civil society to the development of appropriate and relevant policy, the integration of applicable knowledge and data, the dissemination of honest and transparent information, the capacitating of broader stakeholder groups to ensure compliance and to assist in enforcement, the contributions towards biodiversity monitoring and policy review and the participation in the dynamic process of improving and modifying processes and adapting systems through feedback processes, to ensure continuous improvement towards achieving common goals and equitable governance.

5.2. Some final recommendations:

Some key recommendations are offered for the future of TSL development in South Africa. These are premised on the assumption that our environmental governance framework is adaptive in nature and open to reflection, engagement and learning from the past in order to pursue an equitable and effective future. Reflecting on the key themes of environmental governance which emerged out of the literature review and analysis of the stakeholder inputs, the following final recommendations are offered:

Goal identification and consensus building

For the participation of large stakeholder groups to form an effective and meaningful part of an environmental governance process, it is important that the

process begins with consensus, 'up front' about the goals and objectives of the core process and the intentions of the tools being developed. One cannot simply assume that the objectives are jointly understood and shared, and aim to engage meaningfully in a process that assumes this starting point. Caucused opinion and critique of the ToPS listing process confirms this and thus it is recommended that the consultative process for developing the *content* of the ToPS list should only come *after* due attention is paid to an exhaustive process of developing consensus on the meaning, purpose and application of the legislation with regards to the ToPS list and how the list should be developed and applied to start with. This must include a comprehensive process of engagement and consultation on the function, purpose and process of the ToPS list and once there is broad agreement as to what the list is for and why, the outcomes of this process must be written up into a published policy document or guidelines. Only then can the process of populating it begin or in this case, reassessing the current list for the appropriateness of the current listed species. This follows the thinking of Jiggins and Steyaert (2007: 583) who talk about the need to develop a "socio-technical democracy... the development of grassroots scientific literacy, and the co-creation of knowledge and understanding." This will, they suggest "safeguard the contribution of science... and strengthen societies' capacity and willingness to make problems discussable and to confront the risk involved in change" (ibid).

This process of stakeholder consultation was effectively followed in the development of the threatened ecosystems list in South Africa (T. Rebelo, pers. comm.) and is recommended as a priority course of action for the ToPS list revisions. As long as there exists a range of conflicting ideas around the function and purpose of the various forms of species lists, monitoring their success and understanding the impediments to their effectiveness will remain impossible.

Secondly, in this process, is it important to revisit the use of terminology that has conflicting meanings with other lists, or may imply different interpretation. Specifically, should the Red List and ToPS lists not be integrated or merged into a single listing process, a new set of terminology for categories of threat in ToPS is a requirement by all people approached for this report. Thirdly, there is no broad consensus yet on whether or not ToPS and the Red Data Lists can or should become one list, and whilst strong opinions suggest that they should, it suggests another issue that requires a new round of expert consultation and future exploration. A single national list aligning both scientific and regulatory requirements, would alleviate the need for different systems and administrative functions but may create more complications in the interpretation of the Red List under what can or cannot be regulated in terms of South African law.

Either way, there seem to be solid arguments for at least the integration and alignment of national Red Data Lists into the ToPS listing *process*. This may be one of two ways: using Red Data Lists as either a platform for selecting ToPS species based on finer revision using quantifiable, acceptable criteria relevant to the prevailing regulatory framework or; including all Red Data listed species into the ToPS list to create a single list in which all species deemed by science to be threatened are afforded some sort of legal protection, and where the regulatory framework to ensure that the list is effective and enforceable, is examined and if necessary, adapted accordingly. These possible scenarios are presented in Figure 2. This revised institutional map suggests a possible nexus of science and policy instrument development and suggests that, in future iterations of the ToPS list, the national Red Data List may be used as a basis for TSL development, to result in either one single, uniform list or a ToPS list using the Red Data List as a starting point. This map suggests an integration or closer alignment of the Red Data and ToPS lists to result in smoother implementation. The feedback loop is a crucial factor in adaptive governance as it allows for iterations to be based on reflexive learning and cooperative development. The map also demonstrates how greater

consultation and engagement at the level of developing the systems and processes, will enable smoother implementation due to greater integration of the conservation objectives that underpin both lists.

