

**IMPROVING THE CONSERVATION VALUE OF
INVERTEBRATES THROUGH ECOTOURISM**

COMPONENT A

by

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ABSTRACT

Invertebrates are suffering the greatest species loss in the current biodiversity crisis. These animals perform essential ecosystem functions upon which humanity depends yet they are largely ignored in conservation efforts. The main challenges facing invertebrate conservationists, in terms of raising public awareness, are to change common negative perceptions regarding invertebrates and to apply some form of value to them. Conservation efforts can be improved by raising public awareness of, and appreciation for, invertebrates in the context of ecotourism.

Current levels of inclusion of invertebrates in ecotourism activities were gauged, using qualitative research methods of participant observation and semi-structured interviews. The response of tourists to the concept of the inclusion of both western/scientific and indigenous knowledge regarding invertebrates into current and planned ecotourism activities was determined using the quantitative research method of a structured questionnaire. Canvassing of tourists was done at a popular ecotourism destination (Hluhluwe-Umfolozi Nature Reserve) and 121 questionnaires were completed. In addition to tourists the opinions and attitudes of a range of people working in ecotourism and conservation were examined via semi-structured interviews. The respondents were specifically selected according to the positions they held in the ecotourism and conservation field and a total of eight people in management, ten ecotourism guides and seven ecotourism trainers were interviewed. The findings revealed that there is currently negligible information regarding invertebrates in ecotourism activities. There was an overwhelmingly positive response from tourists, with 95% indicating that they would like to see information regarding invertebrates included in ecotourism activities. Ecotourism service providers, such as tour guides and those in conservation management also indicated a positive attitude toward the concept. There is thus potential to increase levels of information regarding invertebrates in ecotourism and it is recommended that ecotourism include a focus on invertebrates. Recommendations on how to address the lack of invertebrate information in ecotourism are provided and examples of the types of invertebrates to include in specific ecotourism activities are given. Including a focus on invertebrates in ecotourism will serve the multiple purposes of placing value on invertebrates; raising public awareness and hence the conservation status of invertebrates, and finally will increase the scope of ecotourism.

PREFACE

The research described in this mini-dissertation was carried out at the Centre for Environment and Development, University of Natal, Pietermaritzburg, under the supervision of Dr Michelle Hamer.

This mini-dissertation represents the original work of the author and has not otherwise been submitted in any form for any degree or diploma at any university. Where use has been made of the work of others it is duly acknowledged in the text.



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DR MICHELLE HAMER

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PLACING COMPONENTS A AND B IN CONTEXT

This dissertation is made up of two independent components. Component A forms the background to the research, consisting of the literature review and an overview of the research methodology used.

Component B is written according to the criteria of a research paper, and must comply with the format of a relevant journal to which it will be submitted for publication. The journal selected is the *Journal of Ecotourism* and the paper has been written according to the journals stipulated requirements for publication. As Component B must be able to stand alone as a publishable journal, abbreviated sections of the background to invertebrate conservation and ecotourism from Component A have been included in Component B.

1. INTRODUCTION AND PROBLEM STATEMENT

Human survival and the global economy depend inextricably on invertebrate animals, however, human activities are systematically destroying countless species within this, the largest component of world biodiversity (Eldredge 1998). What is of concern and what is to be addressed here, is that the general populace is largely unaware of these facts.

Biodiversity is defined as the variability among living organisms from all sources and the ecological systems of which they are part (Bisby 1995). This includes diversity within species, between species and of ecosystems, and hence diversity can be measured at the level of genes, species or habitats (Bisby 1995). Biodiversity conservation is recognised nationally and internationally to be of crucial importance. Conservation measures are however, largely inadequate, particularly with regard to the specific conservation needs of invertebrates (Hamer & Slotow 2002). Current and numerous threats to invertebrate diversity are largely human induced. While there are a number of factors that need to be addressed in order to improve invertebrate conservation, this research is aimed at examining means of raising public awareness about invertebrates, the crucial ecological functions they perform and their conservation needs. Specifically the research focused on the potential to improve conservation efforts by raising public awareness of, and appreciation for, invertebrates in the context of ecotourism.

Ecotourism is defined as “nature based tourism that involves education and interpretation of the natural environment, improves the welfare of the local people and is managed to be ecologically sustainable” (Braithwaite 2001: 667). Ecotourism is becoming increasingly popular around the world, particularly in developing countries (Boo 1990). Within the international tourism industry, ecotourism is the fastest growing sub-sector, its growth rate being three times that of tourism overall (Burns & Holden 1995). The majority of foreign tourists to South Africa are attracted to its natural resources, with ecotourism specifically being one of the fastest growing businesses in the country (Holt-Biddle 2002).

The research aimed to investigate the potential for including information regarding invertebrates into ecotourism activities. The objectives of the research were to:

- Obtain an overview of the current levels of the inclusion of information regarding invertebrates within certain types of ecotourism activities.
- Determine the response of tourists to the concept of the inclusion of more information regarding invertebrates into current and planned ecotourism activities.
- Examine the opinions and attitudes of selected people, working in the ecotourism field, to the concept of including more information regarding invertebrates into ecotourism activities.
- Provide recommendations on how to address the lack of invertebrate information in ecotourism and give examples of the types of invertebrates that could be featured easily in ecotourism, and the type of information that could be included about them.

2. BIODIVERSITY AND INVERTEBRATE CONSERVATION

2.1 Biodiversity

Biodiversity is defined as the variability among living organisms from all sources and the ecological systems of which they are part; this includes diversity within species, between species and of ecosystems (Bisby 1995). Hence biodiversity can be measured at the level of genes, species or habitats. Diversity consists of two major components: firstly the variety and secondly the relative abundance of species (Magurran 1988). Diversity measures take into account two factors: species richness (number of species) and evenness or equitability (how equally abundant the species are). High evenness, when species are equally abundant, is equated with high diversity (Magurran 1988). There are different measures for different aspects of biodiversity. Species richness refers to the number of species of a particular taxon that occur in the study area while species diversity is a measure of the number of species relative to the abundance of those species and is assessed using diversity indices. Alpha and Gamma diversity are inventory diversities, whereas Beta diversity measures the turnover of species between different areas (Magurran 1988). Alpha diversity is within-area diversity, measured as the number of species occurring within an area of given size. Gamma diversity is also a measure of within-area diversity, however, it usually refers to overall diversity within a large region such as

an island or a country (Magurran 1988). Beta diversity is the degree of change along a transect or a given habitat gradient. It is a proportional measure of between-area diversity and is expressed as a similarity index or as a species turnover rate (Magurran 1988).

Biodiversity inventorying and monitoring are important in that they provide fundamental and essential biological information used by many basic scientific disciplines such as systematics, population biology, behaviour and ecology and many applied sciences such as biotechnology, agriculture, forestry, fisheries, conservation and environmental science. Data from inventorying and monitoring are essential for identifying key issues for policy and management goals. In addition, as is further noted in the section on the relevance of the research to national and international environmental policy and legislation, countries that are signatories to the 1992 Convention on Biological Diversity have an international obligation to inventory their fauna and flora.

While mammals and birds are relatively well known to science, invertebrates are not. It is within this major group of animals that estimates of the possible number of species on earth vary so much. It is, however, not even known how many species of plants, animals and microbes have been described. Estimates range from 1.4 million (Wilson 1992) to 1.82 million (Hammond 1995). Nevertheless, most evolutionary biologists are in agreement that this estimate is less than one tenth of the number of species that actually inhabit the Earth (Wilson 1992). For example Stork (1988), based on tropical forest canopy fogging using knock down insecticides in Borneo, estimated that there might be as many as 80 million arthropods worldwide. Erwin (1988) proposed a figure of 30 million tropical insects using a bootstrap extrapolation from a study of beetles on a single species of tree in Panama. May (1989) estimated 10 million species based on an extrapolation of the relationship of body size relative to number of species in each size class. The latter is probably a likely estimate, but in reality we do not know the answer, not even to the nearest order of magnitude.

2.1.a. Threats to Biodiversity and Need for Conservation

It is estimated that roughly 30 000 species of plants and animals become extinct every year due to human activities (Eldredge 1998). Species are being lost to extinction faster than

taxonomists can describe them. Already humans have caused the extinction of 5-20% of species in many groups and current rates of extinction are estimated to be 100-1000 times greater than pre-human times (Chapin, Zavaleta, Eviner, Naylor, Vitousek, Reynolds, Hooper, Lavorel, Sala, Hobbie, Mack & Diaz 2000). Most of these losses occur in the invertebrate group of animal life (Eldredge 1998). Transformation of land, over-harvesting, pollution, mono-agriculture, human introduced alien species, over-hunting, pesticides and herbicides cause changes in the composition richness and distribution of biodiversity. It is estimated that 40-50% of ice-free land surfaces have been transformed by humans into agricultural and urban systems (Chapin *et al.* 2000).

Paucity of effective conservation measures compounds the fact that existing knowledge is “utterly minuscule compared with everything that remains unknown or not understood” (Suzuki 1999: 27). World-wide there has been recognition that it is crucial, both in terms of the intrinsic value of biodiversity and for anthropocentric reasons, to conserve biodiversity. There are large and serious ecological and economic consequences of the current biodiversity crisis and threats to biodiversity should be minimized to keep options open for future solutions to global environmental problems (Chapin *et al.* 2000).

South Africa has an extremely rich biodiversity. It is ranked as the third most biologically diverse country in the world, after Brazil and Indonesia, and South Africa is also one of the megadiversity countries, which collectively claim within their borders more than two thirds of the global diversity resources (World Conservation Monitoring Centre 1992). While the majority of higher taxa occurring in South Africa are reasonably well known, less than 50% of the hyper-diverse insects have been described (Scholtz & Chown 1995). In terms of the numbers of insects, 43 565 species have been described (Scholtz & Chown 1995). The array of ecosystems and landscapes is rich and spectacular. The resources they provide contribute significantly to the country's economy and are the basis of millions of peoples' livelihoods, yet South Africa's biodiversity is one of the most threatened in the world (Wynberg 2002). As such, South Africa has a particular responsibility to conserving biodiversity.

2.2 Relevance of the Research to National and International Environmental Policy and Conservation Initiatives

National and international policy and legislation, agreements and conventions reflect recognition by governments of the biodiversity crisis, the direct threat to humanity's survival, and the need for intervention and management of human induced destruction of the environment.

Internationally the early 1990's saw a number of new biodiversity issues emerging. The Rio Earth Summit of 1992 formally recognised that environmental issues were not only about conservation but also about social justice, equality, poverty and power relations and that these were global concerns (Wynberg 2002). The Rio Earth Summit formulated Agenda 21, the global plan of action for sustainable development. This provides an international framework within which all environmental policies need to be considered. The 1992 Convention on Biological Diversity was ratified by South Africa in 1995, its themes formed the basis for South Africa's 1997 White Paper on Biodiversity (Wynberg 2002). In addition, South Africa has signed numerous international agreements, treaties and conventions on biodiversity use and conservation. South Africa is party to 20 important international law treaties in the environmental sphere (Kidd 1997). International treaties to which South Africa is a signatory that are of relevance to this study include: *The Convention on Wetlands of International Importance especially as Waterfowl Habitat of 1971 (Ramsar)*; *The Convention on International Trade in Endangered Species of Wild Fauna and Flora of 1973 (CITES)*; *The Convention on the Conservation of Migratory Species of Wild Animals of 1979* and *The Convention on Biological Diversity of 1992* (Kidd 1997).

At a national government level in South Africa issues to do with the environment and tourism are dealt with by the Department of Environmental Affairs and Tourism (DEAT). The current research is relevant in terms of DEAT's overall vision and mission, which is defined as follows: "The vision of the DEAT is to lead environmental management and tourism in the interests of sustainable development and to contribute to the improvement of the quality of life of all South Africans by: promoting the sustainable development, utilisation and protection of

our natural and cultural resources; establishing responsible tourism that ensures environmental sustainability and which contributes to job creation and a better quality of life; harnessing the skills, experience and knowledge of the environment to all South Africans; fostering equitable access to the benefits derived from our natural and cultural resources; empowering the South African public, communities and organisations through participation, environmental education, capacity building, research and information services; working together with all relevant stakeholders and spheres of government in the spirit of good governance; ensuring that all international participation and obligations are undertaken in the context of South Africa's environmental policies and principles." (Department of Environmental Affairs and Tourism 2003 a:1)

At a national level *The Constitution of the Republic of South Africa* underpins numerous national and regional conservation initiatives, a number of which are further examined below. Within the Constitution of specific relevance to this research is the Environmental Right which states under section 24 b) that everyone has the right "to have the environment protected for the benefit of present and future generations, through reasonable legislative and other measures that i) prevent pollution and ecological degradation ii) promote conservation and iii) secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development" (Constitution of the Republic of South Africa No. 108 of 1996:78).

The current investigation into improving biodiversity conservation through increasing awareness of invertebrates is well in keeping with five of the six goals of the *White Paper on the Conservation and Sustainable use of South Africa's Biological Diversity*: "To conserve the diversity of landscapes, ecosystems, habitats, communities, populations, species and genes in South Africa; to use biological resources sustainably and minimise adverse impacts on biological diversity; to expand the human capacity to conserve biodiversity, to manage its use, and to address factors threatening it; to create conditions and incentives that support the conservation and sustainable use of biodiversity and to promote the conservation and sustainable use of biodiversity at the international level." (Department of Environmental Affairs and Tourism 1997 a: 4-5). Further relevant policy is the *White Paper on Environmental*

Management Policy for South Africa. Specifically goal two which deals with sustainable resource use and management is of relevance and the supporting objectives of which are: “To promote the conservation of biodiversity through: conserving the diversity of landscapes, ecosystems, habitats, biological communities, populations, species and genes throughout South Africa; expanding human capacity to conserve biodiversity, to manage its use and to address factors threatening it”. The current research investigates factors affecting biodiversity and explores means of expanding the human capacity to conserve biodiversity. Also of relevance is goal five, which deals with empowerment and environmental education. The supporting objectives are to: “Promote the education and empowerment of South Africa’s people; increase their awareness of, and concern for, environmental issues, and assist in developing the knowledge, skills, values and commitment necessary to achieve sustainable development”. (Department of Environmental Affairs and Tourism 1997 b: 11-12). The *National Environmental Management Act (NEMA) No. 107 of 1998* also relates to the research, the preamble of the Act indicating the need to promote conservation (NEMA 1998).

Currently there are a number of new bills and action plans being developed. It is crucial for effective biodiversity conservation that invertebrate conservation needs are included in current and future conservation planning. The *National Environmental Management Biodiversity Bill* has recently been submitted to Parliament. Some matters of concern have been raised regarding the Bill, three of which are noted here as they relate to invertebrate conservation: the Bill makes no provision for the rehabilitation of damaged components of biodiversity; bioprospecting is not adequately dealt with particularly with regard to the issue of bioprospecting for the purposes of developing commercial products from South Africa’s indigenous biodiversity and lastly the Bill does not deal with risk assessments pertaining to permits (KwaZulu-Natal Department of Agricultural and Environmental Affairs & Ezemvelo KwaZulu-Natal Wildlife 2003). Another relevant bill that has recently been submitted to parliament is the *National Environmental Management Protected Areas Bill*. The purpose of the Bill is to provide for the continued existence of South African National Parks and the declaration and management of protected areas in South Africa. It has received some criticism. Of concern are issues that relate to habitat protection: there is no system for identifying conservation priority areas; there is no clear provision made for preventing habitat loss in conservation priority areas and the Bill does

not promote the management of entire ecosystems (Botha 2003). The need for habitat protection is of specific concern for invertebrate conservation, as habitat destruction is one of the main threats to invertebrate biodiversity.

As a contracting party to the Convention on Biodiversity (CBD), South Africa is required to develop national strategies for the conservation and sustainable use of biodiversity. As noted earlier countries that are signatories to the CBD also have an international obligation to inventory their fauna and flora. The *National Biodiversity Strategy and Action Plan* (NBSAP) is currently being developed by national government to address this requirement. As with the above mentioned new Bills, it is crucial for overall effective biodiversity conservation that the NBSAP incorporates a focus on invertebrates and their specific conservation needs. Awareness raising is one of the key cross-cutting themes of the proposed NBSAP. Lastly, DEAT's *Poverty Relief Programme* relates to the aspects of this research that highlight the potential for job creation in the ecotourism sector. The programme was started in the 1999/2000 financial year, with the goal to manage and administer poverty-relief proposals and spin-off projects in the tourism and environmental sectors (Department of Environmental Affairs and Tourism 2003 b).

Relevant national conservation programmes and initiatives include the *Integrated National Protected Areas Programme*. The scope of the current research falls directly within the aims of this programme which includes the strengthening of public outreach and education and the promoting and managing of nature-based tourism as a conservation compatible tool (Department of Environmental Affairs and Tourism 1997 c). The *Bioregional Approach to Protected Areas in South Africa* also relates as it emphasises the economic importance of South Africa's biodiversity and the need to explore the economic potential of protected areas in terms of tourism (Department of Environmental Affairs and Tourism 2001/2002). Highlighting the presence of certain endemic, threatened, charismatic or iconic species of invertebrates in protected areas and bringing them to the attention of the public and conservation officials, will contribute to maximizing the economic potential of protected areas.

The research also relates to various regional conservation planning projects and those dealing with prioritisation of conservation areas, such as: the *Subtropical Thicket Ecosystem Planning*

Project (STEP) of the Terrestrial Ecology Research Unit of the University of Port Elizabeth; the *C-Plan For Land Use Planning* of Ezemvelo KwaZulu-Natal Wildlife; the *Cape Action Plan for the Environment (CAPE)* as co-ordinated via the Bioregional Planning and Implementation Programme of the National Botanical Institute of South Africa; the *BioBase Projects* of Mpumalanga and Northern Provinces; the *GAP Analysis Project* of Gauteng Nature Conservation and the *Succulent Karoo Ecosystem Planning Process (SKEP)* co-ordinated through the Bioregional Planning and Implementation Programme of the National Botanical Institute of South Africa. Invertebrates are currently marginalized in these projects. This research is also aimed at raising awareness of the need to include invertebrate awareness amongst conservation practitioners and planners. It is vital that the conservation needs of invertebrates are included in conservation planning projects if these projects are to be effective in overall biodiversity conservation.

Various training programmes for ecotourism guides (government and non-government organizations (NGO) driven) are also relevant to the research and there are numerous new and on-going training programmes for community guides covering various activities, such as cultural tourism, nature tourism and adventure tourism (for example the training programmes of BirdLife South Africa and Entabeni Environmental Training School). There is scope to work with these programmes to maximize the opportunities for the inclusion of information on invertebrate biodiversity into current and future ecotourism activities.

2.3 Invertebrates and Conservation

The majority of the organisms in the kingdom Animalia are invertebrates, which comprise all the major phyla with the exception of the vertebrates. Invertebrates form an estimated 73.5% of life on earth (Hammond 1995). The current research focuses on the Phylum Arthropoda, which includes insects, crabs, spiders, scorpions and many less familiar groups. Insects and other land dwelling arthropods perform irreplaceable ecological functions upon which humans and all other land dwelling animals depend: pollination; waste disposal, consumption of pests; water purification; decomposition of plant matter, and in addition they are an essential part of almost all food chains (Eldredge 1998). Insects and other land dwelling arthropods are so important to

life that if all were removed humanity would probably only last a few months (Wilson 1992). Invertebrates are considered the most significant component of biodiversity (Horwitz, Recher & Majer 1999).

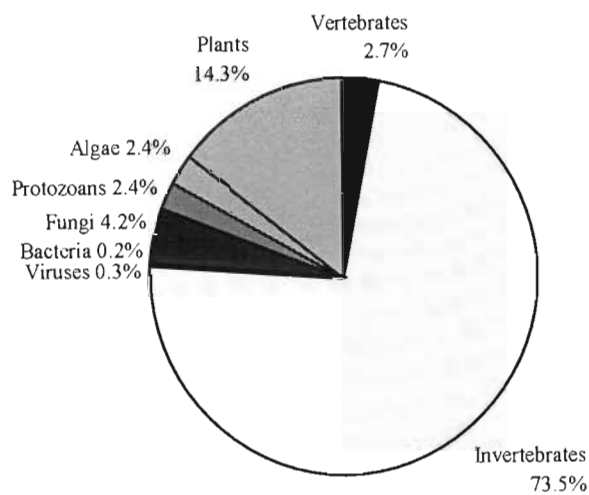


Figure 1. The 1.7 million described species of animals and plants divided into the major groups (after Hammond 1995).

Despite the fact that invertebrates are the most successful animals of all time and have been on earth for at least 300 million years, they are currently under greater threat than before. In addition to natural extinctions, human actions are responsible for the extinction of many species and threaten many more.

2.3.a. Threats to Invertebrate Diversity

It is generally agreed that invertebrate conservation efforts are inadequate, both in South Africa and world-wide (Samways 1994; O'Toole 1995; Gess 1996 and Hamer & Slotow 2002). It is beginning to be realised that insect diversity is inextricably linked to a healthy environment with proper ecological functioning (Collins 1991). Current threats to arthropod diversity are largely

human-induced. McGeoch (2002) notes the following threats: rapid rates of land transformation due to agricultural practices; soil erosion; overgrazing; deforestation; urbanization; expansion of exotic forestry plantations; changes to water regimes; invasive exotic flora and fauna; and the effects of climate change. To these should be added: the exclusion of invertebrates from conservation activities (Hamer & Slotow 2002); human perceptions of invertebrates (O'Toole 1995); the effects of pesticides and insecticides; lack of taxonomic knowledge of invertebrates (Evans, Bellamy, Watson, Galiano, & Wynne 1996) and lack of invertebrate taxonomists (Evans *et al.* 1996). A number of these threats to invertebrate conservation are further examined.