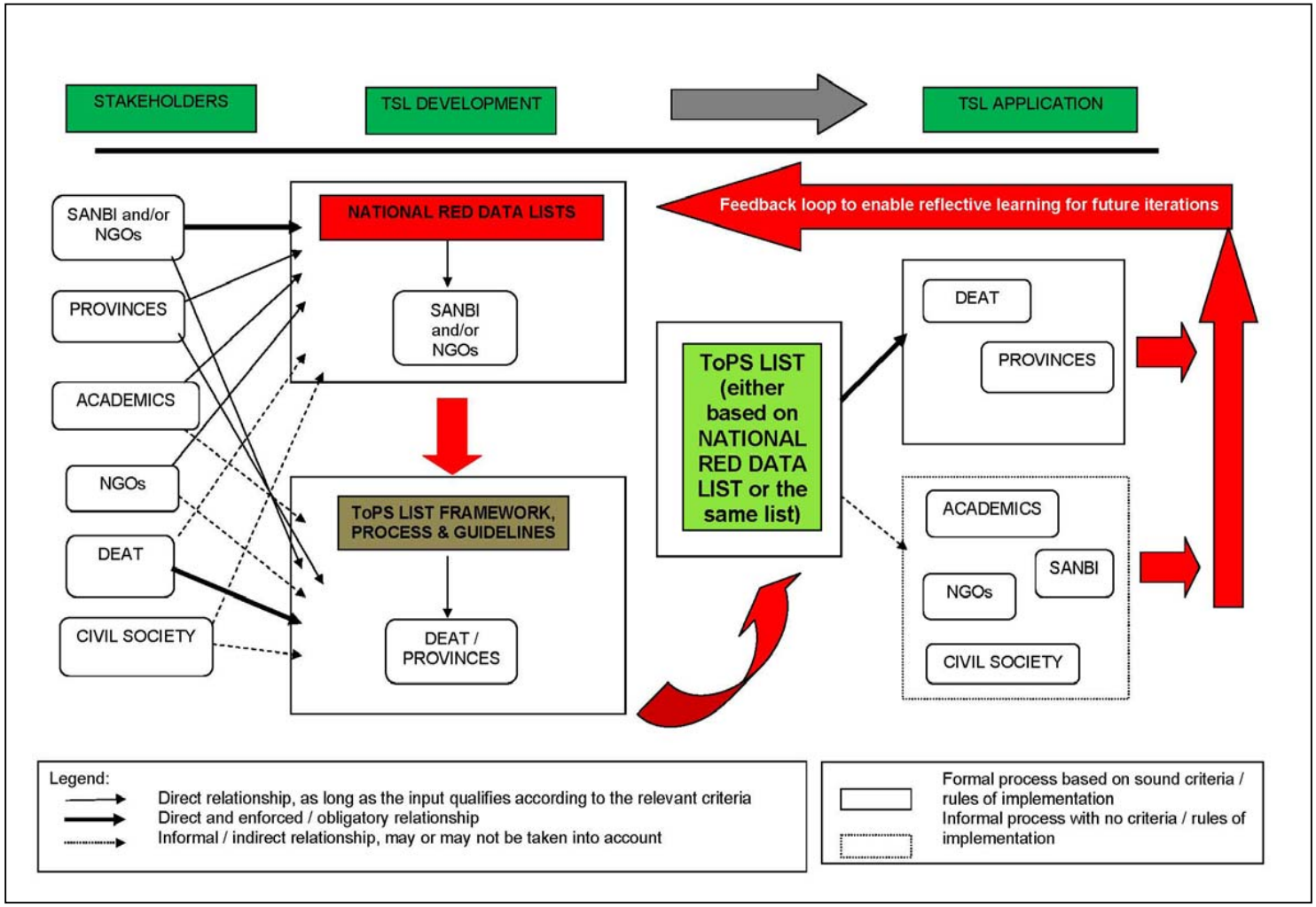

Figure 2: Revised institutional map which suggests new relationships between various stakeholder groups / institutions in the development and application of South African TSLs.

Effective public participation and the role of civil society

Fourth, for consensus on the issues above to be reached, the process or method of consultation and engagement itself remains a critical feature to be considered going forward. It remains a crucial aspect of addressing not only future iterations of our TSLs, but for the general management of our entire natural resource base. As discussed in Chapter Two, Ostrom (2001) suggests that designing effective governance systems is not a simple, objective process undertaken by government analysts. Rather, they should be developed as part of broader polycentric governance systems that are complex compositions of democratic units. Therefore, understanding the social dynamics and 'rules' of these systems is as important as understanding the biophysical requirements of the natural environment and thus much more attention must be paid in future to the process of effectively engaging with these units which in this case, include but are not limited to academics, communities, NGOs and provincial authorities.

Whilst government may feel that consultation on the ToPS list was adequate, it is clear that this may be a quantitative assessment and not a qualitative one, as not one stakeholder approached for this report agreed with the degree to which consultation was fair, equitable or open. Stakeholders felt that the consultations were focussed on them being *told* what the lists were for and how they would be developed, and that information flowed one-way in that responses were not taken into account. The tenets of good governance require an open, fair and equitable process of engagement and without this, stakeholders will feel used, manipulated and patronised. Likewise, once a process has been agreed to and set in place, stakeholders need to agree to comply with it, as governance is also put at risk when stakeholder groups pursue their own interests and apply political pressure to change the rules that may not suit their individual needs. With the ToPS regulations and lists having been in place for some time, much can be learned from an open, honest and meaningful engagement with the institutions and stakeholder groups that have been involved with their

implementation. This represents an excellent learning opportunity for government to initiate a process of reassessment, revaluation and review. As Rosenberg (2007: 93) puts it, "...those working in the increasingly polarized atmosphere of regulatory politics, are coming to grips with the challenge of "reconnecting with stakeholders" whose antagonisms over resource management obscure interests they may share in conservation." It is vital that in future iterations of the ToPS list, that the DEAT heeds this advice and effectively embraces key stakeholder input at all levels of revising the listing process, the final lists and the associated regulations.

Information sharing and knowledge management

As Dietz *et al.* (2003) pointed out, information is crucial in adaptive governance systems and requires quality information, on a broad spectrum of issues to be shared, openly and freely. However, room must be made for dealing with uncertainly and the open-endedness of knowledge systems. As systems become more complex and integrated, knowledge will expand and change. Iterations of processes and the context of threatened species lists in South Africa must therefore be undertaken within the ambits of a complex, dynamic system of socio-ecological interactions with changing rules governing the use and application of information and meaning, and should not remain static or single-minded in their outcomes. Future iterations of the lists should assimilate knowledge of social and cultural values, economic and political imperatives and ecological parameters, with an understanding of the inherent uncertainties and risk in order to make informed decisions based on balance and equity. From this report it is clear that the listing of a species is not only relevant in terms of its biological or conservation status but has social, economic and cultural implications for certain stakeholder groups. Ongoing dialogue informed by knowledge sharing and critical analysis is therefore essential.

Conflict resolution

Seldom are regulatory authorities or scientists skilled in dealing with conflict and with an increasing requirement of these parties to delve deeply into negotiated processes, much more development and capacity building is required in this regard. Conflict resolution and negotiation skills have become key pillars in navigating the way towards effective resource management regimes and dealing effectively with people, is as important as understanding the nature of resources. Human perspectives, interests and philosophies are crucial in the effective governance of the natural world and processes of developing the instruments to govern natural resources require careful, skilled engagement with stakeholders to encourage mutual learning and development. In South Africa, much work needs to be done in the future to support the process of meaningful consultation and engagement so that it moves from being a perfunctory step in a frustrating, bureaucratic process to a meaningful platform that catalyses learning and change.