Agriculture has a significant effect on invertebrate populations. Gess and Gess (1993) examined the effects of different forms of agricultural land-use in the semi-arid areas of southern Africa on the diversity of aculeate wasp and bee fauna. They found that there were a number of adverse effects caused by: excessive stocking rates; heavy selective grazing or browsing; excessive trampling; water pollution by stock; large scale impoundment of water; canalising of water; extensive replacement of natural vegetation by cultivated pastures; extensive replacement of natural vegetation by crop plants; use of insecticides for crop protection; the spread of invasive exotic plant species; bush cutting; and intensive removal of dry wood. They concluded that virtually the entire semi-arid Karoo has been transformed or disturbed to some extent. In addition, the number of areas suited to supporting the pollen bee and wasp communities is on the decline. These insects are habitat specialists not adaptable to change. Continued and increased agricultural exploitation could result in a total loss of endemic species in this region. This is of concern in terms of ecosystem functioning and conservation because of the role bees and aculeate wasps play in these systems. As pollinators and predators their interaction with plants, spiders and other insects is crucial. Disturbances in abundance and species representation of aculeate wasps and bees will have a cascade effect which will inevitably affect the whole ecological system of the Karoo (Gess & Gess 1993).

Mono-agriculture has resulted in many invertebrate related problems. A monoculture is an inherently unbalanced ecosystem where typically certain types of insects can easily survive (and can become pests) while many others (including predators required to regulate the 'pests') are

eradicated (Evans *et al.* 1996). An example of this is the success of the boll weevil – responsible for the destruction of cotton crops in the USA (Evans *et al.* 1996). The use of insecticides to control insect pests has resulted in many insects becoming resistant to insecticides. However, it is the far-reaching effects of insecticides in the ecosystem, which is of greater concern. Insecticides harm other invertebrates, plants, birds and mammals (including humans). As far back as 1963 Carson's *Silent Spring* alerted the world to the overuse of insecticides. The current recommended approach to pest control is a combination of strategies such as chemical, mechanical and biological control, i.e. integrated pest management (Evans *et al.* 1996).

2.3.b. Inadequacy of Current Conservation Measures for Invertebrates in South Africa

Conservation in South African has been at best haphazard and to date it has centred largely on the needs of large mammals (Gess 1996). As such, habitat preservation has focused on the savannas – which are home to the charismatic megafauna (Evans *et al.* 1996). Hamer and Slotow (2002) stress that a major threat to invertebrate diversity, the major component of biodiversity, is the current exclusion of invertebrates from conservation management and planning strategies. They further conclude that this will lead to the extinction of a large proportion of global biodiversity, which will in turn lead to the collapse of systems both inside and outside of protected areas. Not only is the current choice of areas to be conserved based on the needs of megafauna, but so are most conservation management measures, which focus largely on mammals, specifically ungulates. Certain methods, such as burning programmes, regularly used in the management of protected areas are potentially harmful to invertebrates (Hamer & Slotow 2002).

The inadequacy of conservation measures for invertebrates is not only a southern African phenomenon. In Victoria, Australia, the wildlife protection legislation has not only failed to aid invertebrate conservation but has even been detrimental and in many cases misleading (Butcher, Clunie & Yen 1994). Essential to improving invertebrate conservation is the recognition of invertebrates as wildlife, both by conservationists and the general public, and the associated

raising of public awareness of invertebrates and their conservation needs (Butcher, Clunie & Yen 1994).

The main contributing factors to the exclusion of invertebrates are a lack of adequate data and expertise as well as the perceived difficulties of dealing with such an abundant and diverse fauna (Hamer & Slotow 2002). There is a popular perception that if the higher taxa (mammals) are protected, invertebrates will be automatically protected. The protection of vegetation types is also assumed to be an adequate surrogate for the conservation of invertebrate diversity (Hamer & Slotow 2002). However, this is not always the case and studies have shown that there is little congruence between different taxa (Van Jaarsveld, Freitag, Chown, Muller, Koch, Hull, Bellamy, Kruger, Endrody-Younga, Mansell, Scholtz 1998). This means that areas designated for the protection of plants will not necessarily overlap with important areas for invertebrate protection (Van Jaarsveld *et al.* 1998). Studies of the current methods of conservation planning in New South Wales, Australia, (which are based on forest type and growth phases) were shown to be poor surrogates for terrestrial invertebrate distribution patterns and assemblages (York 1999). Many invertebrate taxa are more vulnerable to threats than vertebrates as they have smaller distributional ranges (Ponder 1999).

Current biodiversity conservation initiatives in South Africa generally exclude invertebrates (Hamer & Slotow 2002), as has already been examined in the section on relevant conservation programmes and initiatives. Apart from the need to include invertebrates in the current and future planned conservation initiatives, other factors that need to be addressed in invertebrate conservation include:

- Funding for research into invertebrates and their needs (McGeoch 2002).
- The need for more baseline data regarding species - their existence, locations and distributions, including seasonal variations (Davis 2002).
- Mitigating measures for habitat loss and fragmentation (Samways 1994).
- Increased research into the effects of fire on invertebrate populations, as the extent to which invertebrate populations are affected by fire is unclear (Parr, Bond &

- Robertson 2002). This needs to be undertaken with particular reference to the burning schemes of the various conservation organizations.
- Control of invasive alien plants which out-compete indigenous flora and affect invertebrate populations (Lu & Samways 2002).
 - Means of raising awareness of the public, educators and conservationists of invertebrates, their functions and conservation needs (Samways 1994; Berenbaum 1995; O'Toole 1995; Evans *et al.* 1996).

2.3.c. Developments Regarding Conservation for Invertebrates

In ancient times insects were revered (Berenbaum 1995). However, as agricultural practices intensified (particularly with the emergence of monoculture) insects were increasingly viewed as pests to be eradicated (Samways 1994). While this is still the dominant view of the mainstream general public, attitudes are beginning to change. World wide there is an increasing awareness (both amongst conservationists and increasingly among the general public) of the current rates of biodiversity loss and the need for biodiversity conservation, as well as an awareness of the environment as a whole (Samways 1994). As such, invertebrates are being incorporated into holistic conservation thinking. There is also an increased understanding of the beneficial and essential roles invertebrates play in ecosystems and in the human economy. Their importance is becoming recognised by the major conservation bodies. The IUCN (World Conservation Union, formerly the International Union of Conservation of Nature and Natural Resources) has an increasing number of invertebrate conservation activities (Samways 1994). Invertebrate conservation is a fairly recent addition to the IUCN's activities with the formation of a Lepidoptera Specialist Group in the late 1970's as the initial impetus and this was followed closely by the Invertebrate Red Data Book Project (New 1994). The Species Survival Commission now has several specialist groups and other groups are planned (Samways 1994). Other large conservation organizations such as the World Wide Fund for Nature (WWF); The World Bank, the World Resources Institute and Conservation International are increasingly including invertebrate conservation into the scope of their work (Samways 1994). However this process is slow, whilst biodiversity (chiefly invertebrate) loss is rapid. There is thus an urgent

need to identify a wider range of means of improving invertebrate biodiversity conservation.

There has been an increase in insect conservation research within South Africa in the last 20 years (McGeoch 2002). The following initiatives are aimed at promoting the cause for, and improving the status of, invertebrate conservation in South Africa: the identification of bioindicators; ecological landscaping; the conservation of invertebrates in urban environments; mapping of species' distributions, including invertebrates, for the identification of priority areas for conservation; increasing the number of articles on invertebrate conservation in journals and increasing the number of presentations on invertebrate conservation at congresses (McGeoch 2002). Formal insect conservation in South Africa dates back to 1976 with the inclusion of 16 butterfly species on the protected animal list (McGeoch 2002). Conservation efforts of the Lepidopterists' Society of South Africa have been productive: the initiation of numerous butterfly conservation projects; the proclamation of the Ruimsig Entomological Reserve in 1985; the nomination for Natural Heritage Site status of sites in which vulnerable species are found, and the establishment of management principles for vulnerable species (McGeoch 2002).

There is a growing awareness, although at this stage largely only amongst specialists, for conservation efforts to include a focus on invertebrates (McGeoch 2002). However, the focus of much invertebrate research is largely towards pest control (Berenbaum 1995; McGeoch 2002). A paradigm shift is essential to promote the future conservation of invertebrates. Education and the raising of public awareness of the importance of invertebrates in ecosystems, and the need for their conservation, must form an integral part of all future conservation efforts (Samways 1994).

2.4 Raising Public Awareness Regarding Invertebrates

In a study of public interest in invertebrates, Czechura (1994) came to the following conclusions:

- Not all taxa will inspire interest. Interest in invertebrates is usually highly specific with taxa that are perceived to be dangerous or spectacular in appearance attracting

the most attention. Means must be sought to use existing interest in certain groups to popularise other taxa.

- Traditionally amateur naturalists have been attracted to certain groups such as butterflies, cicadas, dragonflies, spiders and beetles. The enthusiasm of amateur naturalists should be encouraged and means sought to spread their interest to a wider percentage of the public.
- There is an overall lack of information available regarding invertebrates. There needs to be a wide and intense commitment to the provision and management of information regarding invertebrates so that popular interest can be encouraged.
- Negative perceptions regarding invertebrates abound. These need to be counteracted through education campaigns that focus on the benefits humanity receives from the ecosystem functions performed by invertebrates.
- There is a need for increased taxonomic research into invertebrates. Proportionally the amount of research dedicated to vertebrates is greater than that dedicated to invertebrates yet invertebrates comprise 95% of the animal kingdom.
- There is a lack of common names for the majority of invertebrates.

Aspects of these findings are examined in more detail below.

Many people in the developed first-world view invertebrates, particularly insects, with disgust, perceiving them to be dangerous, poisonous or carriers of disease (O'Toole 1995). There is apathy towards invertebrates in general unless they are responsible for large-scale destruction, which generates negative responses (Gess & Gess 1993). This is most marked in the agricultural sector. A third to a half of all food grown for human consumption is lost to insect damage, usually by plant feeding beetles, which are one of humanity's greatest competitors for food (Evans *et al.* 1996). It is largely ecologically unsound agricultural practices, such as monoculture, that are responsible for imbalances that result in large scale and persistent insect pest problems (Evans *et al.* 1996).

The media devotes more time to advertising campaigns to promote the eradication of invertebrate 'pests' than to highlighting their functionality and essential roles in the natural

environment and human economy (Smith 1999). The role of the media in reflecting and moulding public opinion is of significance to invertebrate conservation efforts. A large proportion of the general public has a fear of insects, known as entomophobia, and despite their essential environmental role, invertebrates are largely viewed with fear, aversion and antipathy (Evans *et al.* 1996). In addition invertebrates lack the widespread emotional appeal of the more charismatic vertebrates. For example the indiscriminate destruction of large numbers of insects during mosquito control programmes raises little response and is largely perceived to be benign or even beneficial (Czechura 1994). In contrast, vertebrates receive far more public sympathy. For example, the shooting of flocks of migrating birds over Malta generated much international protest (French 1992 cited in Czechura 1994).

A survey conducted to ascertain the extent and possible reasons for the image problem of invertebrates among conservationists, scientists, farmers and lay people found that generally farmers and the public expressed fear, aversion and dislike for many groups of invertebrates; butterflies, however, were considered to have aesthetic appeal (Kellert 1993). In addition to the negative attitudes is that of the tyranny of numbers. There is a perception that merely because there appear to be so many invertebrates they cannot possibly be in need of conservation (Horwitz, Recher & Majer 1999).

Although invertebrates are one of the most numerous forms of life on earth most people still relate to them more as they would an alien invader (Evans *et al.* 1996). The lack of public awareness and appreciation for invertebrates and their essential environmental and economic roles and conservation needs can be attributed to the fact that invertebrates “do not inspire the same feelings of sympathy that are elicited by the charismatic megafauna to which we seem to be inherently drawn” (Evans *et al.* 1996: 173). It is essential to educate the public regarding invertebrates if this situation is to be reversed and invertebrates are to be included in conservation plans (Samways 1994).

2.4.a The Need to Popularise Invertebrates

The need to raise public awareness of invertebrates and their conservation needs has been recognized by numerous researchers (Jelinek, Britton & New 1994; Samways 1994; Czechura

1994; Hamer & Slotow 2002). Public support is an essential part of successful wildlife conservation and many conservation success stories can be attributed to public sympathy for, and interest in, the animals that are the focus of such programmes (Czechura 1994). For example as in the case of the Ruimsig Nature Reserve which was specifically established to protect the threatened Roodepoort Copper butterfly (*Aloeides dentatis dentatis*) (Henning & Henning 1989). The need for invertebrate conservation efforts to include education and raising public awareness regarding invertebrates is starting to be recognised (Butcher, Clunie & Yen 1994). The process of popularising invertebrates needs to include a focus on the media, the public, educational institutions, the government and conservation organisations and there also needs to be a drive to ensure that invertebrate studies attain a higher profile in scientific and educational institutions (Ponder & Lunney 1999).

An example of an attempt to raise awareness of invertebrates is the Dragonfly Awareness Trail in Pietermaritzburg Botanical Gardens (Suh & Samways 2001). The social research prior to the implementation of the trail indicated that children showed the most interest in this concept, which is significant in that children are important targets to reach, being potential future conservationists (Samways 2002).

The proliferation of butterfly houses around the world (including South Africa) represents an increasing public interest in butterflies. There is also an increasing interest in gardening to attract butterflies. However, Samways (2002) cautions that raised awareness does not necessarily equate with meaningful conservation. Most threatened species of butterfly for example have special habitat requirements which are not met by gardening to attract butterflies and in addition gardening for butterflies is also frequently associated with planting known alien invasive species such as *Lantana camara* which may be harmful to the environment (Samways 2002).

An effective way of increasing public awareness of invertebrates is to give them vernacular names (Czechura 1994; Samways 2002). Butterflies and moths have a long history of common names and this phenomenon is currently spreading to other insect groups such as dragonflies, as reflected in the recently published *A Fieldguide to the Dragonflies of South Africa* (Tarboton & Tarboton 2002). The bird field guide format of facing pages of colour illustrations and text is

used and, as the authors point out, the guide attempts to make identification of South Africa's dragonflies easily accessible to anyone with a pair of binoculars. There is currently a growing interest in dragonflies in South Africa, while in other parts of the world, such as Germany, dragonfly watching has long been a popular outdoor activity. In Japan, there are nature reserves that have been created specifically to protect dragonflies, which play an important place in Japanese culture and folklore (Tarboton & Tarboton 2002). In the recently published *Field Guide to Insects of South Africa* (Picker, Griffiths & Weaving 2002) a broad range of invertebrates are given common names which indicates that public interest in butterflies and dragonflies is spreading to other taxa.

Increased interest in invertebrates by the general public is borne out by the numerous new field guides that have been published in recent years. In South Africa examples of recent publications include: *Spiders and Scorpions of Southern Africa* (Hawthorne 1998); *Butterflies and Moths of Southern Africa* (van Noort 1999); *Field Guide to Insects of the Kruger National Park* (Braack 2000); *Southern African Insects and Their World* (Weaving 2000); *The Emperor Moths of KwaZulu-Natal* (Cooper & Cooper 2002); *Field Guide to Insects of South Africa* (Picker, Griffiths & Weaving 2002); *A Fieldguide to the Dragonflies of South Africa* (Tarboton & Tarboton 2002) and *Scorpions of Southern Africa* (Leeming 2003). Internationally, the BBC television series and the accompanying book *Alien Empire* (O'Toole 1995) have proved popular around the world. The programme and book focus on the world of insects, what they are, how they live and the ecosystem functions they perform. They also challenge some of the common misconceptions regarding insects, stressing that very few of them are actually real pests and disseminators of disease. As O'Toole (1995: 9) states "we need to expand our conservation ethics to embrace those unsung toilers on whom we depend, the insects".

2.5 Conclusion

This chapter has dealt with a range of issues regarding biodiversity and invertebrates and the need for improved biodiversity conservation. Threats to biodiversity are largely human induced and it is estimated that roughly 30 000 species of plants and animals become extinct every year due to human activities (Eldredge 1998). The need for intervention and management of the

human induced destruction of the natural environment has been recognised at government level both nationally and internationally. The research has been placed in the context of relevant national and international policies and legislation as well as regional conservation initiatives.

With specific reference to invertebrates, it is estimated that they form 73.5% of life on earth (Hammond 1995). They perform essential and irreplaceable ecological functions upon which humans and all other land dwelling animals depend. Despite their importance, invertebrates are largely marginalized in general conservation efforts, which tend to focus exclusively on the needs of large mammals (Hamer & Slotow 2002). There are various factors that need to be addressed in order to improve invertebrate conservation. Numerous researchers have highlighted the need to raise public awareness of invertebrates and their conservation needs (Jelinek, Britton & New 1994; Samways 1994; Czechura 1994; Hamer and Slotow 2002). While there is an increasing interest in invertebrates, the public generally still regard invertebrates with apathy and frequently even antipathy (Gess & Gess 1993). There is a need to challenge current misconceptions about invertebrates and this research has focused on the need to raise awareness of the public, educators and conservationists, with regards to invertebrates and their functions and conservation needs.

3. ECOTOURISM

3.1 Background and Definitions

Ecotourism, or nature-based tourism, is becoming increasingly popular around the world, particularly in developing countries (Boo 1990). Within the international tourism industry, ecotourism is the fastest growing sub-sector (Burns & Holden 1995). In South Africa, the majority of foreign tourists come here to see natural resources, with ecotourism specifically being one of the fastest growing businesses in the country (Holt-Biddle 2002). Since the early 1990's, with the political changes and the decline of the Rand, there has been a sustained increase in the number of foreign visitors to South Africa (Ebersohn 1995). The growth in tourism to South Africa is predicted to continue, specifically so in the case of ecotourism (Holt-Biddle 2002), which is significant when looking at the feasibility of recommendations related to

ecotourism activities. Many different activities, from whale watching to game drives, can be classified as ecotourism activities. This study focuses on activities such as game walks and drives in and around inland protected areas.

While the World Tourism Organisation (WTO) (2003) notes that there is no generally accepted definition for the term ecotourism, the definition used for the purposes of this research is that given by Braithwaite (2001: 667): “nature based tourism that involves education and interpretation of the natural environment, improves the welfare of local people and is managed to be ecologically sustainable”. Regarding the relationship between biodiversity and tourism he continues: “Tourism's role in biodiversity might be to both build public support of biodiversity and help fund its conservation” (Braithwaite 2001: 667). The definition stresses education as an important aspect of ecotourism. In the WTO’s summary of the general characteristics of ecotourism, the importance of education and interpretation are also highlighted (WTO 2003). This aspect of ecotourism is of particular relevance to this research with respect to the recommendations regarding the inclusion of invertebrates in ecotourism activities. The WTO (2003) notes that another important characteristic of ecotourism is that it minimises negative impacts on the natural and socio-cultural environment. A further characteristic of ecotourism given by the WTO is that it supports the protection of natural areas. Burns and Holden (1995) support this positive stance toward ecotourism, stating that it embraces the principles of sustainability, recognizing the need for the environment and ecosystems to be conserved for future generations. Not all authors are as positive about the effects of ecotourism, however, as is further examined below.

3.2 Debate about Ecotourism

There is much debate about the perceived positive and negative aspects of ecotourism. Some see ecotourism as being a commercialisation of the environment (Ebersohn 1995). The debate about the desirability of ecotourism is an entire field of study in its own right and it is thus beyond the scope of this research. An overview is given of the more commonly noted positive and negative aspects of ecotourism. This is followed by a brief examination of various means of mitigating and addressing the concerns about potential negative aspects of ecotourism.

Those in favour of ecotourism argue that it combines conservation and human needs, particularly the needs of local communities, and can be beneficial to an area by providing employment and prosperity (Nuttall 1997). Local communities can benefit from ecotourism through being empowered by having access to information, and by being exposed to opportunities for learning and capacity building, particularly in terms of developing tourism related skills (di Castri & Balaji 2002). Tourism also plays an important role in strategies for environmental conservation. This can be for whole areas of a natural environment or it can focus on specific species that tourists are interested in. For example the threatened sea turtles in Tortuguero, Costa Rica, have increased in number since the locals have started seeing them as tourist attractions and not as food (Padget & Begley 1996). On a larger scale one of the less tangible but positive effects of tourism is that the tourist vision of the landscape and its components is based on a qualitative, aesthetic appreciation (Strang 1996). An example of this was highlighted in a study of the effects of tourism in Far North Queensland, Australia. The positive tourist vision of the landscape had a positive environmental impact in that it caused both Aboriginals and white stock workers to re-evaluate their surroundings and to become more open to ideas regarding protecting the local ecology. In terms of a wider positive impact, the tourist vision has helped to promote a concern for the environment throughout Australia, which has in turn created support for protective measures and new legislation (Strang 1996). The consequences of ecotourism are thus positive in that it enables the preservation of both local cultural and natural heritage for tourists and the associated conservation planning that is needed for this to occur (Lea 1988).

Concerns have been raised about ecotourism, particularly regarding its relationship to sustainability. Possibly one of the most common criticisms of ecotourism is that it destroys the very resources upon which it depends: local culture and the environment (Nuttall 1997). Employment opportunities for the local population are frequently cited as being a major benefit of ecotourism, however, this notion has been criticised. Mowforth & Munt (1998) note that the power imbalance between the tourism industry and its dependent destinations allows for exploitation of the local population. Locals do not always receive significant benefit and when they do get work it is largely low-level jobs (Padget & Begley 1996). Another concern raised

about the negative effects of tourism on the local population is related to the volatility of the tourism industry. Lea (1988) classifies tourism (along with banking and insurance) as an invisible export industry. He notes that the critical interplay among social, political, economic, and environmental elements is more marked than in any other international trading activity. This means that tourism can be a volatile industry with the numbers of visitors to an area fluctuating rapidly, which in turn has a destabilizing effect on the local community (Lea 1988).

Further concerns relate to the impact of tourism on the environment and this contentious issue has been the focus of numerous studies. Obvious negative environmental impacts come in the form of the infrastructure needed to accommodate tourists (for example buildings, roads, electricity and airports) and pollution, both from the generation of waste and pollution associated with increased infrastructure (Lea 1988). A related concern is that visitor overcrowding and environmental degradation may occur if parks are developed and promoted beyond their capacities, as is the case with Hwange National Park, Zimbabwe (Potts, Goodwin & Walpole 1996). Casagrandi and Rinaldi (2002) argue that it is difficult to formulate policies that guarantee that tourism can be maintained for a long time without severely impacting on the environment. This is of particular concern in fragile environments, which take a long time to recover from disturbances resulting from the introduction of tourism (Price 1996).

A more fundamental concern raised by McLaren (1998) is that of 'greenwashing' which refers to the strategy by tourism venture owners and operators to present their organisations as being environmentally friendly in order to capture the ecotourism market, which is frequently very lucrative. It is of concern that many tourism businesses claiming to be environmentally friendly in operation are not, but have merely hi-jacked the terms ecotourism and sustainability and the associated 'feel good' aspects that go with them.

Lea (1988) and Nuttall (1997) counteract the criticisms of ecotourism noting that not all anthropologists and sociologists researching tourism have concluded that it has a negative effect on the local community and environment. In addition there are numerous environmental management strategies that can be implemented in a proactive manner to mitigate any negative

environmental effects of tourism (Tribe, Font, Griffiths, Vickery & Yale 2000). The following means of mitigating potential negative effects of ecotourism revolve around the need for co-operation and partnerships between the tourism industry; national and local authorities; investors; NGOs and the host communities (Goodwin *et al.* 1998). It is essential that close links are established between parks and local communities (Potts, Goodwin & Walpole 1996). The community must be a direct stakeholder in ecotourism ventures (Ebersohn 1995) and there must be local control of ventures (Lea 1988). This will address the criticism by Padget and Begley (1996) that local people do not get much more than low-level jobs out of tourism developments. The need for continuing consultation between all interested parties has been highlighted by (Ebersohn 1995) and this would be a means of ensuring that the interests of the community are addressed at all stages of the development of an ecotourism venture. Lea (1988) has stressed the importance of the community participating in all stages of tourism ventures and further notes the need for training and empowerment programmes for local communities.

In response to concerns about potential negative environmental impacts, numerous authors have noted the need for careful environmental management of ecotourism activities to ensure a minimum of negative environmental impacts (Burns & Holden 1995; Goeldner, Ritchie & McIntosh 2000). While it is acknowledged that there will be some unavoidable negative environmental impacts from tourism it is argued that this is preferable to greater environmental damage that occurs with alternative land uses such as agriculture, industry, infrastructure or mining.

In spite of the complexities of ecotourism, it is one of the few areas where there is a strong and clear link between the conservation of natural areas and economic development (Wearing & Neil 1999). While conservation of biodiversity is essential it cannot be done in isolation from human needs. It is generally accepted that while conservation has become a global goal, it cannot be pursued without considering the development needs of the human population (Davis 2002). Tourism has emerged in many countries, particularly developing countries, as a means of providing the financial resources needed to conserve biodiversity, as well as increasing employment and providing foreign exchange (Goodwin, Kent, Parker, & Walpole 1998).

3.3 The South African Situation

The need for poverty alleviation and job creation, especially in the rural areas of South Africa, hardly needs to be reiterated, neither does the urgent need for the conservation of South Africa's rich and highly threatened biodiversity. In making recommendations for improved biodiversity conservation it is essential to take cognisance of the people-centred approach of South Africa's policy and legislation.

Biodiversity conservation is increasingly under pressure to make itself relevant in the light of the current urgent social and economic needs of the people of South Africa. For South Africa with its apartheid history, the environment is a deeply political issue. This is possibly even more so than is the case in other African countries. The importance of conservation is sometimes questioned and the environment as an issue is often separated out from general development discourse and praxis, with the environment being seen as a secondary issue that is generally used to prevent development (Albertyn 2001 *pers. comm.*). To many, the big five of conservation need to be replaced by the big five of human needs: sanitation, water, health, employment and housing (Cock 1996). The population in South Africa is estimated at 43.05 million with a population growth rate of 2% per annum; unemployment is estimated at 23.3%; there is high disparity between rich and poor and HIV/AIDS related deaths are conservatively estimated to reach 0.5 million per annum in the next 10 years (McGeoch 2002). These factors, as well as the likely impacts of climate change, will affect conservation efforts in South Africa (McGeoch 2002).

Conservation increasingly faces financial challenges and there are many competing demands for limited finance. State funds to conservation agencies, museums and universities have decreased (McGeoch 2002). With this in mind it is essential to find innovative and cost effective means of enabling conservation efforts within socio-economic and political constraints while also educating and raising awareness of the urgent needs for conservation of biodiversity.

3.4 Community Based Natural Resource Management

Many developing countries have realised the need to alter, both conceptually and practically,

overall economic perceptions of their biodiversity and the need to conserve it. Sustainable use of natural resources is seen as a means of doing this. “The overview of nature as a resource has evolved over several decades as the paradigm most likely to achieve the supreme goal of maintaining a developing country’s biodiversity while enjoying the support of its electorate” (Environmental Consultants (Pvt) Ltd, 1992: 14). The ‘nature as a resource’ approach attempts to resolve the conflict between aesthetic and ecological concerns on the one hand and social and economic on the other.

The concept of Community Based Natural Resource Management (CBNRM) and Community Wildlife Management (CWM) is gaining in popularity and has been progressing rapidly since 1992 when the Rio Summit stressed the importance of sustainable development initiatives. CBNRM is a “human-centred Africanist approach which prioritises human well being and the right for humans to manage their resources” (Beinart 2002: 225). CBNRM is about recognising the needs of communities and ensuring that they benefit from living near protected areas (Ashley & Roe 1998). Literally this means giving members of local communities harvesting rights, ensuring that they are involved in ecotourism projects and that they benefit from community levies (Chadwick 1992). In terms of ecotourism, potentially the most sustainable, lowest impact use of a natural resource, the economic input of tourists visiting protected areas needs to reach the local population if that population is to have some vested interest in the continued protection of the natural resource (Ashley & Roe 1998).

CBNRM is currently being practised in various parts of southern and eastern Africa, for example in Kenya and Tanzania, around the Masai Mara Reserve (Chadwick 1992); in Zambia, for example around Luangwa Valley; in Zimbabwe (Ashley & Roe 1998) and in Namibia, as practised by Integrated Rural Development and Nature Conservation (IRDNC) (Murphy 2001 *pers. comm.*) In South Africa, conservation agencies such as Ezemvelo KwaZulu-Natal Wildlife have recognised the need to incorporate neighbouring communities into conservation planning and have a variety of projects and policies to expand community conservation partnerships (Hartley 2001 *pers. comm.*). Important and relevant to this research is the encouragement and facilitation of local communities’ involvement in ecotourism activities.

An example of a CBNRM initiative is Zimbabwe’s Communal Area’s Management Plan for

Indigenous Resources (CAMPFIRE) (Ashley & Roe 1998). It is a programme designed and implemented to encourage local communities to conserve rather than exploit remaining natural resources, particularly wildlife, through sustainable utilization (Potts, Goodwin & Walpole 1996). CAMPFIRE places emphasis on the need for incentive and participatory involvement of local people. Regarding the community surrounding Hwange National Park, CAMPFIRE is viewed as a success in terms of increasing local support for the Park, decreasing poaching and as providing a way of spreading non-consumptive tourism into surrounding areas. The local people surrounding the Park view the Park as an asset: they benefit financially and they benefit by having access to the improved infrastructure in the area. Community based wildlife tourism is a way of improving rural livelihoods and improving the state of the environment (Potts, Goodwin & Walpole 1996).

The central objective of the economic policy of South Africa is the need to create employment and a better life for our people (Erwin 2001). This is nowhere more needed than in South Africa's rural areas with their high rates of unemployment. Many of the popular ecotourism destinations in South Africa are also surrounded by rural communities. There is a pressing need for communities bordering areas of biodiversity conservation value to be part of conservation efforts (Chadwick 1992). Despite the high percentage of ecotourism in South Africa, the communities bordering on destination sites have, in the past, seen little benefit from the economic input of ecotourism (Hartley 2001 *pers. comm.*) To address this shortfall a number of community-focused initiatives have been developed. One of these is the training of local community members to become guides for tourists. This equips rural people to gain employment, encourages communities to conserve the biodiversity of communally owned areas of ecotourism potential and encourages a conservation ethos toward the protected areas adjacent to which many rural communities live (Howie 2001 *pers. comm.*)

While CBNRM is largely held to be the way forward in tourism in the Third World, it has not been without criticism. For example in Kenya government policies designed to share the benefits and responsibilities for managing tourism and conservation have, in certain cases, resulted in increased degradation outside parks where urbanization has taken place along tour routes and unplanned settlements near park gates have resulted in increasingly denuded land

(Berger 1996). Resource use (water and wood especially) has been intensified on private land as has resulted in the generation of waste. Degradation of land is particularly evident along the borders of the Masai Mara Reserve (Chadwick 1992). This is largely due to weak management and lack of regulation and not only is the situation environmentally harmful but is also harming the tourist industry as Kenya increasingly faces competition from countries with better environmental management track records (Berger 1996). There is a need for all tourism development projects to be carefully managed. Ecotourism is an important element of CBNRM: It is a non-consumptive use of natural resources; it has great poverty alleviation potential and it encourages an ethos of conservation of the natural resource (Chadwick 1992).

3.5 Rationale Behind Invertebrates in Ecotourism

As has been examined in the prior section on biodiversity and invertebrates the main challenges facing invertebrate conservationists are: the need to increase awareness of invertebrates and their conservation needs; the need to challenge common negative perceptions regarding invertebrates and the need to apply some form of value to invertebrates. It is proposed here that a cost effective and efficient means of doing this, which has, to date, been largely unexplored, is to include a focus on invertebrates in existing and future ecotourism activities. This would be a financially expedient means of raising public awareness of invertebrates. It is further held that if the information given is not only of a western scientific nature, but includes indigenous knowledge, this would generate greater interest. In addition important aspects of local cultures would be highlighted.

The highlighting of marketable features such as rarity, endemism, charismatic qualities and the cultural or medicinal significance of the invertebrate communities at ecotourism destinations adds to the attractions of that area. With reference to tourism, an attraction is defined as “a physical or cultural feature of a particular place that tourists feel meets an aspect of their leisure needs. Attractions are the main motivators for tourism trips and are the core of the tourism product. Without attractions there would be no need for other tourism products” (Braithwaite 2001: 667). All the different role players in the ecotourism business benefit by having more attractions to offer tourists. Destination managers: benefit in that the more attractions an area

can boast the more competitive it becomes in terms of marketability. As ecotourism ventures are highly competitive with one another in terms of attracting clients it stands to reason that having extra marketable features will be of benefit to ecotourism ventures. For service providers: the more knowledge a guide has the better the service (interpretation of the environment) they can provide, consequently gaining more remuneration for their services. Gaining knowledge is also empowering for guides. Tourists benefit from added attractions in that they have more on offer to see and learn about. In terms of public awareness: the provision of information regarding biodiversity contributes toward raising public awareness of organisms and their conservation needs, which in turn means improved biodiversity conservation.

With regard to the potential interest of the public in invertebrates, people are becoming more interested in nature as a whole and there is an awakening to the fact that all living organisms on Earth are interdependent (Samways 1994). As insects are the major component of terrestrial ecosystems, with crucial functionality, it is essential that any holistic approach to observation and understanding of biodiversity include a focus on invertebrates. An example of the benefits of a broader focus for ecotourism is the Richtersveld National Park (part of the Namaqualand region of South Africa). Until the 1990's tourism in the Richtersveld National Park was restricted to four weeks in the spring when tourists were attracted to the natural floral displays (Boonzaier 1996). This has changed completely with publicity around the park focusing on the area's general scenic beauty, rugged isolation and rare succulent plants. "Officials, operators and entrepreneurs claim that the tourist season has been extended because people are no longer only interested in pretty flowers – they come to see nature" (Boonzaier 1996: 131). It is this holistic type of thinking that should be applied to the inclusion of a focus on invertebrates in ecotourism activities.

Invertebrates have been largely marginalized in the tourism industry. For example in South Africa none of the tour operators registered with the KwaZulu-Natal Tourism Authority indicate that they include tours which focus on invertebrates (Ndlela 2003 *pers. comm.*). The Australian Association of Ecotourism Operators, which has a total of 500 members, has only 3 tour operators that indicate that they take invertebrate focused tours (Ecotourism Australia 2003). Many tour operators indicate the ability to offer tailor made tours, however, tailor made

tours fall outside of this research which focuses on the incorporation of invertebrates into standard ecotourism products.

Where invertebrate focused tours do take place it is inevitably to view a spectacular phenomenon created by a large collection of one type of insect. For example in Mexico there are tours offered to see the spectacle of the annual migration of millions of Monarch butterflies (*Danaus plexippus*) (Burton 2003). The Monarchs are also considered a considerable tourist attraction in the United States where in Florida and California they are protected by state laws (Smart 1975). In Australia there are tours offered to see large collections of glow worms which create an impressive sight as they mass in canyons (Tread Lightly Eco Tours 2003), while New Zealand's Waitomo glow worm caves attract an average of 400 000 tourists annually (Tourism Holdings Limited 2003).

Lepidoptera have long been a source of fascination for a wide spectrum of people from collectors, amateur naturalists, scientists, and as the recent proliferation of butterfly houses attests, tourists. The increasing number of butterfly houses indicates that a market has developed where there is a demand to see living insects (Samways 1994). In 1989 in Britain alone, for example, there were 38 commercial butterfly houses displaying living butterflies to the public (Samways 1994). Butterfly houses are also numerous and popular in the United States and Australia, while in South Africa there are currently two large and fully operational butterfly houses, one in Pietermaritzburg and the other in Cape Town, plus a number of smaller concerns (Cooper 2003 *pers. comm.*). Various tour operators around the world offer guided excursions to see butterflies in the wild, for example Kalyspo Adventures in India's Kerala Province takes people to see inland butterfly sanctuaries (Elamonji & Zacharias 2003), Indigo Tours offers 10 day butterfly tours in Turkey (Indigo Tours 2003), Butterfly Trips, a tour company, takes customised butterfly viewing trips to Alaska and Central America (Butterfly Trips 2003) while Greentours, a British based company, offer world wide tours focusing on a wide range of flora and fauna, including butterflies (Greentours 2003).

Examples of invertebrate focused tours offered as a standard product to the general public include those of the Botanical Gardens, Pietermaritzburg, where insect and spider focused guided walks are offered to the general public. The walks highlight a range of invertebrates,

giving information regarding interesting and unusual breeding, feeding or nesting habits that the animals may have, drawing attention to attractive, dangerous, rare or endemic orders or species (Roffe 2002 *pers. comm.*).

3.5.a. Indigenous Knowledge in Ecotourism

The topic of indigenous knowledge is a contentious and much debated one. Even defining the concept is problematic. The National Research Foundation (NRF) states that “indigenous knowledge systems refer to the complex set of knowledge and technologies existing and developed around specific conditions of populations and communities indigenous to a particular geographical area” (2003: 1). Regarding the subject of ethnobiology, Berlin (1992: 3) notes that there is no generally accepted definition of the field, but that most “practising ethnobiologists would probably agree that the field is devoted to the study, in the broadest possible sense, of the complex set of relationships of plants and animals to present and past human societies”.

Unlike ethnobotanical research there is little recorded in formal literature regarding ethnozoology (Herbert, Hamer, Mander, Mkhize & Prins In Press). On the topic of ethnoentomology in particular, Toms (2001 *pers. comm.*) notes that one of the problems regarding the literature in the field is that some of the published data have not been verified and are not necessarily accurate, while other ideas have become dogma when they may only apply to a small geographical area.

Despite the complexities of the field it is proposed that the concept of including indigenous knowledge of invertebrates into ecotourism activities should be explored. Indigenous knowledge should be brought into the mainstream of knowledge (NRF 2003) and it is held that incorporating aspects of indigenous knowledge, along with western, scientific knowledge, into ecotourism is one means of doing this. It must be stressed however that any proposed use of indigenous knowledge must be done with the approval of, and in conjunction with, the owners of such knowledge and that due recognition must be given to the intellectual property rights of those from whom the information originates. In addition it is important to recognise and respect that certain animal products are believed to have magico-medicinal properties that can be used

for good and evil and that it is often believed that knowledge regarding these products should be kept in the hands of trained practitioners only (Herbert *et al.* In press).

3.6 Conclusion

This research has focused on the potential for improving the conservation value of invertebrates through the inclusion of a focus on invertebrates in ecotourism activities. The chapter has given some background to the concept of ecotourism, acknowledging that there is much debate about not only the definition of the term but also the desirability of ecotourism. The perceived positive and negative aspects of ecotourism have been examined to some extent. Despite the complexities of ecotourism, researchers such as Wearing and Neil (1999) have noted that it is one of the few areas where there is a link between conservation of natural areas and economic development. This factor is particularly relevant to the South African situation where the conservation of biodiversity has become a political issue and cannot be done in isolation from human needs. In fact, for future conservation to be effective it must be seen to incorporate human needs if it is to win the support of the electorate. Ecotourism is becoming increasingly popular around the world (Boo 1990), particularly so in South Africa where it is one of the fastest growing businesses in the country (Holt-Biddle 2002). Invertebrates have to date been largely marginalized in the tourism industry. The potential benefits to ecotourism of having added features of interest to market were explored. It is suggested that ecotourism destinations highlight the presence of invertebrates with marketable features such as rarity, endemism or other charismatic qualities and that these taxa are shown to tourists. This will serve the dual purpose of firstly raising public awareness about invertebrates and secondly benefiting ecotourism operators by adding to the attractions of their site.

The concept of indigenous knowledge of invertebrates, and the potential for its incorporation into ecotourism, has been introduced. The NRF (2003) has highlighted the need for indigenous knowledge to be brought into the mainstream of knowledge. It is suggested here that one means of doing this is to incorporate aspects of indigenous knowledge, along with western scientific knowledge, into ecotourism activities. It has been stressed, however, that this must be done with the approval of and in conjunction with the owners of such knowledge.

4. RESEARCH AIM, OBJECTIVES AND METHODS

4.1 Research Aim

The aim of the research was to investigate the potential for including information regarding invertebrates into ecotourism activities.

4.2 Research Objectives

- Obtain an overview of the current levels of the inclusion of information regarding invertebrates within certain types of ecotourism activities, specifically game drives and guided walks.
- Determine the response from tourists to the concept of the inclusion of more information regarding invertebrates into current and planned ecotourism activities.
- Investigate the opinions and attitudes of selected people working in the ecotourism field to the concept of including more information regarding invertebrates in ecotourism activities.
- Provide recommendations on how to address the lack of invertebrate information in ecotourism and give examples of the types of invertebrates that could be featured easily in ecotourism, and the type of information that could be included about them.

4.3 Research Methodology

Qualitative and quantitative research methods were used. Qualitative research falls within the interpretive paradigm. The interpretive paradigm is used to work with subject matter which the researcher believes to consist of people's subjective experiences of the external world (Terre Blanche & Durrheim 1999). The methodologies used are interactional and interpretative. The epistemology is one of empathy during the course of a number of different methods of gaining information: open ended interviews; participant observation and loosely structured discussions (Terre Blanche & Durrheim 1999). The interpretive approach holds that human actions cannot be observed in the same way as natural phenomena. Within the interpretive tradition the aim is

to understand. Using qualitative methodologies, the aim is to uncover and understand the social rules which govern behaviour (Mouton 2001).

Quantitative research falls within the positivist paradigm. Positivism is defined by Mouton (2001: 17) to be that tradition which holds that 'social and scientific worlds are sufficiently similar to enable one to study and investigate phenomena in those worlds using the same general methodological and logical principles'. Positivism is concerned with neutrality, measurement and observation and quantitative methodologies are invariably used to achieve these goals. Redclift (1999) notes that 'good science' is reliable, rigorous and objective. He continues that the methodologies used are timeless and placeless and attempt to be independent of human intervention and that knowledge is a process of gradual accretion through which we learn more on a linear, uni-dimensional basis. Postmodernists and critical theorists have criticised the positivist approach as being inappropriate for social science. They stress the impossibility of a value free and neutral approach to human inquiry (Mouton 2001).

After a consideration of the advantages and disadvantages of both the positivist and the interpretive approaches in the context of this research it was decided that a study employing techniques from both approaches would be of maximum benefit. Quantitative methodologies from the positivist approach were used in the first part of the research, which dealt with determining the response of tourists to various aspects of invertebrate focused ecotourism. Quantitative methods make it possible to measure the reactions of a great many people to a limited set of questions, which facilitates comparison and statistical aggregation of data (Patton 1990). In this research the use of a standardised questionnaire enabled the responses of 121 tourists to be measured.

Research methods from the interpretative approach are suited to exploring the reasoning behind peoples' opinions. In matters concerning environmental degradation, it is non-biological factors which underpin and are responsible for the current biodiversity crisis: the roots of environmental degradation are to do with issues of stewardship, equity, justice, and the inherent worth of living things (Hamilton 1993). It is held that issues to do with people's attitudes, values and opinions can be best examined using the qualitative research methods of open-ended interviews, discussion and participant observation. Use of research methods from the

interpretative approach were thus selected for the second part of the research, which dealt with examining the opinions and attitudes of people working in conservation and ecotourism fields. Specifics of the methodologies used are further examined below.