Further, compliance with the policies that are developed, will only be assured if innovation is applied in developing systems that are considered to be legitimate and fair to the greatest number of stakeholders. This requires the ability of policy-makers to engage meaningfully, to be creative and inclusive in the development of policy mechanisms and to accept a degree of error with each iteration that will lead to growth and improvement in the next.

Adaptive governance and growth

Above all, in an almost philosophical reflection, the need to learn and grown from each ‘mistake’ is crucial and continued review and reflection in process and outcomes, are critical. Key questions need to be asked around whether or not the ToPS list and regulations have been successful in what they were intended to do, or if they have become regulation for the sake of regulations. The success of a regulation is not measured by its existence and status as a gazetted piece of

legislation, but on its ability to serve a purpose and achieve a desired goal. Their strengths and weaknesses need to be critiqued and a 'lessons learned' approach to future iterations of the ToPS list must be applied. If necessary, a new framework for the entire meaning of listing species must be explored. Above all, the process up until now must be tested against the original intentions of this TSL, because if it is not achieving its goal, it will not be able to serve as an effective instrument for environmental governance but will become an output of a system of an over-regulated government. Dietz *et al.* (2003: 1910), for example, state that:

> "Institutions must be designed to allow for adaptation because some current understanding is likely to be wrong, the required scale of organization can shift, and biophysical and social systems change. Fixed rules are likely to fail because they place too much confidence in the current state of knowledge, whereas systems that guard against the low probability, high consequence possibilities and allow for change may be suboptimal in the short run but prove wiser in the long run. This is a principal lesson of adaptive management research".

The Biodiversity Act requires that the ToPS List is revised every five years and the IUCN Red Lists System also recommends review at least every five years. Thus, if the current governance system in place allows for reflexive learning and adaptive governance, iterations of these lists should present opportunities for gaps and inadequacies to be identified and addressed. How these get addressed will heavily depend on the meaningful participation of relevant role-players in contributing towards the ongoing testing and application of these tools, and a meaningful revaluation of their role as effective instruments of environmental governance for stemming the ongoing loss of biodiversity.

5.3. Concluding thoughts

There is much that can be done to address the individual weaknesses in each of the TSLs discussed in this report. Individually, each has a key role to play in its contribution to addressing the decline in biodiversity in South Africa, although they may be tackling the issue of species decline from different angles and with varying degrees of success. It may not be necessary to develop an integrated system of species listing if one concurs with the suggestion that TSLs may be indeed designed to fulfil different mandates and have different objectives, and a one-size-fits-all approach is not necessary and may even be damaging. In order to reduce confusion, contradiction and misperception, however, as well as to streamline research, data assimilation, public understanding and conservation policy and programme development, it is critical that a broadly accepted national framework for listing threatened species is developed, which encompasses the nexus between threatened species listing systems designed to empirically assess extinction risk versus normative instruments such as legislated lists, with regulation as their primary objective.

This debate should not become a matter of regulation versus no regulation. Hird (2008: 397) "does not advocate dismantling old regulatory structures, instead recognizing the importance of legal authority, normative standards, and transparency". The argument should not focus on the need for more or less regulation but instead, "we should be working to build a different kind of regulation that responds to the criticisms of the revisionists" (ibid).