The research is aimed at gathering information and generating findings that are useful, as opposed to purely academic. Thus, this is evaluation or applied research, the purpose of which is to inform action and enhance decision making (Patton 1990). “Applied evaluative research is judged by its usefulness in making human actions and interventions more effective and by its practical utility to decision makers, policy makers and others who have a stake in efforts to improve the world” (Patton 1990: 11). The information gathered in this research is useful in that it can be employed to inform decisions regarding content of ecotourism activities. This can lead to improved public awareness and appreciation for invertebrates and thus improved biodiversity conservation.

As examined by Patton (1990) both qualitative and quantitative research methods have different strengths and weaknesses and using them both in the same study can be advantageous. Bless and Higson-Smith (2000) indicate that in nearly all cases of social research the line between quantitative and qualitative research is blurred and that a comprehensive study will use both methods. Patton (1990) notes that recently there has been an increasing trend toward the use of multiple research methods. The use of multiple research methods results in what is termed triangulation. As noted by Neuman (1999), triangulation of method occurs in several ways, one of which is when qualitative and quantitative styles of research are mixed. Kane and O’Reilly-de Brun (2001) note that the information that a researcher gets will be ‘stronger’ if triangulation is used. Research methods can be mixed in several ways, two of which have been used here: sequential mixing: and parallel mixing. Sequential mixing has been used where the quantitative research methods of the structured questionnaires were followed by qualitative methods of participant observation and open-ended interviews. Parallel mixing has been used when, during the course of the quantitative research (the structured questionnaires) qualitative research methods of informal discussions took place with some respondents. Whilst administering the questionnaire, a certain number of the respondents were particularly interested in the topic and discussions ensued. The conversations were recorded. In this way there was parallel mixing of

quantitative and qualitative research. This process was beneficial to the research process as a broader view of tourists' interests were gained. Further to this aspect, Arksey and Knight (1999) note that it is important to integrate methods, and not to design a study that comprises mutually exclusive approaches. It is held that this has been achieved in this research.

Triangulation can be used for completeness or for confirmation. In this research the primary reason for using triangulation is for completeness, however a spin off benefit has been that it has, in many instances, confirmed results. For instance, observation of tourists enjoying the sight of butterflies confirms the tourists' claim in the questionnaire that they have an interest in invertebrates. Some of the advantages of triangulation that are applicable in this research are:

- It increases confidence in the results.
- It strengthens the completeness of the study.
- It enables different but complementary questions within a study to be addressed.
- It enhances interpretability as one set of data enables the understanding of another set.
- It enables the researcher to be closer to the research situation thus enabling a deeper understanding of the subject – approaching research questions from different angles allows one to capture alternative explanations and a range of views.

(Arksey & Knight 1999)

In regard to the subject of research ethics, the basic principles of ethical social research were followed. The questions asked of interviewees did not concern any private or confidential subject, however, informed consent was attained from the respondents in the open-ended interviews and from the interviewees in the structured survey. In addition informed consent was attained from the conservation authorities managing the protected areas where research took place, which enabled access to be gained to the sites. The researcher identified herself and the institution she was from and informed the respondents where they could attain further information regarding the survey should they require it. Offers were made to provide a summary of the findings to respondents should they require them. No deception was used at

any stage in the research and repercussions of the research were anticipated. It has been anticipated that certain ecotourism guides and managers of protected areas would be interested in gaining access to more information regarding the invertebrates in their area as a result of the research. Means of enabling this to take place are being pursued.

4.3.a Quantitative Methods

As noted by Neuman (1999) quantitative research aims to get a representative sample from a much larger population so that the researcher can study the smaller group and produce accurate generalisations regarding the larger group. Quantitative methods were used to address the research objective of examining the response of tourists to the concept of the inclusion of information regarding invertebrates into current and planned ecotourism activities. The quantitative method of a structured survey was used. The survey was in the form of a structured questionnaire (Appendix A). It was administered by the researcher in face-to-face interviews with 121 individual ecotourists. The researcher aimed to administer, and complete at least 100 questionnaires during the survey period as this was considered to be a good sample size. As the response rate was better than initially predicted this quota was exceeded and the larger number of questionnaires completed was used as the total.

Purposeful sampling was used as it was deemed that this was the most appropriate method for gaining access to ecotourists. Kane and O'Reilly-de Brun (2001) define purposeful sampling as the process of deliberately choosing people as respondents because they have characteristics that interests the researcher. In this research it was decided that random sampling of the general public was not likely to be effective as it was the opinions and attitudes of ecotourists specifically that were sought. The sample group of ecotourists was selected by approaching visitors in a protected area already engaged in ecotourism activities such as game drives, wilderness trails and bird watching. Access was thus gained to a relevant and accessible sample group of ecotourists. The researcher was aware of the potential for selection bias within the sample group. Selection bias occurs when not all members of the study population have an equal probability of selection (Henry 1998). In order to minimize the possibility of selection bias by the researcher, the researcher attempted to approach all tourists reporting to the central

reception areas in the nature reserves. All tourists are required to report at the reception on arrival in the protected area. In this way the researcher minimised the potential for selection bias that could occur if the researcher were to 'choose' which tourists they wanted to question.

The survey was conducted in Hluhluwe Umfolozi Park (HUP) at Hilltop and Mpila Camps over a three-day period of 11-13 October 2001. The following factors were taken into consideration as recommended by Neuman (1999): the questionnaire was standardised and kept brief so as not to impose on tourists' leisure time; wording was kept fairly simple to cater for non-English first language speakers; jargon was avoided; concepts were explained to respondents where necessary. The survey aimed to determine:

- The percentage of respondents positive toward the integration of invertebrate focused ecotourism into current tourism activities.
- The percentage of respondents positive toward ecotourism activities focusing almost entirely on invertebrates.
- The percentage of respondents positive toward the inclusion of indigenous knowledge and uses of invertebrates.
- The percentage of respondents positive toward invertebrate-focused walks for children.

The potential for invertebrate focused walks specifically for children was explored as the literature review indicated that previous social research had highlighted an interest from children in insects (Su & Samways 2001). With children being the potential conservationists of the future there is an urgent need to explore means of educating and raising conservation awareness in this group. The responses to the questions were recorded in front of the interviewees as the survey was conducted. Data was analysed by categorising responses to the four main sections of questions. Responses were categorized as a positive or a negative or an undecided and then calculated as a percentage of the whole. The results are then graphically presented. Results are discussed and certain recurrent comments from respondents are highlighted.

4.3.b Qualitative Methods

The aim of qualitative research is to find out about people's perspectives, beliefs and attitudes (Arksey & Knight 1999). The aims of this qualitative research were to:

- Assess the current level of inclusion of information regarding invertebrates in certain ecotourism activities.
- Assess the potential for the inclusion of information regarding invertebrates into ecotourism activities.
- Assess the response to the inclusion of indigenous information regarding invertebrates into ecotourism activities.
- Assess the potential for inclusion of information regarding invertebrates into ecotourism guide training programmes.

Methodology

The research techniques that were used for this portion of the research were in-depth open-ended interviews and participant observation. Neuman (1999) notes that the primary purpose of sampling in qualitative research is to collect specific cases that can clarify and deepen the understanding of the whole. The researcher aimed to do this by interviewing a cross section of role players in the ecotourism and conservation sectors. It was decided that open-ended interviews would provide the most direct way of accessing the opinions and attitudes of those working in the ecotourism and conservation field. Another benefit of qualitative research that was considered was that it enables researchers to explain concepts and ideas and to adjust to the interviewee's norms and language use. In addition the questions and order in which they are asked can be tailored for specific people. These factors were considered important in this research as the interviews were conducted with a range of different people from different backgrounds and with different language abilities. Even further advantages of open-ended interviews are that they allow the researcher to probe initial responses (Vithal & Jansen 1997). This enables elaboration on topics thus uncovering information that would otherwise remain hidden. Patton (1990) notes a further benefit of qualitative research of this nature is that a

wealth of detailed information regarding smaller numbers of people and cases is produced. This increases the understanding of the cases.

Drawbacks of qualitative research include bias and the fact that qualitative data are more difficult to analyse (Arksey & Knight 1999). Bias refers to “the ways in which data collection or analysis are distorted by the researcher’s theory, values or preconceptions” Maxwell (1998: 92). He goes on to stress that it is not possible to eliminate these theories, preconceptions or values but that one must be aware that they are there and of the effect that they can have on the research (Maxwell 1998). There are many different types of bias. The researcher was aware that selection bias could occur in the process of selecting respondents for interviews and attempted to minimize this by interviewing as wide a range of people as possible within the fields of ecotourism and conservation. Specifically in this instance the researcher interviewed representatives from the local cultural heritage authority as well as the nature conservation authority. Thus was done to avoid only interviewing those already working in nature conservation who would be likely to be biased in favour of the need for invertebrate conservation. The researcher was also aware of the potential for interviewer bias. The same interviewer (the researcher) conducted all the interviews. Bias from the tone of the questions asked was minimised. Questions were asked in a neutral manner and subjective terms or words were avoided, thus minimizing the giving the impression of a ‘right’ or ‘wrong’ answer. The researcher was aware however that there was a potential for bias from what Salant and Dilman (1994) term a slanted introduction. The potential for bias of this nature occurred because respondents required a brief introduction to the research topic prior to conceding to being interviewed. By introducing the topic to the respondents, even in a very brief manner, they were made aware of the need for improved biodiversity conservation

In-depth open-ended interviews were held with ecotourism service operators, owners and managers of ecotourism ventures; employees of conservation bodies; ecotourism guides and trainers of ecotourism guides, as indicated below.

Representatives of Organisations Interviewed

Organisations that Control Protected Areas Visited by Tourists

- Amafa (Heritage) KwaZulu-Natal
 - The Director (Appendix B.1)
 - The Head of Archaeology (Appendix B.2)
- Ezemvelo KwaZulu-Natal (KZN) Wildlife
 - Umfolozi Officer in Charge (OIC) (Appendix B.3)
 - Umfolozi Office Staff at Reception (Appendix B.4)

Other Conservation Related Organisations

- Wildlands Trust
 - CEO (Appendix B.5)

Private Ecotourism Organisations

- Thula Thula Game Reserve: owner/manager (Appendix B.6)
- Inyati Nature Reserve: owner/manager (Appendix B.7)
- Tembe Safaris: manager (Appendix B.8)
- Tembe Safaris: owner (Appendix B9)

Trainers of Tour Guides

- Birdlife South Africa
 - Manager and Trainer (Appendix C.1)
- Entabeni Environmental Training School and Education Centre
 - Director and Trainer (Appendix C.2)
- EU Wild Coast Community Tourism Initiative
 - Project Manager and NGO Trainer (Appendix C.3)
- Amafa (Heritage) KwaZulu-Natal
 - Trainer (Appendix C.4)
- Ezemvelo KZN Wildlife
 - Training Officer (Appendix C.5)
- Private Training Organisation
 - Tribe Africa (Appendix C.6)

Ecotourism Guides

- Pietermaritzburg Botanical Gardens
 - Guide (Appendix D.1)
- Birdlife SA
 - Guide (Appendix D.2)
- KZN Wildlife
 - Umfolozi
 - Open vehicle drive guide (Appendix D.3)
 - Walking trail guide (Appendix D.4)
 - Ndumu
 - Walking trail guide (Appendix D.5)
 - Open vehicle drive guide (Appendix D.6)
 - Hluhluwe
 - Open vehicle drive guide (Appendix D.7)

Private Operators

- Freelance guide (Appendix D.8)
- Private tour guide (Appendix D.9)
- Tembe Safaris guide (Appendix D.10)

Participant observation

Patton (1990) notes how participant observers can gather much information during naturally occurring, informal conversations. Patton (1990) further notes that there are limitations to what can be learned from what people say and that to fully understand the complexities of situations, observation of, and direct participation in the phenomenon of interest may be the best research method. Observation and interviewing are thus mutually reinforcing techniques. Participant observation was used in this research and was found to be very beneficial. Participant observation was used to observe both guides and tourists at a number of ecotourism sites: Tembe Elephant Park; Ndumu Game Reserve and Umfolozi Game Reserve. Data were collected by participating in:

- Guided night drive: Umfolozi Game Reserve.
- Guided game drive: Ndumu Game Reserve.
- Guided walk: Ndumu Game Reserve.
- Self guided drives with observation of and discussions with tourists: Tembe Game Reserve, Ndumu Game Reserve and Umfolozi Game Reserve.

Information was recorded on the content of the guided tours - specifically what the guides drew tourists' attention to. Tourists' responses and questions were also recorded. Questions were asked by the author regarding some of the more obvious invertebrates to ascertain the guides' interest in and knowledge of this group. This also served to enable observation of the tourists' response to these invertebrates. More general discussions ensued with guides, tourists and camp managers. The records of observations, and interviews were analysed for parallels and contradictions and these were highlighted and presented in the results. Key themes are thus identified in the interviews and recommendations are made accordingly.

Invertebrate observations

With the assistance of entomologist, Dr Simon van Noort, the researcher conducted a brief invertebrate site survey at Tembe Elephant Park and Ndumu Game Reserve. The aim of the survey was to note the presence of obvious charismatic and iconic invertebrates and to note the ease with which these can be observed during ecotourism activities such as a guided walk, from a vehicle, and from bird and game viewing hides. Furthermore the aim was to be able to give examples of the types of invertebrates to include in ecotourism activities.

5. CONCLUSION AND BENEFITS OF OUTCOMES OF RESEARCH

The literature review has highlighted the fact that there is at present little emphasis placed on the need for biodiversity conservation to incorporate a focus on invertebrates. Public awareness and support for conservation are closely linked. The review has highlighted the need to raise public awareness regarding invertebrates. If people have limited knowledge about invertebrates, and only have negative attitudes toward them, then there will be little support for the protection

of threatened species and habitats. Ecotourism is seen as a means of raising awareness about invertebrates and their conservation needs. This research has focused on the feasibility of ecotourism incorporating a focus on invertebrates. The potential benefits of this are the opportunities for improved invertebrate biodiversity conservation through increased awareness and appreciation for invertebrates; the benefit to ecotourism ventures in terms of expanding their knowledge of biodiversity in their areas, which in turn adds value to their tourism product and the potential to strengthen the case for the conservation of specific areas through highlighting the presence of endangered or endemic invertebrate species.

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Conservation Related Organisations

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Trainers of Tour Guides

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C.1: Manager and trainer: Andre Botha

Entabeni Environmental Training School and Education Centre

C.2: Director and trainer: Nick Shaw

EU Wild Coast Community Tourism Initiative

C.3: Project Manager: Mike Haynes

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Appendix A: QUESTIONNAIRE FOR TOURISTS

People being interviewed are given brief background information about the research in order to explain why their opinions are being sought. The interviews were kept brief so as not to impose on their leisure time. Any relevant additional comments were recorded at the end of the interview.

- 1) Name and address:
- 2) Duration of visit to protected area:
- 3) What activities have you done / still intend to do?
[Prompt: for example: game drives, birding, walking or wilderness trails]
- 4) If there was a guided walk focusing on other types of smaller animals like butterflies, spiders, wasps; caterpillars, scorpions; beetles, ants and millipedes would you chose to go on it?
YES.....NO.....MAYBE.....
- 5) Would you like to have information about invertebrates included in the existing game and birding walks?
YES..... NO..... MAYBE.....
- 6) Would you be interested in finding out indigenous knowledge such as cultural or medicinal use of invertebrates?
YES..... NO..... MAYBE.....
- 7) Would you consider sending your children on such a walk? Why?
YES..... NO..... MAYBE.....
- 8) Preferred duration of walk:
- 9) How much would you expect to pay for such a tour?

Appendix B.1: SUMMARY OF DISCUSSION WITH DIRECTOR OF AMAFA (HERITAGE) KWAZULU-NATAL

Name: Barry Marshall
Position: Director
Organisation: Amafa (Heritage) KwaZulu-Natal
Contact Details: P. O BOX 523, Ulundi, 3838, KwaZulu-Natal
Tel: 0358 702050
Date of discussion: 8 August 2001

A discussion was held with the director of Amafa in the context of Amafa's role as custodian of sites of historical and cultural significance in KwaZulu-Natal. The concept of invertebrate focused tourism was discussed with reference to the possibility of tour guides on Amafa controlled sites including a focus on invertebrates.

1. Q: To what extent does Amafa use guides?

A: "Amafa oversee a large area and there are quite marked differences in the situation at different sites, so I [Barry Marshall] will discuss each area separately. It must be established at the outset that we [Amafa] do not do any training of guides ourselves. This was attempted at Isandlwana, but was not been successful there as battlefield tours are a niche market. If training is needed in the future for guides at any of our sites we will subcontract that work out to a professional training organisation to do the training on our behalf."

Rock Art Sites and Rock Art Guides: Marshall discussed the fact that Amafa have stipulated that no one is allowed within 50 meters of rock art sites unless accompanied by a trained local guide. This is a means of protecting the rock art sites and creating employment.

Drakensberg Rock Art Sites: Many of the rock art sites occur in the Drakensberg area. Amafa and KZN Wildlife jointly manage a number of areas that are rich in rock art, such as: Giants Castle, Kamberg, Cathedral Peak, Monks Cowl, Loteni and Mweni Valley. Mweni Valley is particularly rich in rock art sites and there is a large rural community living in close proximity to the Mweni Valley area. There is an on going programme underway at present in the Mweni Valley area to train members of the local community to be rock art guides. Training is not done by Amafa, but by specialized trainers. A number of guides have been trained and more are in the process of being trained.

Border Cave: This is on the Swaziland and KwaZulu-Natal border. It is historically very significant and many artefacts of early civilizations have been found there. There are still a lot of artefacts in and around Boarder Cave and because of this tourists need to be accompanied when visiting the area. There is a plan to train local guides to accompany tourists. This is an attempt to both protect the integrity of the site and create employment opportunities. The plan for border cave includes the building of an interpretative centre. This would create a number of jobs for the local community.

Trails: Amafa are planning two new trails. One through the Ngwavuma Valley (near Border Cave) and the other outside the Hlatikulu area near Dingaan's grave. Tourists doing these trails will be required to make use of a guide, and trail guides will be specifically trained for this purpose.

2.Q: Will the focus of these trails only be historical and cultural or will there be a place for an incorporation of natural history.

A: The trails will definitely be holistic and as such we would want to provide tourists with as wide a range of information as possible. It would be very good for trails guides to have a knowledge of the natural environment as well as the cultural and historical.

3.Q: Within the context of the natural environment, do you think a focus on invertebrates would be acceptable?

A: Yes I do. For tourists on a trail they are going to be coming across all sorts of different invertebrates, there are a lot of insects, spiders, scorpions etc and it would be good for a guide to be able to tell tourists about these creatures. It is all part of the experience and the more informed guides are the better.

4. Q: *Regarding the training of guides what do you think of the New Tourism Amendment Act And The Guidelines For Training Of Guides.*

A: The function of the accreditation of guides has been devolved down to the provinces, which is a good move. There are three categories of guides: cultural, natural history, adventure. Within these categories there are different levels of specialisation – starting with site specific guides and going up to guides that are qualified on a national level. The new guidelines are a good development as a standardised system facilitates the employment and use of guides, by both organisations such as Amafa and tourists.

5. Q: *What do you think of the concept of invertebrate focused ecotourism as a whole?*

A: In the context of Amafa's co-operation with KZN Wildlife we would want to contribute where we can to biodiversity conservation initiatives. I must say that I was not aware that invertebrates were threatened nor that they may have specific conservation needs. I had assumed that current conservation efforts automatically also included invertebrates. In terms of tourism that focuses entirely on invertebrates I can't imagine that this would be popular outside of specialist interest groups, however I do think that there is a place to include some information about invertebrates into general ecotourism. Naturally in order to do this guides will need to be trained so invertebrate focused information should be included in training courses.

A discussion ensued about indigenous knowledge and the potential for its incorporation into ecotourism. Marshall was enthusiastic about the concept, cautioning however that owners of such knowledge must be part of the process and in agreement with any use of their knowledge in cultural or ecotourism.

Appendix B.2: SUMMARY OF DISCUSSION WITH AMAFA'S HEAD OF ARCHAEOLOGY

Name: Annie Van De Venter
Position: Head of Archeology, Amafa.
Organisation: Amafa (Heritage KwaZulu-Natal)
Contact Details: Amafa Offices, Pietermaritzburg, 195 Longmarket Street, Pietermaritzburg, 3201
Tel: 033 3946543
Date of interview: 19 October 2001
Place of interview: Amafa offices in Pietermaritzburg.

The respondent was given a brief background as to the nature of the research. What follows is a summary of the interview highlighting pertinent issues. In certain cases the respondent has been quoted directly, as indicated by use of quotation marks.

1. Q: *Could you give some background on Amafa's use of community guides?*

A: "Amafa does not do the training of guides but subcontracts out the training of guides to other organisations to do on their behalf. As and when Amafa need guides in certain areas, training programmes are put out to tender. Amafa is however directly involved in the assessing of guides. This is being done in accordance with the New Tourism Amendment Act. I have recently been on the assessors course. This is a 4 day course which is run by Stephen Roberts of KZN Wildlife Head Office at Queen Elizabeth Park. According to the Tourism Amendment Act all tourism related guides are to be assessed and are to be given a NQF (National Qualifications Framework) rating. Once guides have been given a rating they are to register through their provincial registrar. Their particulars are then registered with the national registrar. All guides operating in South Africa are required to comply with the Act. It is effective as of 1 September 2001. Existing, legally registered tour guides, have two years from 1 September 2001 to convert their present qualifications to the relevant national qualification for the category of tourist guiding they are involved in. Those guides who are not presently registered have a window of six months from 1 September 2001 to be assessed and then register with the relevant provincial authority. Community guides as used in the Drakensberg as rock art guides receive a NQF rating of two. It is absolutely essential that all future guide training programmes comply with the Tourism Amendment Act. At this stage there are three categories for guides: culture; nature; adventure. Amafa and KZN Wildlife have a history of working in collaboration in the management of certain sites which are of both natural

and cultural interest – such as parts of the Drakensberg, Isandlwana; Spioenkop and others. The two organisations try to assist each other's efforts where possible. [The collaboration see between KZN Wildlife and Amafa is further examined in the discussions with Graeme Smythe (addendum C.4); Barry Marshall (addendum B.1) and Stephen Roberts (addendum C.5)].

Regarding invertebrates and conservation, I did not realise that invertebrates were particularly threatened nor that they had specific conservation needs.”

2. *Q: What do you think of the potential for including ecological aspects, specifically a focus on invertebrates into the training of guides?*

A: “Amafa would like the guides to incorporate some ecological aspects into the tours. This is particularly relevant for the guides taking trails. Although the main focus of the trails would be historical and cultural, Amafa would like to have some environmental aspects incorporated to add to the richness of the experience.”

3. *Q: Specifically on invertebrate biodiversity, do you think Amafa would be interested in the guides being taught something about the invertebrates in the areas they are working in?*

A: “It would be very good to include some information about invertebrate biodiversity.”

4. *Q: What do you think of the concept of including a focus on indigenous knowledge of invertebrates such as cultural and medicinal uses?*

A: I am particularly interested in this aspect, both as knowledge for the guides to pass on to tourists and as information that Amafa would like to have access to. Amafa would like to have access to the information gained during research into indigenous cultural knowledge and use of invertebrates. We have noted that indigenous knowledge can often be quite different in different areas.

Appendix B.3: SUMMARY OF DISCUSSION WITH UMFOLOZI OFFICER IN CHARGE

Name:	Peter Hartley
Position:	Officer in Charge (OIC)
Organisation:	KZN Wildlife, Umfolozi, Mpila Camp
Contact Details:	Mpila Camp, P.O. Box 99, Mtubatuba, 3935. Tel: 035 5508468
Date of interview:	12 October 2001
Place of interview:	Mpila Camp, Umfolozi Game Reserve

1. *Q: How much information about invertebrates is included in current ecotourism activities?*

A: The activities on offer are game walks, game drives and wilderness trails. The guides are all trained as ecotourism guides and as such have a very good knowledge of the natural environment, however obviously they are all individuals with individual interests and they would bring out different aspects in their interpretation of the environment. I know for example that one of the walking guides, David Mnxali focuses a fair amount on insects and spiders. There is a certain amount of pressure on the guides to find the big five in a limited time as this is inevitably what tourists want to see, so I doubt that there is very much time to focus in invertebrates on the general game drives. The wilderness trails are over a few days so there would be more time to focus on invertebrates. In addition the wilderness trails aim to give tourists an holistic experience of the environment and as such should incorporate information about invertebrates.

2. *Q: What do you think of the concept of including more information about invertebrates into current ecotourism activities?*

A: I think it is a very good one that should be pursued but it would need to be done while bearing in mind that tourists prioritise seeing large mammals. Game viewing is very good here in Umfolozi -much better than Hluhluwe because the vegetation is more open here, so we can usually satisfy the need to see the large mammals in a fairly short time frame.

A discussion was held about ecotourism activities that focus entirely on invertebrates, Hartley noted that he doubted that this would be popular outside specialist interest groups.

3. *Q: Do you think there would be an interest in indigenous knowledge such as cultural and medicinal uses of invertebrates?*

A: Yes. That concept would tie in very well with our current drive to include the neighbouring communities in our conservation and ecotourism activities. The people living in the neighbouring communities, particularly the older people will have such knowledge that could be accessed in a mutually beneficial way.

Appendix B.4: SUMMARY OF BRIEF DISCUSSION WITH UMFOLOZI OFFICE STAFF

Name: Rae Hartley and Colette Openshaw
Position: Office administrators
Organisation: KZN Wildlife, Umfolozi, Mpila Camp
Contact Details: Mpila Camp. Tel: 035 5508468
Date of interview: 12 October 2001
Place of interview: Mpila Camp, Umfolozi Game Reserve

1. *Q: Do the tourists ever ask you about any of the insects here?*

Rae: Some ask about mosquitoes and malaria. Some ask about spiders and if they are poisonous.

Colette: The large golden orb spider near the office has generated much interest. People always want to know if it is dangerous.

2. *Q: Would you be interested in finding out more about invertebrates? If there was a course or some sort of training about some of the invertebrates of this area would you be interested in going on it?*

Rae: Yes we always welcome having extra knowledge to pass on to tourists. This will better their experience. I think all the staff should go on a course like that. It would also be good if the course was focused on the kind of things we can find in the camp area as people are looking for things to do around the camp, between game drives.

A discussion was held about the fact that there is a fair amount of visible invertebrate activity in the camp area. For example the cicadas, butterflies, ants, millipedes, wasps, spiders and dragonflies and then in the evening there are moths and crickets. Both respondents indicated that it would be useful to have information to give tourists about these animals. The idea of a pamphlet was discussed. Openshaw suggested that the pamphlet could be complimented by small information plaques and so the tourists could be guided around the camp area to different points of interest and that a self guided walk could include information about plants as well as insects. It was also discussed that information could be given about the different sounds one hears at different times of the day – for example the cicadas during the heat of the day and the crickets at night. Hartley noted that tourists asked about cicadas.

[NOTE: The office shop stocks a number of natural history books. Of note are the field guides to invertebrates: Spiders and Scorpions of Southern Africa (Hawthorne 1998); Butterflies and Moths of Southern Africa (van Noort 1999); Southern African Insects and their World (Weaving 2000)].

Appendix B.5: SUMMARY OF DISCUSSION WITH WILDLANDS TRUST CEO

Name: Andrew Venter
Position: CEO
Organisation: Wildlands Trust

Contact Details P.O BOX 57, Hilton, 3245, KwaZulu-Natal
e-mail: wldtrust:@mweb.co.za
Date of discussion: 30 August 2001

A discussion was held with the CEO of the Wildlands Trust, Andrew Venter in the context of the Wildlands Trust's role in biodiversity conservation and environmental education. Andrew was given a brief on the research. The need for invertebrate conservation and the need to raise public awareness of, and appreciation for, invertebrates was discussed. Andrew detailed the vision and mission of The Wildlands Trust (The Trust) noting that any projects entered into need to be in keeping with these. The Trust operates in KwaZulu-Natal. The Trust was established at a time when formal conservation was suffering due to lack of funding. The Trust thus raises funds from the private sector in support of conservation. With the ethos that for conservation efforts to succeed in the long run they must be relevant to local communities, the Trust seeks to build partnerships between the private sector, local communities and formal conservation. The key areas funded by The Trust are: development of infrastructure; education centres; skills development; the supply of equipment; monitoring of endangered species and tourism development. The area of tourism development is particularly relevant to this research. Venter noted that he was unaware that invertebrates may have specific conservation needs and had always assumed that efforts to provide conservation for the larger mammals and certain vegetation types would automatically also provide for the conservation needs of invertebrates. This, he said, was the first time The Trust had been approached about invertebrate conservation.

Training of Community Guides: The Trust plans to facilitate projects for the training of local community members as ecotourism guides. Community guide training programmes are planned to commence in approximately 18 months. Training programmes will take place in areas bordering on protected areas that are popular tourist destinations. Andrew was very positive about the concept of including information about invertebrates into such training projects. During the course of the discussion he noted that while they would like to see information about invertebrates included into general ecotourism training courses, he doubted that there would be much demand for walks focusing entirely on invertebrates. The Trust will not do the training themselves but will use Tribe Africa, a training organisation based in Mkuzi*.

The need for invertebrate surveys prior to training guides at specific sites was discussed. This would be necessary in order to ascertain the make up of the invertebrate populations at each site. Employing local people as research assistants was concluded to be a means of providing employment and raising awareness of invertebrates. Research assistants could become trainees as the project progressed.

Regarding the potential inclusion of indigenous knowledge into ecotourism, Venter was positive. He noted that tourists, especially foreigners were interested in various aspects of indigenous culture.

Sites where The Trust are currently involved and plan to be involved in the future are: Ndumu Game Reserve; Tembe Elephant Park; Mapelane; Duku Duku; Lake Sibaya; Mkuzi; Lake St Lucia and Royal Zulu Biosphere Reserve. The Royal Zulu Biosphere Reserve, which incorporates the private game reserve Thula Thula, was suggested by Andrew as a pilot site. The Wildlands Trust is working in conjunction with the owner of Thula Thula on a number of conservation and environmental education projects.

*** Tribe Africa**

Paul Walters

tribeafrica@iafrica.com

Tel: 035 573 1474 / 082 375 9252

The trainer was contacted and was positive about including information about invertebrates into the courses. Walters noted that they would need to be provided with all the training material about invertebrates.

Appendix B.6: SUMMARY OF DISCUSSION WITH OWNER OF THULA THULA PRIVATE GAME RESERVE

Name: Lawrence Anthony
Position: Owner and manager
Organisation: Thula Thula Private Game Reserve
Date of meeting: 12 December 2001
Place of meeting: Thula Thula Private Game Reserve
Contact Details: 035 792 8322

The initial response of Anthony was that he had no idea that invertebrates had specific conservation needs, nor that certain conservation management practices such as regular block burning may adversely effect invertebrate populations. He was given information about the need for invertebrate biodiversity conservation and the current threats to invertebrate biodiversity. The need for raising public awareness for, and appreciation of invertebrates, was discussed. During the course of a day spent in Thula Thula Anthony was shown a number of different invertebrates on his reserve such as millipedes, fig wasps and spiders. The functionality of these invertebrates was discussed. Anthony noted that he would want to include a focus on invertebrates in the general guided walks and game drives for tourists. He was cautious however about the concept of a walk focusing entirely on invertebrates. With reference to threats in invertebrates, a brief tour of the reserve showed that a burning programme was in place. A discussion was held regarding how burning programmes can have a negative impact on invertebrate populations. Regarding the incorporation local communities into tourism related projects, Anthony discussed the fact that all their developments had been done in conjunction with, and after extensive consultations with, the local community. He stressed that any inclusion of indigenous knowledge would be done along the same lines. He noted that tourists were interested in indigenous knowledge, and so he would want to see it included but that this must be done in a sensitive manner. Thula Thula is in a development phase and will be looking to train ecotourism guides from the local community. Regarding the inclusion of information about invertebrates on such training programmes, Anthony was positive.

Appendix B.7: SUMMARY OF DISCUSSION WITH OWNER OF INYATI PRIVATE NATURE CONSERVATION RESERVE

Name: Lyn Pearson
Organisation: Co-owner/manager of Inyati Nature Conservation Reserve
Contact : 036 354 7003 / 083 25 9667
Date of discussion: 12 October 2001
Place of discussion: Mplia Camp, Umfolozi Game Reserve

What follows are notes made from two discussions held with Pearson. The first took place at the Umfolozi Mpila Camp office and the second before a night game drive. Pearson and her husband own and manage Inyati Game Reserve which is part of the Weenan Biosphere Reserve. Inyati caters for ecotourists and adventure tourists. When Inyati has tourists who want to see the big five they are taken Umfolozi. They regularly go on Umfolozi's organised game drives and night drives. The concept of including information about invertebrates into ecotourism activities was discussed. Pearson welcomed the concept and said that guides would benefit from having a far wider training that included aspects of biodiversity such as invertebrates. She noted that most of her work had been with larger mammals and that she was not aware of that invertebrates may have specific conservation needs that may differ to those of larger animals.

Regarding tourists and their interest in invertebrates, Pearson stressed that if one shows people things in such a way that it is interesting they will respond accordingly. She said that at Inyati they try to incorporate a holistic approach on their tours and tourists respond well to being shown smaller animals such as spiders and butterflies as well as the larger animals. On the topic of indigenous knowledge, Pearson was positive, stating that tourists were often very interested in local culture. Regarding the concept of a walk that has as its main focus

invertebrates, Pearson was very positive. She commented that it would need to be at least three to four hours long as a guide needs time to explain things to tourists. She commented that this idea would work well in any situation where environmental education is a priority.

Appendix B.8: SUMMARY OF DISCUSSION WITH MANAGER OF TEMBE SAFARIS

Name: Mark Howie
Position: Manager of Tembe Safaris in Tembe Elephant Park
Organisation: Tembe Safaris
Date of interview: 23 December 2001
Place of interview: Tembe Elephant Park

A discussion was held with Mark Howie who is the camp manager of Tembe Safaris. He was given a brief on the research project. The following notes were made during the discussion.

Howie noted at the outset that the Tembe area was a very species rich area for plants, birds and larger animals. Regarding invertebrates he noted that very little was known and that research was needed in the area. The fact that invertebrates have specific conservation needs that may differ to those of larger mammals was discussed, Howie noted that he assumed conserving the vegetation would automatically conserve insects too. He drew attention to the fact that Tembe had been declared an Important Centre of Plant Biodiversity (ICPB). The criteria of an ICPB are:

- species richness
- high levels of endemism
- diverse range of habitats
- the area contains a significant proportion of species adapted to special soil [edaphic] conditions
- contains plants of use to humans
- the area is threatened or under imminent threat of large scale devastation

Tembe falls in the centre of the Maputoland Centre of endemism. This is significant in terms of biodiversity conservation.

Regarding the local community in the Tembe area, Howie said that Tembe Safaris are being proactive in that they are planning to run environmental education courses in the local schools. They have identified a need for environmental education in the area and plan to have Tembe Safaris' field guides teaching courses on environmental education in local schools. Tembe Safaris are also in the process of training a number of local people to be ecotourism guides for Tembe Safaris. At present there are two local people working as guides and another two are in training. The aim is to have six guides, who will be divided, between taking drives and walks. Regarding the content to the training and the inclusion of information about invertebrates, Howie noted that there was very little on invertebrates. A discussion developed around the fact Tembe is very rich in invertebrates, and that there are a number of large flashy orders, particularly of butterflies, spiders and dung beetles which certainly do attract tourists' attention. Howie noted that tourists notice and ask about invertebrates, particularly in the camp area. He said that Tembe Safaris would like to have access to more information about invertebrate animals. Part of Tembe Safari's aim is to educate people about environmental issues and that ecological stories are often used to do this. It would be beneficial to have information about invertebrates, which are so important in all healthy environments, to use in their environmental education.

Regarding indigenous knowledge of invertebrates, such as cultural and medicinal use, Howie said that in his experience this would be of interest to tourists, particularly international tourists. About 50 % of the tourists are foreign. He noted that at present guides incorporate indigenous knowledge of certain plants, trees and dung beetles, and that this type of information is very popular.

On threats to invertebrates, Howie noted that since the reintroduction of DDT as a malaria control, there were many dead insects in the area.

Discussion was held about a walk being laid out around the camp area that focused largely on invertebrates. Howie noted that between the organized drives and walks tourists have time on their hands and frequently wander about the camp and that it would be good to be able to give them more information about the smaller animals they come across. As the discussion progressed, Howie said that Tembe Safaris would like to include a module on invertebrates in their field guide training. He was very positive about the need to include a focus on this neglected area. He noted that it was difficult to gain access to information about invertebrates and that it was a specialized area.

Appendix B.9: SUMMARY OF DISCUSSION WITH OWNER OF TEMBE SAFARIS

Name: Ernest Robertsa
Position: Owner of Tembe Safaris
Organisation: Tembe Safaris
Contact Details: 335 Moore Road, Durban, 4000
Place of interview: Durban and Tembe

Two meetings were held with Ernest Robertsa, the first at his office in Durban and the second in Tembe. At the first meeting Robertsa was given a brief overview of the research topic and asked for permission to visit his camp in Tembe and interview some of his staff. He was very co-operative and said that he would be in Tembe himself and would be able to discuss the topic at more length than. A brief discussion was held around the inclusion of information about invertebrates in the guided walks and drives. Robertsa noted that there was not a great deal of information about invertebrates in the walks and drives on offer at present. This he said was partly because there is a need to educate guides in this regard and partly because tourists are more interested in seeing big game. Regarding the possibility of including more information about invertebrates into the current game drives and walks Robertsa was very positive. He noted that in a reserve like Tembe, which has such dense vegetation, it is actually quite difficult to see game. This puts a great deal of pressure on guides to entertain the tourists and provide them with interesting experiences. The invertebrate fauna is plentiful and easy to see. There are thus good opportunities, both in terms of the time and availability, to include more information about invertebrates. He noted that Tembe Safaris were considering having a self guided walk around the camp area which would include a focus on plants. Invertebrates could be included in this. Robertsa was positive about the need to incorporate indigenous knowledge, noting that Tembe Safaris has a good working relationship with communities around the park.

Appendix C.1: INTERVIEW WITH MANAGER OF BIRDLIFE SOUTH AFRICA, WAKKERSTROOM

Name: Andre Botha
Position: Project Manager, BirdLife SA, Wakkerstroom
Organization: BirdLife South Africa
Contact details: Tel: 017 730433; e-mail: ajbotha@dorea.co.
Date of interview: 23 August 2001
Place of interview: BirdLife Offices, Wakkerstroom
Course: Sasol-BirdLife South Africa Training Course

Aim: to gain an insight into a number of community conservation and training of community guide projects that are taking place in the ecotourism industry in SA at present. This is done with a view to ascertaining the potential for community guide involvement in ecotourism. The aim is to gain knowledge of the logistics involved, such as instruction methods, resources required and means of selecting community members. This

information can then be assessed and applied to invertebrate ecotourism where appropriate. Discussion was encouraged where appropriate. This is in keeping with the qualitative research methodology used. Respondents were told about the aim of the research beforehand and the concepts of including a focus on invertebrates in ecotourism activities

1) *Q: What is the nature and aim of the project?*

A: To train financially disadvantaged community members as guides for bird watching tourism.

2) *Q: How long has the project been in operation?*

A: The first course of the current type was run in September 2000. Prior to this current, very professional training system, a number of guides were trained on a more *ad hoc* basis.

3) *Q: How long did it take to develop the course?*

A: It took one year of planning prior to implementation in September 2000 to prepare the course material and content.

4. ACCREDITATION OF COURSE

4a) *Q: Is the course recognised by any organisations?*

A: Yes, it is recognised by THETA (The Hospitality and Tourism Association) and it has NQF rating. (National Qualification Framework).

4b) *Q: Are the trainers assessed and accredited in any way?*

A: Yes - the trainers are accredited and are regularly assessed by THETA. The institution itself is regularly assessed and validated by THETA. The entire process is in line with the new Tourism Amendment Act.

5. SELECTION OF CANDIDATES

5a) *Q: How are candidates selected from the community?*

A: Bird Life South Africa has 21 branches throughout SA. The various branches identify potential trainees and nominate them for the course.

5b) *Q: Are there any prerequisites?*

A: Yes - potential trainees must be able to converse well in English and must have a matric.

6. AGE OF TRAINEES

6a) *Q: What age are candidates/ guides?*

A: An average of 24 years old.

6b) *Q: What, if any impact does age have on the likelihood of success of the candidate/guide?*

A: None – the likelihood of success depends entirely on individual commitment.

7) *Q: What is the male to female ratio?*

A: 40 % of the trainees are women.

8. TRAINING

8a) *Q: How is the training done – {lecture/workshop/in the field}?*

A: The training is done at the centre in Wakkerstroom. The course lasts 30 days. At present there are four different levels of training: Site (carries NQF rating level 2); Magisterial (NQF 4); Provincial (NQF 5) and National (NQF 6). It would be more effective if training could be done according to biomes as opposed to man made boundaries. This is not likely to take place however as the accreditation process is locked into the magisterial, provincial and national system. In the future BirdLife intends to train guides for the southern African subregion. This would be done in conjunction with their branches in neighbouring countries.

8b) Q: *What are the subjects covered by the course?*

A: Bird Identification; Small Business Skills; Public Relations; First Aid (level 1); Threats to birds e.g. Poison and cultural aspects.

Q: *What does the section on cultural aspects cover?*

A: No actual information about cultural knowledge of different species is given, but rather trainees are encouraged to find this information for themselves in their areas. The reason for this is that cultural knowledge of different bird species varies greatly across the country. The trainees are given guidelines about what kind of cultural knowledge/ anecdotes would be of interest to tourists, and how to go about incorporating this into a guided tour.

9) Q: *Are there any exams? What is the pass rate?*

A: Yes - the pass rate is 80 to 90%

10) Q: *Who gives the training?*

A: There are two full time trainers and a number of visiting guest lecturers.

The full time lecturers are Andre Botha and Carol De Bruin.

The visiting lectures are generally fairly high profile people from the birding world (e.g. Geoff Lockwood; Warwick Tarbotton; Rick Nuttall).

11) Q: *How long does the initial training take?*

A: 30 days. There are 250 hours of training given in this period. 240 hours of training is the equivalent of 24 credits in terms of NQF rating.

12) Q: *Is there any form of ongoing training or an aftercare programme?*

A: Yes. Firstly in a formal sense the trainers go to the different parts of the country where the trainees are based and meet with them. A formal two day refresher course is given a year after the initial training. Secondly in an informal sense the trainers are open and amenable to being contacted by the trainees at any time after the training course.

13) Q: *How many people are trained at once and how many candidates have been trained to date*

A: 80 to date. They are trained in groups of 20.

14) Q: *Of those that have been trained, how many are currently working as guides?*

A: 50 to 60% are active. Most of these people have part time employment.