Considering that environmental governance is grounded within the broader governance objectives and structures in a country and is not an isolated entity, we need to contextualise the need for and role of instruments of environmental governance within the prevailing need for more stringent and accountable systems of overall governance in South Africa. It would therefore seem that within a society that is far from effective self-regulation and adequate voluntary

compliance with its own rules and regulations, the authority to implement and enforce strict command and control regulations may indeed be necessary. Having said that, it seems that the need for enforcing the law is not contested by society as a whole. It is rather the law that is enforced that people may question. It would therefore seem that in order to produce a viable system of environmental governance that accommodates shared visioning and negotiated objectives, some degree of regimented enforcement is required, but within the framework of continued efforts towards achieving the negotiated meaning and participatory development that characterises effective systems of adaptive environmental governance.

The holistic monitoring and the measurement of biodiversity trends suggests that TSLs, both the ToPS regulatory lists, and the Red Data Lists, should be embedded as *components* of environmental governance systems which cannot be evaluated in isolation of other systems of assessment and governance. If TSLs are simply part of a suite of environmental governance tools, isolated measures of their success or failure as single instruments will be short-sighted and provide only part of the picture. Rather, measuring the success or failure of both instruments of environmental governance requires an holistic assessment of trends of the broader human-biophysical world, which includes reviews of the effectiveness of each component tool, but which ultimately recognises the value of each list as a single tool and not as a panacea towards solving the complete spectrum of problems and complexities associated with species decline. The capacity of the institutions tasked with developing the TSLs, to effectively integrate social complexities and to assimilate data and perspectives from a wider variety of sectors in addition to ecological and scientific data, presents a significant challenge due to the current 'silo-styled' composition of government, academic and parastatal institutions. As much as these different actors may cooperate to some degree, this is not yet formalised and hence, it remains to be

tested to see if the regulatory reform and shift in thinking suggested by Hird (2008) will be forthcoming.

In the next few years, South Africa will see revisions of both the ToPS and Red Data Lists and it would be useful if these iterations could find areas of common ground and at least become more aligned in their objectives and application towards achieving a shared common purpose, in order to ensure both the relevance of Red Data Lists for law enforcement and policy development as well as credibility and relevance of the ToPS List within the academic and conservation communities. This implies the need for ongoing improvements in the development of a cooperative framework for negotiating environmental policy and regulations and by necessity, the ongoing need for capacity building within institutions and individual people to achieve this. This in turn implies the need for the ongoing knowledge transfer within and between all stakeholder groups, and efforts to ensure that such knowledge covers the broad spectrum of knowledge systems relevant to holistic policy development. Dietz *et al.* (2003: 1907) are clear in their statement that good "environmental governance depends on good, trustworthy information" and this information is not limited to the submission of empirical data about the state of species, but information on the process, transparency on the decisions made, information sharing about needs and issues and above all, a dual passage of information with feedback loops to provide for critique and review.

If civil society is to participate actively in the process of negotiating instruments of environmental governance, as well as mobilising support for the implementation of regulatory frameworks of compliance, there needs to be a heightened sense of public awareness, understanding and accountability for this shared role. Good governance stems from a consensus driven process, in which all parties openly engage in developing a common paradigm and where policy

development is not just a ‘tick box’ process of meaningless consultation without due consideration of a diversity of opinions.

The role of public participation in environmental governance does not begin and end with policy development, but remains a crucial feature throughout policy implementation, enforcement and monitoring. In some instances, the implementation of certain instruments of environmental governance is in fact, largely driven by civil society and the NGO sector. Civil society therefore plays an essential role in seeing policies through to their implementation and beyond and therefore both government and civil society have crucial roles to play in generating mutual trust through transparency, accountability and basic good governance.