12 have full time employment. Some people sent on the course were already employed and were sent on the course to improve their capability as guides. Apart from the community guides that are selected (recommended) by BirdLife branches, the course is also open to anyone who wants to do the course and is willing to pay the full rate.

Q: *What is the full rate?*

A: R5500.

15. COST OF TRAINING

15a) Q: *How much does it cost to train one guide?*

A: It costs about R5500 to R6000 to train one guide

15b) Q: *Does the project receive any form of external sponsorship?*

A: The project is fully funded by SASOL

15c) Q: *What is the nature of this sponsorship?*

A: The funding is of medium term commitment. SASOL initially committed to fund the first 3 years of training. After this period access progress and decide if they are going to commit for another 3 years.

The project provides the following for each trainee: Accommodation; food; binoculars; bird identification book; training.

16. PAYMENT OF GUIDES

16a) Q: Are guides paid by the organisation or by tourists?

A: The guide here at BirdLife in Wakkerstroom is on a full time monthly salary. The tourists who use his services pay R30 per hour direct to BirdLife At Wakkerstroom there is only one guide who is a full time employee. He does other jobs for the organisation when there is no guiding work.

16b) Q: Is the fee the guides' charge set by the organisation?

A: Yes

16c) Q: To what extent do the guides rely on tips from tourists?

A: The average tour is 3 hours at a rate of R30 per hour. No comment re tips.

16d) Q: Are guides paid a retainer by the organisation to ensure that they are available when needed?

See 16a.

17. GENERAL EVALUATION OF THE TRAINING COURSE

17) Q: Identify any short falls and suggested ways of ameliorating these.

See question 8a.

18. GENERAL DISCUSSION ON TRAINING GUIDES FOR ECOTOURISM AND THE CONCEPT OF A FOCUS ON INVERTEBRATES

18) Q: Please share any other observations or recommendations that you may have about the concept of community guides in general and the idea of invertebrate focused ecotourism specifically. Feel free to make any comments or observations about the proposed training of guides for invertebrate ecotourism.

A: The nature of the backup is important. While it is essential to have an aftercare programme it is important to not encourage a dependency mentality.

- Do not create false expectations.
- It is important before and during the course to stress to trainees that doing the course will not necessarily guarantee employment.

Some guides, on returning to their communities have initiated eco-clubs at schools, which does much to heighten environmental awareness and the need for conservation.

Regarding invertebrates: It would be very good to have some training about invertebrates included in the BirdLife training course. It would be especially good to have the site at Wakkerstroom surveyed, as there is very little knowledge on the invertebrates of the area at present. Information on invertebrates would be a valuable addition to the current knowledge of the biodiversity of the area.

Appendix C.2: INTERVIEW WITH OWNER/MANAGER OF ENTABENI ENVIRONMENTAL TRAINING AND EDUCATION CENTRE

Name: Nick Shaw

Position: Owner and Manager
Organization: Entabeni Environmental Training and Education Center
Contact details: Tel: 033 2632441; e-mail: nshaw@futurenet.co.za
Date of interview: 20 August 2001
Course: Rock art guide training course

Aim: to gain an insight into a number of community conservation and training of community guide projects that are taking place in the ecotourism industry in SA at present. This is done with a view to ascertaining the potential for community guide involvement in ecotourism. The aim is to gain knowledge of the logistics involved, such as instruction methods, resources required and means of selecting community members. This information can then be assessed and applied to invertebrate ecotourism where appropriate. Discussion was encouraged where appropriate. This is in keeping with the qualitative research methodology used. Respondents were told about the aim of the research beforehand and the concepts of including a focus on invertebrates in ecotourism activities.

1) *Q: What is the nature and aim of the project?*

A: To train community members in areas bordering sites of cultural interest as tour guides.

2) *Q: How long has the project been in operation?*

A: The community guide training programme has been in place for a year.

3. ACCREDITATION OF COURSE

Q: Is the course recognised by any organisations?

A: We are in the process of gaining accreditation from THETA

4. SELECTION OF CANDIDATES

4a) *Q: How are candidates selected from the community?*

The community was told about the programme and volunteers were invited.

4b) *Q: Are there any prerequisites, such as a matric pass?*

No, a matric is not needed. Guides must have conversational English.

4. AGE OF TRAINEES

4a) *Q: What age are candidates/ guides?*

There is a wide range of ages: 17 to late 60's.

4b) *Q: What, if any impact does age have on the likelihood of success of the candidate/guide?*

None. Enthusiasm is the most important factor.

5.) *Q: What is the male to female ratio?*

Out of the 13 trainees 2 are women.

6. TRAINING

6a) *Q: How is the training done – {lecture/workshop/in the field}?*

A: All training is done on site in the Mweni valley. We initially considered doing training at the centre then decided against it.

6b) *Q: What are the subjects covered by the course?*

There are 3 units: 1: Generic tour guide. 2: Technical skills (this deals with mountaineering skills) 3: Cultural aspects (in this case it is the rock art).

7) *Q: Are there any exams? What is the pass rate?*

There are no exams. We judge a persons readiness by observing them.

8) *Q: Who gives the training?*

Nick Shaw and a Zulu colleague and Beth Waal and Len van Schalkwyk of Entebeni Cultural Training.

9) *Q: Of those that have been trained, how many are currently working as guides?*

There are 13 guides that are still in the process of being trained. They have been doing some work during this time. We are intending to have an information centre built in Mweni Valley. The guides will use this as their base, meet tourists there and take guided walks from this base.

10. COST OF TRAINING

10a) *Q: How much does it cost to train one guide?*

R6000. It is expensive, as it is outcomes based training which is one on one.

10b) *Q: Does the project receive any form of external sponsorship?*

We receive sponsorship from the poverty relief fund

10c) *Q: What is the nature of this sponsorship?*

R2 million for the Mweni Valley area.

11. PAYMENT OF GUIDES

11a) *Q: Are guides paid by the organisation or by tourists?*

They are paid directly by tourists. Once the information centre is up and functional the guides will give a levy to the organisation. They charge R40 per person per day.

11b) *Q: Is the fee the guides charge set by the organisation?*

Yes.

12. GENERAL DISCUSSION ON TRAINING GUIDES FOR ECOTOURISM AND THE CONCEPT OF A FOCUS ON INVERTEBRATES

12a) *Q: Please share any other observations or recommendations that you may have about the concept of community guides in general and the idea of invertebrate focused ecotourism specifically. Feel free to make any comments or observations about the proposed training of guides for invertebrate ecotourism.*

A: Avoid creating false expectations. Beware of training for unemployment.

12) *Q: What do you think of the idea of including a focus on invertebrates in the training for the guides.*

A: At this stage our training is more focused on cultural aspects, however obviously tourists coming to the Drakensberg are also interested in nature and environmental subject matter so we could consider including a focus on invertebrates. We would need the assistance of entomologists in identifying appropriate invertebrates to include and in preparing course material.

13) *Q: What do you think of the idea of including a focus on indigenous knowledge such as cultural and medicinal use of invertebrates.*

A: This would be very interesting as it is likely to be area specific and we could work with the people in the area to gain access to this knowledge. Tourists would be interested in this type of information.

Appendix C.3: SUMMARY OF BRIEF DISCUSSIONS REGARDING GUIDE TRAINING BY EUROPEAN UNION WILD COAST COMMUNITY TOURISM INITIATIVE

Name: Mike Haynes
Position: Project manager
Organisation: European Union Wild Coast Community Tourism Initiative
Contact details: 082 8704 115; e-mail: mhaynespmu@euwildcoast.za.org
Date of discussion: 26-10-01

A discussion was held with the project manager, Mike Haynes regarding use of community guides, training of community guides and the inclusion of information about invertebrates into the guide training programmes. Mike welcomed the concept and said they would certainly be receptive to including a module on invertebrates in the training courses. He added that as the wild coast was not trying to sell big five game experiences but rather promote an appreciation for the environment as a whole this would be appropriate. He noted that future training courses would be done through a Wild Coast local NGO, PondoCROP.

Name: Travis Bailey
Position: PondoCROP area manager
Organisation: PondoCROP (developmental NGO)
Date of discussion: 27-10-01

A discussion with Travis Bailey of PondoCROP was held. He was receptive to the idea of including information about invertebrates in the training courses for community guides. He requested the local people be used as much as possible as assistants during any surveys of the area in the course development phase. These assistants could then go on to do the ecotourism guide training course. This would be an effective means of raising public awareness of invertebrates.

Appendix C.4: INTERVIEW WITH AMAFA CULTURAL OFFICER FOR KWAZULU-NATAL

Name: Graeme Smythe
Position: Cultural Officer for Amafa Northern KwaZulu Natal
Organisation: Amafa (Heritage) KwaZulu-Natal
Contact details: 03421 82375
Date: 7 August 2001
Place of interview: Amafa offices, Dundee

Aim: to gain an insight into a number of community conservation and training of community guide projects that are taking place in the ecotourism industry in SA at present. This is done with a view to ascertaining the extent of and potential for community guide involvement in ecotourism. The aim is to gain knowledge of the logistics involved, such as instruction methods, resources required and means of selecting community members. This information can then be assessed and applied to invertebrate ecotourism where appropriate.

A brief background on the research was given.

1) Q: Could you give some background on Amafa in the context of local communities.

A: Amafa is dedicated to the protection and preservation of the cultural heritage of KwaZulu Natal. Amafa maintain numerous sites of historical significance, many of which are regularly visited by tourists. Some of these sites border the residential areas of local communities, such as the Isandlwana battle site and its adjacent community. Amafa initiated a project aimed to train members of the Isandlwana community to be guides for tourists at the battle site adjacent to the community. Isandlwana is the most visited site of historical significance in northern KwaZulu-Natal and the community lives in close proximity to the site. It is a fairly large and established community. Amafa has a policy of employing people from communities bordering their areas where possible. At Isandlwana, Amafa employ six people from the community as guards against vandalism of grave sites and against poaching of game on the site. These guards receive their training from KZN Wildlife. We also

employ two people from the community as administration staff in the office at Isandlwana.

2) *Q: How long has the project of training community guides been in operation?*

A: Amafa initiated the community guide project at Isandlwana in 1998. It is not running any longer. We now subcontract out any training that is needed instead of trying to do it ourselves.

3) *Q: How long did it take to develop the course?*

A: A few weeks.

4) *Q: Is the course recognised or accredited by any other organisations such as THETA and does it have NQF [National Qualification Framework] rating? Are the trainers assessed in any way?*

A: No.

5) *Q: How are candidates selected from the community?*

A: The community was told of the project and people were invited to approach Amafa if they were interested in applying for training to become guides. Amafa selected only those who had matric level education.

6) *Q: What age are candidates?*

A: Matric level school leaving age which is approximately 18 to 20 years old.

6a) *Q: What, if any impact does age have on the likelihood of success of the candidate/guide?*

A: Age does seem to have significant impact. Younger people are less likely to remain in a rural area than more established older people.

7) *Q: What is the male/female ratio of guides trained?*

A: All male.

8 TRAINING

8) *Q: What type of training are prospective guides given? What subjects are covered and what form does the training take? (e.g.: lectures; on site field work; workshops)*

A: The training consisted of a two-day course focusing on the historical significance of the site. The trainees were taken around the battle site, and shown where to take tourists and what to tell them at various points on the site. Trainees were also given a brief written account of the battle and background to the battle. The onus was on the individual candidates to get familiar with the information they are given so that they can convey it easily to tourists.

9) *Q: Are there any exams? What is the pass rate?*

A: There are no exams.

10) *Q: Who gives the training?*

A: I do. [Graeme Smythe].

11) *Q: Is there any form of ongoing training?*

A: No. Theoretically there is a place for training on an *ad hoc* basis in that there are full time employees of Amafa on site (administrators and guards) who the guides could approach if they needed assistance or wanted to make contact with Graeme.

12) *Q: How many people are trained at once and how many have been trained to date?*

A: Five. There has only been one course.

13) *Q: Of those that have been trained, how many are currently working as guides?*

A: One, who proved very enthusiastic and competent from the outset and has been employed on a full time basis by Amafa.

14) Q: How much does it cost the organisation to train one guide?

A: Very low direct costs (only the generation and copying of the notes guides are given). In terms of indirect costs, my [Graeme Smythe's] time for two days.

15. PAYMENT OF GUIDES

15) Q: Once employed how does payment of the guides work – are they paid by the organisation or by tourists? Is the fee the guides charge set by the organisation or do guides rely on tips from tourists?

A: The question is answered theoretically as the system is no longer in operation: the guide system was advertised at the office where tourists pay to get access to the site. There is a set price which the tourists pay directly to the guides. The price is fairly low to encourage business. The guides hope to get a tip in addition to the fee. There is no exchange of money between Amafa and the guides. The guides do not give a commission to Amafa, nor are they given any retainer by Amafa.

16) Q: How many dos guides charge per tour and how long is the tour. How much do you estimate that they make per tour in tips?

A: Approximately R30 per hr. per group.

17) Q: Are guides paid a retainer by the organisation to ensure that they are available when needed?

A: No. It would be a good incentive to the guides to be on a retainer

18. AFTERCARE PROGRAMMES

18) Q: Is there an aftercare programme? Do you have regular meetings with the guides to get feedback, to discuss problems/successes? Is there any other type of ongoing support that you provide for guides?

A: Not formally but guides theoretically have access to the organisation and the trainer by virtue of the fact that they live in close proximity to the site and to full time employees of Amafa

19) Q: Identify any short falls & suggested ways of ameliorating these.

Please share any other observations or recommendations that you may have about the concept of community guides, with reference to the proposed training of guides in invertebrate ecotourism.

SELECTION OF GUIDES

The selection criteria used for the project at Isandlwana proved to be inappropriate.

CRITICISM OF CRITERIA FOR SELECTION

EDUCATION LEVEL: Amafa stipulated that candidates applying to be trained as guides for the Isandlwana site must have a matric level of education. This is not necessarily a good indicator of a person's ability to communicate with the public nor engage with the subject matter. Candidates should be judged on their ability to communicate – not necessarily in perfect English but in terms of having an engaging and pleasant personality and enthusiasm. Obviously a certain level of conversational English is required for practical reasons.

AGE: The five people that were selected for training as guides at Isandlwana were all recent school leavers and thus very young. Four of them have since moved away from the rural Isandlwana area to seek employment in urban areas. More stable (usually older) members of the community be considered in the future. For example there is a very successful guide on another site: uMngungundlovu/ Dingaans Stad in the eMakhosini Valley near Ulundi.. Here the guide is an older woman from the community adjacent to the site. She meets tourists that visit the site and gives them an account to the historically significant events that took place there. She is now a full time employee of Amafa.

OBSERVATIONS REGARDING POSSIBLE CONTRIBUTING FACTORS TO NON-SUCCESS OF COMMUNITY GUIDE SYSTEM

The guides that were trained were not used much by tourists and consequently did not earn enough money to

make guiding worth their while. There may be a number of reasons why tourists did not use the guides. Many of the tourists visiting the battle sites are staying in upmarket lodges in the area and the lodges provide very specialised, expert guides. Additionally there is a prestige element to being taken around a battle site such as Isandlwana by an internationally acknowledged authority (for example Dave Ratray of Fugitives Drift Lodge). There is much competition for business between established guides, who are often fairly critical of one another. These aspects may not be as marked in the ecotourism industry.

[Note – Barry Marshall made the same observation.]

FUTURE DEVELOPMENTS

Amafa and KZN Wildlife are looking to further extend their collaboration. A number of sites of historical significance are also of interest environmentally and are marketed as such. In the Drakensberg there are numerous areas of rock art sites which are jointly managed [see discussion with Barry Marshall]. At Isandlwana the 804 ha site is also marketed as a nature reserve. It incorporates a wetland, a variety of vegetation and is home to a number of small mammals and numerous bird species. Amafa and KZN Wildlife intend to make use of community guides in the future –to interpret not only the historical aspects of sites but also the environmental. As with the thinking behind community based natural resource management, facilitating employment of members of the local community is a good way of encouraging communities to value sites adjacent to which they live.

The areas where this is likely to take place are:

- a) eMakhosini Valley – 14000 ha. which incorporates numerous sites of historical significance, There are a number of resident rural communities, living fairly traditional life styles within the valley. There is a fair amount of game (antelope and small mammals) however at present there are problems with poaching of wild game. AMFA and KZN Wildlife hope to address this problem in part by encouraging tourism and community based natural resource management, which would involve training and use of community guides.
- b) Fugitives trail. The trail route runs from Isandlwana to Fugitives Drift and combines elements of historical and environmental interest.
- c) Ngwavuma Valley and Hlatikulu trails [as noted in the discussion with Barry Marshall].

Appendix C.5: SUMMARY OF DISCUSSION WITH TRAINING AND DEVELOPMENT OFFICER OF KWAZULU-NATAL WILDLIFE

Name:	Stephen Roberts
Position:	Training and Development Officer
Organisation:	KwaZulu-Natal Wildlife
Contact details:	Tel: 033 845 1323
Date of interview:	22 October 2001.

1.) Q: What is the nature of the collaboration between Amafa and KZN Wildlife?

A: Amafa and KZN Wildlife run a number of sites in collaboration. Most of these are in the Drakensberg area as this is the richest area for rock art. The sites run in collaboration are: Giants Castle, Kamberg, Cathedral Peak, Monks Cowl, Loteni and Cobham.

Certain battlefield sites are also run in collaboration: Spioenkop, Isandlwana and Lancaster Hill.

2.) Q: Is KZN Wildlife training ecotourism guides

A: At this stage KZN Wildlife is not directly involved in the actual training of community guides. They are only training assessors of community guides. It is likely that KZN Wildlife will become trainers of guides in the future.

3.) *Q: Do you think it would be relevant to include information about invertebrates in the training courses?*

A: Yes, KZN Wildlife would welcome information about invertebrates at different sites and would definitely want to include a focus on invertebrates in proposed future guide training programmes.

4.) *Q: What do you think of the concept of including a focus on indigenous knowledge of invertebrates such as cultural and medicinal use of invertebrates?*

A: This would be very interesting and I am sure would be popular with tourists. A lot of indigenous knowledge of invertebrates is being rapidly lost so it would also be good to document this information as soon as possible. For example indigenous knowledge of invertebrates as indicators of clean water has to a large extent been lost as is reflected in the high levels of cholera and other water borne diseases.

Appendix C.6: NOTES FROM DISCUSSION WITH TRIBE AFRICA TRAINERS

Name:	Paul Walters
Position:	Owner and Trainer
Organization:	Tribe Africa
Contact Details:	Tel: 035 573 1474. Cell: 082 375 9252. tribeafrica@iafrica.com
Date of Interview:	30 August 2001
Mode of interview:	Telephonic

The trainer, Paul Walters was positive about including information about invertebrates into the courses. Walters noted that they would need to be provided with all the training material about invertebrates.

Appendix D.1: INTERVIEW WITH BOTANICAL GARDENS PIETERMARITZBURG ECOTOURISM GUIDE

Name:	John Roffe
Position:	Chief Interpretive Officer for National Botanical Institute
Organisation:	Botanical Gardens Pietermaritzburg
Contact Details:	Tel: 033 344 35 85
Date of Interview:	13 August 2001
Place of Interview	Botanical Gardens, Pietermaritzburg

Background: John is a full time employee of the Botanic Gardens in Pietermaritzburg. For the last four and a half years he has offered guided walks for the general public. These are his own initiative and he runs them out of office hours – in the evenings or on weekends. They focus on a number of different aspects of the environment and there is a good representation of walks focusing on invertebrates. Examples of specifically relevant walks that take place on a regular basis are spider focused walks; medicinal plant tour (relevant in terms of its relation to indigenous knowledge) and the ‘interesting insects’ guided walk.

1) *Q: What has the response of the public been to the walks in general?*

A: This varies a fair amount. Most of the recent walks have had about five to eight people attending.

2) *Q: What is the response to the invertebrate focused walks been?*

A: Again this varies a fair amount. When a specific or unusual species is marketed there is great interest. For example a species of Grassland Bolas spider was found in the grassland area of the Botanic Gardens and this was the first time this species had been recorded in this area. We managed to generate a fair amount of publicity around this find which in turn created much interest from the general public. We then offered a series of walks to see the spider and these were very popular.

3) *Q: How many people participated?*

A: Up to 45 people.

4) *Q: Do the walks that focus on invertebrates appeal to children?*

A: Yes, the walks are very popular with children. About a third of the participants the insect and spider walks are children, accompanied by their parents. Parents say that they see the walks as an educational opportunity for their children.

5) *Q: In general what do you consider the potential for ecotourism that focuses on invertebrates?*

A: If the concept is marketed well, there is great potential for invertebrates in ecotourism. One needs to use draw cards to attract people's attention. There is a great range of invertebrates in SA, and if invertebrate ecotourism activities focus on good interpretation of invertebrates that is accessible to the public there will be interest and consequently a market for invertebrate ecotourism.

6) *Q: Could you give some examples of the type of draw cards you would use?*

A: It is importance of getting the attention of the public by having a draw card of particular interest – such as the example of the Grassland Bolas spider. Invertebrates that are rare, attractive or dangerous capture people's imagination. One could stress the presence of red data listed species, or endemic species or species with other charismatic features. One could also draw attention to those with unusual breeding, feeding, or nesting habits.

7) *Q: How do you actually go about showing people invertebrates on walks?*

A: It is good to have a number of different methods to add variety and keep people's attention. Apart from just walking along and seeing what you come across (and you will always find invertebrates as you go along) traps can be used. For example, a trap can be set in the upper canopy of the forest some time before the walk. Then people can be told beforehand the type of things that can be found in the upper canopy level. The group can then go and discover together what has been trapped and discuss form, function and interesting features of the invertebrates that have been trapped. Use can also be made of baits (such as rotting banana for butterflies), beating boards or light traps. Part of the educational aspect of the walk can be around explaining how and why scientists use these methods of trapping invertebrates. There are many invertebrates living in ponds and streams. If there is a pond or stream near the target area it should be included in the walk. Taking a net and showing people some of the life found in water is of interest and educational value. In terms of conservation it is important to always tell people the function of the insects they are looking at and stress their role in the ecosystem.

8) *Q: What is the ideal length of time for invertebrate focused walks.*

A: About one and a half hours.

9) *Q: Is there anything else you would like to mention in connection with invertebrate conservation and ecotourism that focuses in invertebrates?*

A: Yes. There seems to be a growing interest in invertebrates among the general public. For example dragonflies capture people's attention. In Japan there are whole areas set aside for dragonflies with walks set out to observe them. The Pietermaritzburg Botanic Gardens has recently set up a self-guided dragonfly walk around the ponds and it is proving popular. Umgeni Valley Nature Reserve used to have a similar one for spiders.

Regarding indigenous knowledge, John was very positive about the need to incorporate it into ecotourism. He noted that the walks and talks on muti plants in the Botanical Gardens are popular.

[Notes: John expressed interest in being involved in any projects that may arise, particularly in the area of training guides for invertebrate focused ecotourism].

Appendix D.2: INTERVIEW WITH BIRDWATCHING GUIDE TRAINED BY BIRDLIFE SA

Name: David Nkosi
Position: Bird Guide for BirdLife, Wakkerstroom
Contact Details: Tel: 017 730433
Date of interview: 23 August 2001
Place of interview: BirdLife Offices, Wakkerstroom

1.) *Q: What kind work do you do?*

A: I am a guide for birdwatchers.

2.) *Q: Are you employed full time as a guide or do you do freelance work?*

A: I am employed full time as a guide by Bird Life South Africa in Wakkerstroom. I am the only full time guide in Wakkerstroom. When I am not busy as a guide I do other work for BirdLife, such as research on mice in the Wakkerstroom area; bird ringing; education to discourage the use of poisons and care and release of injured birds.

3.) *Q: When is the busiest time of the year for you and how many groups to you have per day when it is very busy?*

A: The busiest time of the year is the rainy season. During this period I have two to three groups every day.

4.) *Q: Does this effect you income?*

A: I am on a fixed monthly salary. Sometimes I do get tips and so I make more money when it is busy.

5.) *Q: How long have you been working as a guide?*

A: I have been working four months as a full time guide but before that I worked freelance for some years.

6. TRAINING

6a.) *Q: Have you had formal training as an ecotourism guide?*

A: Yes

6b.) *Q: Who gave you the training – please name the organisation and individuals involved.*

A: BirdLife SA in Wakkerstroom. The trainers were Andre Botha and Carol DuBryn who are the full time trainers. Guest lecturers were Geoff Lockwood and Aldo Barutti

6c.) *Q: When were you trained?*

A: September 2000.

6d.) *Q: Do you think it was good training?*

A: Yes, it was excellent.

6e.) *Q: Is there anything you think could have been done better?*

A: The course should include information on common plants and insects in the area as tourists often ask about these things. I would especially like to learn about dragonflies and butterflies as clients often ask about these. The course should stress more the interactions between birds and their habitat and food sources, which are often insects. It is very difficult to be asked questions about plants and insects and not be able to answer them. To help with finding birds, it would be good to be supplied with cassettes of birdcalls so that certain species that people have come a long way to see can be called up.

6e.i) *So do you include information about insects and spiders in your guided tours?*

No I don't really because I don't know enough about these things. I want to know about insects.

6f) *Q: Do the trainers keep in contact with you still? Do you think they should? Do you have problems/questions that you would like assistance with?*

A: I have daily contact with the training organisation as I am working on site at Bird Life in Wakkerstroom.

Other guides have a formal aftercare programme. They can also contact the trainers if they need help.

6g) *Q: Do you get taught anything about indigenous knowledge of animals?*

On our training courses there is a section on indigenous knowledge – they do not really teach us anything specific but tell us the kind of things tourists want to know about then it is up to us to find out this type of information for ourselves and then tell the tourists.

6h) *Q: Are tourists interested in indigenous knowledge? Do you think it should be included in a guided tour?*

Yes, they are interested, it must be there.

7. MISCELLANEOUS

7a.) *Q: Is there anything else that you would like to talk about regarding being an ecotourism guide?*

A: Well, nothing that we have not already discussed. I can stress again that we really do need training on plants and insects.

7.b.) *Q: Earlier you mentioned that tourists sometimes ask you about insects. Are those questions always about insects in relation to birds. Do the tourists ever ask any other kinds of questions about insects?*

A: No - I can say that they always ask about insects in relation to birds - for example if they are food for birds. Some birds use spider webs in their nest building. We talk about insects and spiders in these terms. Birdwatchers are very focused on the subject of birds.

Appendix D.3: INTERVIEW WITH KZN WILDLIFE UMFOLOZI GAME DRIVE GUIDE

Name: Bheki Njoko
Position: Guide for game drives
Organisation: KZN Wildlife, Umfolozi
Contact Details: Mpila Camp Office, Umfolozi. Tel: 035 5508481
Date of interview: 12 October 2001
Place of interview: Mpila Camp, Umfolozi Game Reserve

1.) *Q: What kind of ecotourism guiding do you do?*

A: Game drives, which are both day and night drives.

2.) *Q: Are you currently employed full time as a guide?*

A: I am employed full time by KZN Wildlife - I have been with the organisation for 16 years. I have been here at Umfolozi for seven years.

3. TRAINING

3a.) *Q: Have you had formal training as an ecotourism guide?*

A: Yes. KZN Wildlife sends staff to the Ntinini Training Centre near Ulundi for training. I have also received training at head office [Queen Elizabeth Park] in Pietermaritzburg and also on the job training here in Umfolozi. I am registered with SATOUR.

3b.) *Q: Who gave you the training?*

A: KZN Wildlife staff.

3c.) *Q: When were you trained?*

A: At different times during the time that I have been employed by KZN Wildlife.

3d.) *Q: Do you think it was good training?*

A: Yes

3e.) Q: *Is there anything you think could have been done better?*

A: No. The training was good.

3f.) Q: *Do the trainers keep in contact with you still? Do you think they should? Do you ever have problems or questions that you would like assistance with?*

A: I never need any assistance but if I did I could ask.

3g.) Q: *If there was a training course to teach you about insects and other small animals would you be interested in going on it?*

A: Yes I could go on a course. .

4a.) Q: *What do tourists want to see when they are on one of your guided drives?*

A: Mostly they want to see the big five and other large mammals.

4b.) Q: *Do the tourists ever ask you about insects and other small animals?*

A: Sometimes they ask about spiders, if they are dangerous. Sometimes about flying ants. The termite mounds are something they find interesting. But mostly tourists are here to see the big game, especially the foreign tourists who want to see the big five. The game drives here in Umfolozi are good, especially the night drives when we usually see lion. There is not really time to look for anything other than large mammals. Sometimes, even though the game viewing is good in Umfolozi, there is pressure to find all the game people want to see in just three hours.

5.) Q: *Do you think the tourists would be interested in finding out about indigenous knowledge such as cultural and medicinal uses of animals?*

A: Some tourists maybe interested. But this knowledge is not easy to come across. If you want to find out this kind of information you need to speak to the old people that used to live here before they made a park here. I can find these people. There are two of them who work for KZN Wildlife. Msweli who works at the workshop at Hilltop [Hluhluwe Main Camp] and Makhwanazi who works at the research station at Hilltop.

6. MISCELLANEOUS

Q: *Is there anything else that you would like to talk about regarding being an ecotourism guide?*

A: No.

Appendix D.4: INTERVIEW WITH KZN WILDLIFE GUIDE FOR WALKS IN UMFOLOZI

Name:	David Mnxali
Position:	Walking guide
Organisation:	KZN Wildlife, Umfolozi
Contact Details:	Mpila Camp Office, Umfolozi. Tel: 035 5508481
Date of interview:	12 October 2001
Place of interview:	Mpila Camp, Umfolozi Game Reserve.

1. Q: *What kind of guiding do you do?*

A: The walks. We go for two or three hours. I take about 5 or 10 people.

2. Q: *Are you employed full time as a guide?*

A: Yes. I have been employed full time by KZN Wildlife for 11 and a half years. I was working in anti-poaching for five years and I have been a guide for the walks for 6 years.

3. Q: *Were you trained as a guide?*

A: Yes. There was some training by the KZN Wildlife staff, but I know this place so when I take the people walking I show them what I know.

4. Q: *Do you show people insects and spiders on the walks?*

A: Yes always. I show them the baboon spider - I put a stick down its hole to make it come out then the people can see it. They always like that and are frightened of it. I show them the trap door spider. I show them the flying ants and tell them that these ants are food for people and animals and birds. They think that is good. I show them butterflies and the caterpillars that are for that butterfly and I show them which plants the caterpillars eat. That is interesting for the people. I tell them which caterpillars the birds will eat and which they will not eat because they are poisonous. I show them other insects too that birds will not eat because they are poisonous. The insects with red and black colours like the big grasshoppers are poisonous and the birds will not eat them.

4.i) *Were you trained about insects?*

A: No – I am interested in insects and spiders and so I talk about them.

5. Q: *Do you ever tell the tourists about things like which animals or insects or plants are good for medicine?*

A: Yes - mostly for the plants.

6. Q: *Do you tell them any stories from your culture, from your people, about any of the animals.*

A: Yes the people like this. I tell them what the bird calls mean and I tell other stories too. The people like to hear these things.

7. *Do you think the training courses for guides should have more information about insects?*

A: Yes they should because the tourists are interested when I talk about this.

Appendix D.5: PARTICIPANT OBSERVATION AND CASUAL CONVERSATION WITH GUIDE DURING A GUIDED WALK AT NDUMU GAME RESERVE

Name: Sonto Tembe
Position: Walking guide at Ndumu Game Reserve
Organisation: KZN Wildlife
Contact: KZN Wildlife Offices at Ndumu: 035 591 0004
Date: 25 December 2001
Place: Ndumu Game Reserve

The researcher participated in a guided walk at Ndumu Game Reserve. The objective was:

- to observe how much information about invertebrates was included in the walk
- to observe opportunities for including information about invertebrates

The walk took place along the north bank of Nyamiti pan. (26° 58.222' S 32° 26.285' E). The walk was two hours long. There was much invertebrate activity. Most noticeable were:

- many species of dragonflies
- Golden Orb Web Spiders
- many species of butterflies- most noticeable being the families Papilionidae and the Pieridae
- cicadas
- wasps
- millipedes
- Porcelain Tree Snails
- scorpions

- dung beetles, fruit chaffers, long horn beetles, jewel beetles
- lace wings

Informal conversation with Guide: The guided walk took two hours. During the first hour the researcher was engaged in participant observation. During the second hour the guide was asked some questions about the invertebrates that were observed. The guide was asked about millipedes, spiders, wasps, dragonflies and butterflies but had no information to pass on about them. A discussion was held about invertebrates

Recommendations after participant observation and interaction with the guide

- the guides be taught the common names of the more obvious invertebrates fauna such as some of the spiders, dragonflies, butterflies, wasps, millipedes, beetles
- the guides are taught some of the ecological interactions that place, specifically those that relate to the larger fauna that tourists are interested in.

Appendix D.6: PARTICIPANT OBSERVATION AND CASUAL CONVERSATION WITH GUIDE DURING GAME DRIVE AT NDUMU GAME RESERVE

Name: Efraim Sokhula
 Organisation: KZN Wildlife Ndumu Game Reserve
 Contact: 035 591 0058
 Date: 25 December 2001
 Place: Ndumu Game Reserve

The researcher participated in a guided game drive. The aim was to:

- Assess how much information about invertebrates is included in this ecotourism activity.
- Assess the potential for inclusion of information about invertebrates:
 - are invertebrates easily observable from a moving open vehicle?
 - do other tourists notice any invertebrates
 - how would information about invertebrates fit into the existing tour?

The drive commenced at 7.30 am and ended at 10 am. There were five people in the vehicle: the driver (who was also the guide, Efrahim), the researcher, the research assistant, two tourists.

The drive went through the reserve to the south banks of the Nyamiti pan. On the way there the guide stopped three times to view game. One of the tourists asked about a particular tree. The guide named it a Toad Trees (*Tabernaemontana elegans*) and gave some interesting information about it

The guide was very knowledgeable about birds; he knew them well by call and by sight. Ndumu is known for its good birding and it would appear that guides assume that tourists visit Ndumu specifically to birdwatch.

In terms of the practicality of seeing invertebrates from an open vehicle, it is quite feasible. For example one can hear the cicadas calling. At one of the stops we saw the cicadas on a nearby tree. The guide stops the vehicle fairly often to view birds and at each of these stops one can observe invertebrates. Dragonflies were easily seen. For example researcher and two of the tourists had noticed groups of 10 to 15 dragonflies flying alongside the vehicle as we drove slowly around the south bank of the Nyamiti pan. They moved as a group and easily kept up with the vehicle for a few kilometres. One of the tourists asked the guide why the dragonflies did this. The guide said he did not know. He noted that they were always to be found in that particular area and that if one were walking they flew near you. They accompany animals too in this manner.

Butterflies were easily seen and there were some spectacular species such as the blue swallow tail (*Papilio nirens*).

Cicadas started calling more loudly and incessantly as the day warmed up. The researcher asked the guide about the cicadas. He knew that they were cicadas and that they always called in the heat of the day in the rainy

season. The researcher was being assisted by an entomologist who caught one of the cicadas and showed the other tourists and the guide how it made its call. He gave a few brief details about cicadas such as their life cycle. The tourists and the guide were very interested.

From a practical point of view, it is quite feasible to include information about invertebrates in a game drive. Many taxa can be easily observed from a slow moving open vehicle. When game and bird viewing, frequent stops are made and it is quite possible to include some information about any of the invertebrates that are easily seen at the same time that these stops are made.

Conclusions regarding feasibility of including information about invertebrates into current game drives:

In terms of the interest levels of tourists in invertebrates, the researcher noted that tourists are very receptive to information about invertebrates if it is presented in an accessible way. It is recommended however that information be kept brief and to the point as the main focus of most tourists is animals, and sometimes birds, and time is limited.

Appendix D.7: BRIEF DISCUSSION WITH KZN WILDLIFE GAME DRIVE GUIDE AT HLUHLUWE

Name: Eric Forsythe
Position: Game drive guide
Organisation: KZN Wildlife
Contact Details: Hilltop Camp Office, Hluhluwe. Tel: 035 5620255
Date of interview: 12 October 2001
Place of interview: Hilltop Camp Tourist Centre, Hluhluwe Game Reserve.

1. Q: *What kind of guiding do you do?*

A: The open vehicle game drives - night drives and early morning drives.

2. Q: *Are you employed full time as a guide?*

A: Yes.

3 Q: *What is the focus of interest on the game drives?*

A: Most tourists are interested in seeing the big five. I personally am interested in birdwatching and it is always good for me when there is a fellow birder in the group, but this does not happen very often.

4. Q: *Do you tourists ever ask you about insects and other smaller animals on the drives?*

A: Sometimes. Usually people ask if bees, wasps, spiders etc are dangerous. Quite often tourists are scared of these things. Mostly there is just pressure for me to find as many large animals as possible in the three hours that the drive lasts. I can't say I really know a great deal about insects and spiders and the like - my speciality is birds, and of course I know mammals well too.

5. Q: *Would you be interested in finding out more about invertebrates? If there was a course or some sort of training about some of the invertebrates of this area would you be interested in going on it?*

A: Yes, it is always good to learn. It would also be good to have more to pass on to tourists. Game drives are hard in the sense that there is always pressure to find large impressive animals to show tourists. Sometimes you can drive at night for hours and find nothing and that is terrible. Other times you are lucky and find leopard, elephant and rhino easily. On those nights when you cannot find the big game it would be good to have something else to show people. Yes I would like to find out more about any insects that are special to this area.

6. Q: *Do you think tourists are interested in local indigenous knowledge such as cultural and medicinal uses of animals?*

A: Yes, especially the foreigners.

A discussion ensued about the content of tours and the potential to include more information about invertebrates and the potential to include indigenous knowledge (specifically of invertebrates and in general). The guide was very positive about the concepts, cautioning only that time may be a limiting factor to inclusion.

Appendix D.8: INTERVIEW WITH FREELANCE TOURGUIDE

Name: Justin Gossman
Organisation: Freelance Tour Guide
Contact Details: Via Hluhluwe Umfolozi 035 5620255
Date of Interview: 13 October 2001
Place of Interview: Hluhluwe Main Camp

1. Q: *How long have you been working as a tour guide?*

A: 5 years

2. Q: *This seems to be quite a large group of people you have with you – is that typical for a tour group?*

A: Yes. There are 11 in this party. I usually get groups of 10 to 15 people. They are all German. I speak German so I often get this kind of work.

3. Q: *What is the main focus of interest for the people you take on tour?*

A: Wildlife and seeing the countryside. We typically do a 20-day tour. The average international tourist is middle aged and spends two weeks in South Africa. Our tours go to the Kruger, then Blyde River canyon then down here to KZN to HUP. In the game reserves the tourists want to see the big five.

4. Q: *What about smaller animals like insects and spiders and scorpions? Do you ever include a focus on those? Do tourists ever ask about invertebrates?*

A: Sometimes. Often with international tourists they are afraid of insects and spiders and always ask if they are poisonous. They are always impressed with the butterflies. Usually if we do talk about insects at all it is in response to a tourists question. I do point out termite mounds and tell people about flying ants.

5. Q: *What do you think of the idea of including more information about invertebrates into ecotourism activities?*

A: It could work but it depends how it is done. It is always good to have more information to give people so in that sense it would be good for me to know more to tell them [the tourists]. You must remember though that these people [international tourists] are really here to see big game – particularly the big five – and so anything else has to happen around that main objective. I think it would also depend on the guide. I am interested in insects, but I don't know if all guides would be. Personally for my tours I could include a focus on invertebrates. As I am with one group for around 2 weeks there is time. For other guides who do game drives in reserves that only last about three hours, I doubt they would have the time.

6. Q: *What do you think of having a walk in the game reserve that focused on invertebrates. It could be in and around the camp or it could be a longer walk such as the ones already on offer at many camps.*

A: A short walk around the camp area would be really good, as it would give people something to do. In terms on a longer walk I think it would be better if information about insects was just included into existing walks. I really doubt that any of the people I take on tours would go on a three-hour walk that focuses on insects. Their top priority is to see animals. It would be good as a guide, however, to have that extra information, even just to include when driving around the park because often there can be quite long gaps when you don't see any big animals and you have to tell the people something.

A discussion ensued about the content of tours and the potential to include more information about invertebrates and the potential to include indigenous knowledge (specifically of invertebrates and in general). The guide was

very positive about the concepts. The guide indicated that he would be interested in being trained in these areas.

Appendix D.9: SUMMARY OF DISCUSSION WITH PRIVATE TOUR OPERATOR

Name: Alan Brundstone
Position: Tour Operator
Organisation: African Fun Tours
Contact: 031 205 09 37 / 082 372 2537
Date of discussion: 13 October 2001

A discussion was held with Alan who was being paid by KwaZulu-Natal Tourism to take an Australian journalist on a tour of KwaZulu-Natal. The following are notes made immediately after the discussion.

He noted that on the whole foreign tourists are here to see the big five and that any focus on invertebrates would have to be very secondary to that need. An ecotourism activity that focused only on invertebrates could only be considered for longer tours. On the whole most tours are fairly short and there is pressure to see the big five.

He said that in his experience most foreigners were scared of insects and spiders. We discussed the idea that this very factor may in fact serve to ignite their interest in going on an invertebrate focused walk.

Regarding having an invertebrate focused walk for children, Alan was quite positive, saying that children get very restless on tours and this would be a good activity for them.

A discussion ensued about the content of tours and the potential to include more information about invertebrates and the potential to include indigenous knowledge (specifically of invertebrates and in general). The guide was very positive about the concepts. The guide indicated that he would be interested in being trained in these areas.

Appendix D.10: SUMMARY OF DISCUSSION WITH COMMUNITY GUIDE AT PRIVATE GAME LODGE

Name: Tom Mahamba
Position: Ecoguide
Organisation: Tembe Safaris
Date of discussion: 24 December 2001
Place of discussion: Tembe Safaris Camp, Tembe Elephant Park

Tom Mahamba has been trained by Tembe Safaris and has been working for them for almost a year.

Regarding indigenous knowledge, Tom said that he did not know that tourists would be interested in this kind of information. The researcher walked with him around the camp area, where there were many wasps, spiders, butterflies, beetles and ants. He was interested in the invertebrates but did not have a particularly good knowledge of them. By comparison his knowledge of the birds in the vicinity was far better, he knew them by call as well as by sight and could recount a number of interesting facts about their habits.

Regarding tourists and their interest in invertebrates, Tom said when people were in the camp they would often notice the smaller creatures like insects and spiders. They often asked about spiders, whether or not they were poisonous. He said he would definitely like to know more about these animals so that he could answer tourists' questions. Tom also made the point that invertebrates are part of the cycle of life and that having more knowledge about invertebrates and what they do, would relate to observations of larger animals and birds.

OBSERVATIONS: There was particularly rich invertebrate fauna in the camp area at Tembe Safaris. It is in the camp situation that tourists have the time to watch smaller animals. Tourists were frequently seen at Tembe, Hluhluwe, Umfolozi, and Ndumu wandering around looking for something to do. Staff confirmed that tourists

often asked about all sorts of invertebrates, especially spiders and wasps. Tourists usually stay in the camp for a few days thus have the opportunity to observe invertebrates over a period of time. This makes for an ideal educational opportunity in terms of raising public awareness about invertebrates.