TSLs are not a panacea to all threatened species conservation challenges but are one of the many instruments available to conservationists and authorities to determine appropriate responses in halting the decline of biodiversity within a complex world. The conservation challenge is large and diverse, and therefore requires a multi-faceted approach to addressing the many impacts which humans inflict on our environment. If threatened species lists are considered within the broad spectrum of instruments of environment governance in South Africa, these lists offer much insight. The present situation in which we have dual lists, with opposing degrees of scientific basis and origin, differently structured processes of development, and vastly different degrees of buy-in and acceptance, offers a crucial opportunity to test the adaptive and dynamic nature of our framework of environmental governance. If indeed, we are a learning society, whose legislative framework operates within the boundaries of meaningful dialogue, information exchange and learning; if indeed our policy development systems are adaptive and reflexive in nature; and if indeed our regulatory systems are developed to serve the needs of overarching policy objectives rather than to become self-serving entities of their own, the future

may be bright for the role of TSLs as key instruments in the war against rampant species decline. As the threats to biodiversity become more complex and more serious in nature, the ability to adapt environmental governance systems to become more innovative and all-encompassing and less reliant on the declining capacity of authorities to implement measures of strict regulatory enforcement, becomes more important. Decisions around managing the listing of species for conservation purposes, need to align themselves with the current thinking around systems of environmental governance which are holistic and adaptive in nature.

South Africa has made excellent strides in recent years with the development of some of the most forward thinking environmental legislation in the world. Turning these regulations into a system of sound *governance,* as this report has shown, remains a key challenge. The threatened species listing process in South Africa highlights some of the challenges posed by the move away from state-centred *government* to holistic *governance*, and if adaptive learning and reflection are appropriately applied to future iterations of these lists, we will make great strides in ensuring that our systems for governing our natural resources are effective, equitable and progressive.

This report has exposed some of the weaknesses in the current approach to environmental governance and the administrative challenges presented by both the institutional arrangements, as well as the effective management of multi-party inputs in developing and implementing the regulatory framework. The development of the ToPS List in South Africa is a significant step towards establishing an overarching framework that may eventually reduce administrative conflicts, increase public participation and improve transparency with regards to managing the nexus at which socio-economic, political and biophysical agendas converge. It is firmly believed that this is the intention behind this piece of legislation. However, as with many regulatory instruments,

there is a disconnection between intention and outcome. In the case of the ToPS List, it is vital that ongoing revision of not only the list but more importantly, the process of development, is undertaken. The regulations and the list need to be adaptive in nature and the iterative processes need to be reflexive, and transparent, with the intention of addressing previous weaknesses through ongoing policy development and sound governance.

This work has shown that areas which require urgent attention for improving the listing of threatened species in South Africa include effective consultative processes which build on bodies of knowledge and share ideologies, perceptions, needs and issues; the development of sound, scientifically informed and widely communicated processes of developing the listing criteria and process; a mechanism to list or delist species which is characterised by defensible arguments for the final product based on these sound criteria; a re-evaluation of the current terminology used in the ToPS List and regulations; the development of enforceable regulations and policy documents which reduce conflict and administrative complications at the provincial level; fresh debate around the practicality of producing both national and provincial lists; and ongoing debate and discussion around the convergence of the process of listing species for regulatory purposes in South Africa, with the infusion of the academic and science-based process for conservation purposes at a point in this process which is acceptable to the relevant stakeholders.

This report has responded to most of the questions posed in Chapter One through the analysis of TSLs in the context of environmental governance and specifically, in the South African context. Specific themes were identified as being important to the functioning of an environmental governance system. These were identified and explored within the context of threatened species lists and their role as tools of environmental governance in South Africa. What remains to be done is the development of a complete proposal with practical

recommendations as to how future revisions of the ToPS List can effectively merge the requirements for developing TSLs for conservation assessment purposes *with* those designed as a regulatory response, if this is deemed necessary. It is precisely due to the need for this to be undertaken within the context of a governance framework that is underpinned by wide consultation, public participation and ongoing negotiated decision-making that this report will offer this as a primary recommendation for ongoing work and will not attempt to present a complete resolution to this issue herein. Suggestions as to how and why this convergence is possible have been made, but the final recommendation from this work is that a far greater process of consultation, negotiation and adaptive learning is employed as the starting point towards addressing this very important issue. The current threatened species lists which exist in South Africa meet very specific needs and objectives, and each offers the potential to make its own contribution to the overall conservation goals of the country. How these lists either complement or contradict each other still needs to be tested and critically reviewed in the years to come as they are utilised, tested and enforced. This is necessary so that future iterations of either or both lists do not simply follow on where these lists left off, but are the result of careful consideration of the potential of each list, individually or collectively, to achieve the highest aims of a sound, effective environmental governance system which results in reduced biodiversity loss and the improved status of the species it aims to conserve.

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APPENDIX 1: Structure of the IUCN Red List Categories

version 3.1, 2001 (IUCN, 2001:4).

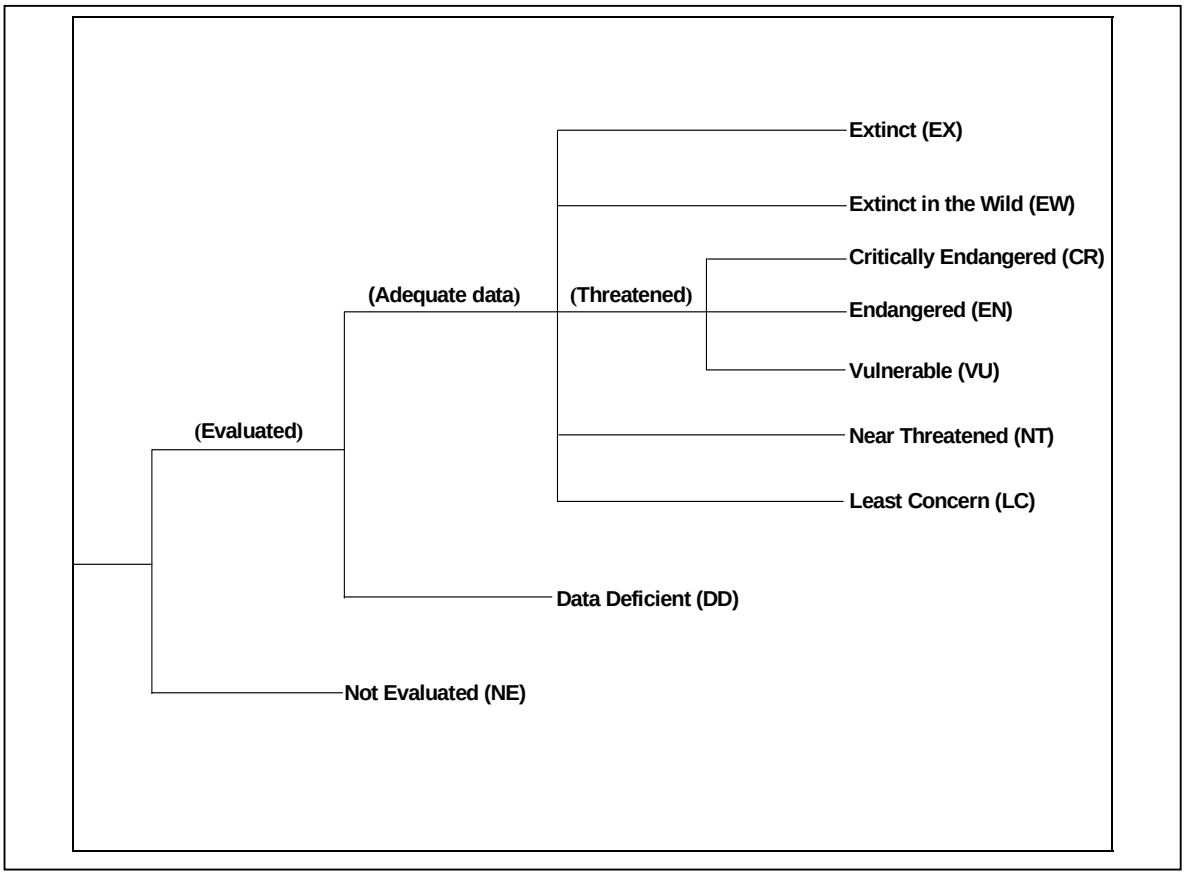

Figure 3. Structure of the IUCN Red List Categories (IUCN, 2001: 4).
Figure 3 demonstrates the relationships between the IUCN Red List categories.

EXTINCT (EX)
A taxon is Extinct when there is no reasonable doubt that the last individual has died. A taxon is presumed Extinct when exhaustive surveys in known and/or expected habitat, at appropriate times (diurnal, seasonal, annual), throughout its historic range have failed to record an individual. Surveys should be over a time frame appropriate to the taxon's life cycle and life form.

EXTINCT IN THE WILD (EW)
A taxon is Extinct in the Wild when it is known only to survive in cultivation, in captivity or as a naturalized population (or populations) well outside the past range. A taxon is presumed Extinct in the Wild when exhaustive surveys in known and/or expected habitat, at appropriate times (diurnal, seasonal, annual), throughout its historic range have failed to record an individual. Surveys should be over a time frame appropriate to the taxon's life cycle and life form.

CRITICALLY ENDANGERED (CR)
A taxon is Critically Endangered when the best available evidence indicates that it meets any of the criteria A to E for Critically Endangered (Section V), and it is therefore considered to be facing an extremely high risk of extinction in the wild.

ENDANGERED (EN)
A taxon is Endangered when the best available evidence indicates that it meets any of the criteria A to E for Endangered (see Section V), and it is therefore considered to be facing a very high risk of extinction in the wild.

VULNERABLE (VU)
A taxon is Vulnerable when the best available evidence indicates that it meets any of the criteria A to E for Vulnerable (see Section V), and it is therefore considered to be facing a high risk of extinction in the wild.

NEAR THREATENED (NT)
A taxon is Near Threatened when it has been evaluated against the criteria but does not qualify for Critically Endangered, Endangered or Vulnerable now, but is close to qualifying for or is likely to qualify for a threatened category in the near future.

LEAST CONCERN (LC)
A taxon is Least Concern when it has been evaluated against the criteria and does not qualify for Critically Endangered, Endangered, Vulnerable or Near Threatened. Widespread and abundant taxa are included in this category.

DATA DEFICIENT (DD)
A taxon is Data Deficient when there is inadequate information to make a direct, or indirect, assessment of its risk of extinction based on its distribution and/or population status. A taxon in this category may be well studied, and its biology well known, but appropriate data on abundance and/or distribution are lacking. Data Deficient is therefore not a category of threat. Listing of taxa in this category indicates that more information is required and acknowledges the possibility that future research will show that threatened classification is appropriate. It is important to make positive use of whatever data are available. In many cases great care should be exercised in choosing between DD and a threatened status. If the range of a taxon is suspected to be relatively circumscribed, and a considerable period of time has elapsed since the last record of the taxon, threatened status may well be justified**.**

NOT EVALUATED (NE)
A taxon is Not Evaluated when it is has not yet been evaluated against the criteria.

APPENDIX 2:

List of interviewees

i) **Anonymous (2),** Biodiversity Directorate of the South African Department of Environmental Affairs and Tourism, telephone (12) 310 3930.

ii) **Dr. Tony Rebelo,** South African National Biodiversity Institute; telephone (021) 799 8800, Rebelo@sanbi.org.

iii) **Ms. Sharon Hughes,** Permit Manager, Ezemvelo KwaZulu-Natal Wildlife; telephone (033) 845 1999, sharronh@kznwildlife.com.

iv) **Dr. Kas Hamman,** Director: Biodiversity CapeNature; telephone (021) 659 3460 khamman@capenature.co.za.

v) **Dr. Mark Penning,** Executive Director, South African Association for Marine Biological Research; telephone (031) 328 8222, mpenning@saambr.org.za.