Appendix E.1: OBSERVATIONS OF AND INFORMAL DISCUSSIONS WITH TOURISTS IN TEMBE, HLUHLUWE AND UMFOLOZI GAME RESERVES

The following field notes were made. They consist of observations of tourists and notes made after conversations with tourists that are relevant to invertebrate focused ecotourism.

Umfolozi Game Reserve: 10 October 2001: A group of three Australian tourists were observed looking at the large Golden Orb Web Spiders which have their webs near the offices at Mpila Camp. They then went into the reception area to ask about the spiders. They wanted to know the name of the spiders - which the office staff told them. They wanted to know if they were poisonous. The staff said they were not but that they could inflict a fairly painful bite but that one was unlikely to get bitten unless one tried to pick up the spider. The tourists noted that they thought the spiders quite beautiful. The staff suggested they look at the field guide to spiders in the shop, which they then did. The researcher asked the tourists to be respondents in the structured survey, which they did. They were very enthusiastic about the concept of invertebrate focused tourism. The one individual was a schoolteacher and said she found children to be particularly interested in insects and spiders and very receptive to conservation issues. The teacher noted that she had been working with primary school children for the last 25 years and she knows that they are interested in small things such as insects and spiders. She was very taken with the idea of invertebrate walks for children. She suggested giving the children a magnifying glass and making the educational aspect fun. Parents interviewed during the structured survey confirmed her observations. Another tourist interviewed later in the day noted that it is important to educate children about the fact that spiders are not necessarily dangerous and do not need to be killed in the home environment.

Umfolozi Game Reserve: 10 October 2001: A tourist was observed looking at a Paper Wasp (*Belanogaster sp.*, *Vespidae*) and its nest in the eaves of a hutted building. The tourist was approached regarding being a respondent to the structured survey. After answering the questions she noted that observing insects gives an extra dimension to ecotourism. She gave her enjoyment of observing the wasp as an example. She said that she was waiting for her friend to join her so that they could go on a game drive. Her friend was late. Instead of getting bored or feeling that she was missing out on chances to see the large mammals, she said she was enjoying watching how the wasp was feeding its young. She noted that she would like to know more about wasps -for example how long did they feed their young like this. She added that she observed that some young were smaller than others - why was this? How long did it take for a wasp to mature?

Hluhluwe Game Reserve: 17 October 2001: Two Italian tourists that responded to the structured survey said that there "is so much nature in South Africa, we did not know it was threatened at all". From this and a number of other comments, particularly by foreigners, one can see that there is a perception that biodiversity in South Africa is not threatened. There is thus identified a need for education of the general public about threats to biodiversity and the need for improved conservation measures.

Tembe Elephant Park: 23 December 2001: An encounter with three South African tourists at a hide in Tembe is noteworthy in terms of their comments about the potential for invertebrate focused tourism. The tourists were in their own vehicle and were day visitors to the Park. One of the group asked us if we had seen any animals yet that day. We had seen Nyala at the last hide, and much fresh evidence of elephant, but had not actually seen any elephant. The tourists said they had been driving around all day and had seen no game. We all noted that the bush was so thick it was really hard to see any large animals. The tourists then commented on the fact that the butterflies were so numerous and so beautiful. They noted how one could get very close to the butterflies as they sat in groups in the road. The butterflies they were referring to were Green-banded Swallowtail (*Papilio nireus*). When asked what they thought of the idea of including information about invertebrates into ecotourism activities such as game drives and walks, the tourists were very positive. They noted that the game drives they had been on did not include any information about invertebrates which they said, was a pity. They noted that all aspects of nature should be included.

Mpila Camp, Umfolozi 12 October 2001: Five tourists approached after an early morning walk taken by David Mnxali (Appendix D.4.) were very impressed with the walk and with Mnxali as a guide. Although he is not fluent in English his walks are very popular. The tourists note that they particularly liked being shown plants and insects as well as animals. This observation contrasts with a group of four tourists at Hluhluwe who had been on a similar early morning walk with a guide. However the guide in this instance was criticised for only pointing out mammals and then only to name them.

**IMPROVING THE CONSERVATION VALUE OF
INVERTEBRATES THROUGH ECOTOURISM**

COMPONENT B

by

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for the degree of
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ABSTRACT

Invertebrates are suffering the greatest species loss in the current biodiversity crisis. These animals perform essential ecosystem functions upon which humanity depends, yet they are largely ignored in conservation efforts. The main challenges facing invertebrate conservationists, in terms of raising public awareness, are to change common negative perceptions regarding invertebrates and to apply some form of value to invertebrates. Conservation efforts can be improved by raising public awareness of, and appreciation for, invertebrates in the context of ecotourism. Current levels of inclusion of invertebrates in ecotourism activities were assessed. Further, the response to the concept of the inclusion of both western/scientific and indigenous knowledge regarding invertebrates into current and planned ecotourism activities was assessed. The findings revealed that there is currently negligible information regarding invertebrates in ecotourism activities. However, the positive response to the concept from both ecotourists and ecotourism service providers showed that there is potential to increase levels of information regarding invertebrates in ecotourism. Recommendations on how to address the lack of invertebrate information in ecotourism are provided and examples of the types of invertebrates to include in specific ecotourism activities are given. Including a focus on invertebrates in ecotourism will serve the multiple purposes of placing value on invertebrates; raising public awareness and hence the conservation status of invertebrates, and finally will increase the scope of ecotourism.

Author Keywords: Biodiversity; ecotourism; invertebrates; conservation.

INTRODUCTION

Human survival and the global economy depend inextricably on invertebrate animals, however, human activities are systematically destroying countless species within this, the largest component of world biodiversity. What is of concern, and the subject to be addressed in the context of ecotourism, is that the general populace is largely unaware of these facts.

Biodiversity conservation is recognised nationally and internationally to be of crucial importance, however conservation measures are largely inadequate, particularly with regard to the specific conservation needs of invertebrates. The current and numerous threats to invertebrate diversity are largely human induced. While there are a number of factors that need to be addressed in order to improve invertebrate conservation, the need to raise public awareness, and this includes educators and conservationists, regarding invertebrates has been stressed by numerous authors (Samways 1994; Berenbaum 1995; O'Toole 1995; Evans, Bellamy, Watson, Galiano, Wynne 1996). There is a need to challenge common negative perceptions and raise awareness as to the functions and conservation needs of invertebrates. In doing so, biodiversity conservation can be improved. This research examined means of raising awareness in the context of ecotourism. The research aimed to investigate the potential for including more information regarding invertebrates into certain ecotourism activities. The objectives of the research were to:

- Obtain an overview of the current levels of the inclusion of information regarding invertebrates within certain types of ecotourism activities.
- Determine the response of tourists to the concept of including more information regarding invertebrates into current and planned ecotourism activities.
- Examine the opinions and attitudes of selected people working in the ecotourism field to the concept of including more information regarding invertebrates into ecotourism activities.
- Provide recommendations on how to address the lack of invertebrate information in ecotourism and give examples of the types of invertebrates that could be featured easily in ecotourism, and the type of information that could be included about them.

BIODIVERSITY

Threats to biodiversity are largely human induced. Scientists have estimated that roughly 30 000 species of plants and animals are lost every year due to human activities (Eldredge 1998). Already humans have caused the extinction of 5-20% of species in many groups and current rates of extinction are estimated to be 100-1000 times greater than pre-human times (Chapin, Zavaleta, Eviner, Naylor, Vitousek, Reynolds, Hooper, Lavelle, Sala, Hobbie, Mack & Diaz 2000). Most of these losses are in the invertebrate group of animal life (Eldredge 1998). Transformation of land, over-harvesting, pollution, mono-agriculture, human introduced alien species, over-hunting, pesticides and herbicides cause changes to the composition, richness and distribution of biodiversity.

South Africa has an extremely rich biodiversity. It is ranked as the third most biologically diverse country in the world, after Brazil and Indonesia, and South Africa is also one of the megadiversity countries which collectively claim within their borders more than two thirds of the global biodiversity resources (World Conservation Monitoring Centre 1992). These resources contribute significantly to the region's economy and are the basis of millions of people's livelihoods, yet South Africa's biodiversity is one of the most threatened in the world (Wynberg 2002). As such, South Africa has a particular responsibility in conserving its biodiversity.

Invertebrates

The majority of the organisms in the kingdom Animalia are invertebrates, which comprise all the major phyla with the exception of the vertebrates. Invertebrates form an estimated 73.5% of life on earth (Hammond 1995) and are the most significant component of biodiversity (Horwitz, Recher & Majer 1999). Insects and other land dwelling arthropods are so important that if all were to be removed humanity would probably only last a few months (Wilson 1992). Invertebrates perform irreplaceable ecological functions, upon which humans and all other land dwelling animals depend (Eldredge 1998). While the majority of higher taxa occurring in South Africa are relatively well known, South Africa's insect species richness is estimated at twice to three times the presently described number, which is 43 565 (Scholtz & Chown 1995).

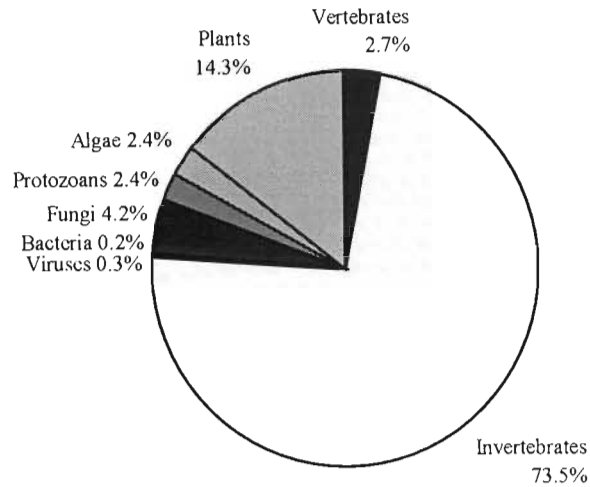


Figure 1. The 1.7 million described species of animals and plants divided into the major groups (after Hammond 1995).

It is generally agreed that invertebrate conservation efforts are inadequate (Samways 1994; O'Toole 1995; Gess 1996; Hamer & Slotow 2002). Conservation in South Africa has been at best haphazard and to date it has centred mostly on the needs of large mammals (Gess 1996).

The inadequacy of conservation measures for invertebrates is not peculiar to South Africa. A study done in Victoria, Australia, showed that their wildlife protection legislation has not only failed to aid invertebrate conservation but has even been detrimental and in many cases misleading (Butcher, Clunie & Yen 1994). The authors stress that essential to improving invertebrate conservation is the recognition of invertebrates as wildlife, both by conservationists and the general public, and the associated raising of public awareness of invertebrates and their conservation needs (Butcher, Clunie & Yen 1994). Factors that need to be addressed in invertebrate conservation include, amongst others, means of raising awareness of the public, including educators and conservationists, of invertebrates, their functions and conservation needs (Samways 1994; Berenbaum 1995; O'Toole 1995; Evans *et al.* 1996).

Contributing to the inadequacy of conservation measures for invertebrates are the general negative perceptions regarding invertebrates. Many people in the developed first world view invertebrates, particularly insects, with disgust perceiving them to be dangerous, poisonous or carriers of disease (O'Toole 1995). In addition to negative attitudes toward invertebrates is the "tyranny of numbers" concept. There is a general perception that merely because there appear to be so many invertebrates they cannot possibly be in need of conservation (Horwitz, Recher & Majer 1999).

It is proposed that a cost effective and efficient means of raising awareness of invertebrates and applying some form of value to them, which has to date been largely unexplored, is to include a focus on invertebrates in existing and future ecotourism activities. It is held that this is a financially expedient means of raising public awareness of invertebrates. It is further held that if the information given is not only of a western, scientific nature, but also contains indigenous knowledge, this would generate more interest and would in addition highlight important aspects of local cultures.

Indigenous Knowledge

It is acknowledged at the outset that the topic of indigenous knowledge is a contentious and much debated one. Even defining the concept is problematic. The National Research Foundation (NRF) (2003: 1) states "indigenous knowledge systems refer to the complex set of knowledge and technologies existing and developed around specific conditions of populations and communities indigenous to a particular geographical area". Berlin (1992: 3), notes that there is no generally accepted definition of ethnobiology, but that most "practising ethnobiologists would probably agree that the field is devoted to the study, in the broadest possible sense, of the complex set of relationships of plants and animals to present and past human societies".

Unlike ethnobotanical research, there is little recorded in formal literature regarding ethnozoology (Herbert, Hamer, Mander, Mkhize & Prins In Press). On the topic of ethnoentomology in particular, Toms (2001 *pers. comm.*) stresses that one of the problems regarding the literature in the field is that some of the published data have not been verified and

are not necessarily accurate, while other ideas have become dogma and may only apply to a small geographical area.

Despite the complexities of the field it is proposed that the concept of including indigenous knowledge of invertebrates into ecotourism activities should be explored. Indigenous knowledge should be brought into the mainstream of knowledge (NRF 2003). It is proposed that incorporating aspects of indigenous knowledge, along with western, scientific knowledge, into ecotourism is one means of doing this. It must be stressed however that any proposed use of indigenous knowledge must be done with the approval of, and in conjunction with, the owners of such knowledge and that due recognition must be given to the intellectual property rights of those from whom the information originates. In addition it is important to recognise and respect that certain animal products are believed to have magico-medicinal properties that can be used for good and evil and that it is often believed that knowledge regarding these products should be kept in the hands of trained practitioners only (Herbert *et al.* In press).

ECOTOURISM

It is generally accepted that while conservation has become a global goal, it cannot be pursued without considering the development needs of the human population (Davis 2002). Tourism has emerged in many countries (particularly developing countries) as a means of providing the financial resources needed to conserve biodiversity, as well as increasing employment and providing foreign exchange (Goodwin, Kent, Parker & Walpole 1998).

Within the international tourism industry, ecotourism is the fastest growing subsector, its growth rate being three times that of tourism overall (Burns & Holden 1995). In South Africa, the majority of foreign tourists come here to see natural resources, with ecotourism specifically being one of the fastest growing sectors in the country (Holt-Biddle 2002). Since the early 1990's, with the political changes and decline in the Rand, there has been a sustained increase in the number of foreign visitors to South Africa (Ebersohn 1995). The growth in tourism to South Africa is predicted to continue, specifically so in the case of ecotourism (Holt-Biddle 2002), which is significant when looking at the feasibility of recommendations regarding ecotourism activities.

There are numerous definitions and interpretations of the term ecotourism. There is also a certain amount of debate surrounding its desirability. Some have criticised ecotourism for being a commercialisation of the environment (Ebersohn 1995). A more common criticism of ecotourism is that it can have a negative effect on the very resources upon which it depends: local culture and the environment (Nuttall 1997). Compounding this is the fact that it is difficult to formulate policies that guarantee tourism can be maintained over the long term without severely impacting on the environment (Casagrandi & Rinaldi 2002). Lea (1988) counteracts this argument by noting that not all anthropologists and sociologists researching tourism conclude that it has a negative effect on the local community and environment. In addition there are numerous environmental management strategies that can be implemented in a proactive manner to mitigate any negative environmental effects of tourism (Tribe, Font, Griffiths, Vickery & Yale 2000). In spite of the complexities of ecotourism, it is one of the few areas where there is a strong and clear link between the conservation of natural areas and economic development (Wearing & Neil 1999). Other positive aspects include the fact that it is based on a qualitative, aesthetic appreciation of the landscape. For example studies of the effect of tourism in Northern Queensland, Australia show that it has encouraged locals to re-evaluate their surroundings and be more receptive to protecting the environment (Strang 1996). Braithwaite (2001: 667) further notes: "tourism's role in biodiversity might be to both build public support of biodiversity and help fund its conservation".

In making recommendations for improved biodiversity conservation it is essential to take cognisance of the people-centred approach of South Africa's policy and legislation. Biodiversity conservation is increasingly under pressure to make itself relevant in the light of the current urgent social and economic needs of the people of South Africa. For South Africa, with its apartheid history, the environment is a deeply political issue, possibly even more so than is the case in other African countries. Many do not see the importance of conservation and feel that the big five of conservation should be replaced by the big five of human needs: sanitation, water, health, employment and housing (Cock 1996). In addition, conservation increasingly faces financial challenges and there are many other competing demands for limited finance. There has been a decrease in state funds to conservation agencies, museums and universities (McGeoch 2002). With this in mind it is essential to find innovative and cost

effective means of enabling conservation efforts within socio-economic and political constraints while also educating and raising awareness of the urgent needs of conservation of biodiversity.

The highlighting of marketable features such as rarity, endemism, charismatic qualities, cultural or medicinal significance of the invertebrate communities at ecotourism destinations adds to the attractions of that area. With reference to tourism, an attraction is defined as “a physical or cultural feature of a particular place that tourists feel meets an aspect of their leisure needs. Attractions are the main motivators for tourism trips and are the core of the tourism product. Without attractions there would be no need for other tourism products” (Braithwaite 2001: 667). People are becoming more interested in nature as a whole and there is an awakening to the fact that all living organisms on Earth are interdependent (Samways 1994). As insects are the major component of terrestrial ecosystems, with crucial functionality, it is essential that any holistic approach to observation and understanding of biodiversity include a focus on invertebrates. Boonzaier’s (1996) study of the development of tourism in the Richtersveld National Park (part of the Namaqualand region of South Africa) highlights that until the 1990’s tourism in the region was restricted to four weeks in the spring when tourists flocked to see the flowers. This has changed completely with the publicity around the park focusing on the area’s general scenic beauty, rugged isolation and rare succulent plants. “Officials, operators and entrepreneurs claim that the tourist season has been extended because people are no longer only interested in pretty flowers – they come to see nature” (Boonzaier 1996: 131). It is this holistic type of thinking that must be applied to the inclusion of a focus on invertebrates in ecotourism activities.

Invertebrates in Ecotourism

Ecotourism incorporates a number of different activities. This study focuses on game drives and walks in and around inland protected areas. It examines the extent of the inclusion of information regarding invertebrates in such activities and the potential for including more information regarding them into such ecotourism products. It is uncommon for invertebrates to be included as a focus area for general ecotourism. For example the Australian Association of Ecotourism Operators, which has a total of 500 members, has only three tour operators that indicate that they take invertebrate focused tours (Ecotourism Australia 2003). Many tour

operators indicate the ability to offer tailor made tours, however, tailor made tours fall outside the scope of this research, which focuses on the incorporation of invertebrates into standard ecotourism products.

Where invertebrate focused tours do take place it is inevitably to view a spectacular phenomenon created by a large collection of one type of insect. For example in Mexico there are tours offered to see the spectacle of the annual migration of millions of Monarch butterflies (*Danaus plexippus*) (Burton 2003). The Monarchs are also considered a considerable tourist attraction in the United States where in Florida and California they are protected by state laws (Smart 1975). In Australia there are tours offered to see large collections of glow worms which create an impressive sight as they mass in canyons (Tread Lightly Eco Tours 2003), while New Zealand's Waitomo glow worm caves attract an average of 400 000 tourists annually (Tourism Holdings Limited 2003).

Lepidoptera have long been a source of fascination for a wide spectrum of people from collectors, amateur naturalists, scientists, and as the recent proliferation of butterfly houses attests, tourists. The increasing number of butterfly houses indicates that a market has developed where there is a demand to see living insects (Samways 1994). In 1989 in Britain alone, for example, there were 38 commercial butterfly houses displaying living butterflies to the public (Samways 1994). Butterfly houses are also numerous and popular in the United States and Australia, while in South Africa there are currently two large and fully operational butterfly houses, one in Pietermaritzburg, the other in Cape Town, plus a number of smaller concerns (Cooper 2003 *pers. comm.*). Various tour operators around the world offer guided excursions to see butterflies in the wild, for example Kalyspo Adventures in India's Kerala Province takes people to see inland butterfly sanctuaries (Elamonji & Zacharias 2003), Indigo Tours offers 10 day butterfly tours in Turkey (Indigo Tours 2003), Butterfly Trips, a tour company, takes customised butterfly viewing trips to Alaska and Central America (Butterfly Trips 2003) while Greentours, a British based company, offer world wide tours focusing on a wide range of flora and fauna, including butterflies (Greentours 2003).

Examples of invertebrate focused tours offered as a standard product to the general public include those of the Botanical Gardens, Pietermaritzburg, where insect and spider focused

guided walks are offered. These walks highlight a range of invertebrates, providing information regarding interesting and unusual breeding, feeding or nesting habits that the animals may have, drawing attention to attractive, dangerous, rare or endemic orders or species (Roffe 2002 *pers. comm.*). There appear to be very few tour companies that incorporate a focus on invertebrates as part of their general ecotourism experience.

RESEARCH METHODS

Both qualitative and quantitative approaches were used. The methodology is discussed in relation to the research objectives. The quantitative method of a structured, standardised questionnaire was used to address the objective of determining the response of tourists to various aspects of the inclusion of more information regarding invertebrates into current and planned ecotourism activities. Specifically the questionnaire sought to gather information in order to examine the response of tourists to:

- The integration of invertebrate focused tourism into current tourism activities.
- Ecotourism activities focusing almost entirely on invertebrates.
- Invertebrate focused walks for children.
- Inclusion of indigenous knowledge.

The quantitative method of a structured questionnaire was selected as it is an effective means of measuring the reactions of a large number of people to a limited set of questions, which facilitates comparison of data (Patton 1990). The sample group was selected by targeting visitors in a protected area already engaged in ecotourism activities such as game drives, wilderness trails and bird watching. In this way access was gained to a relevant sample group. This sample was taken to represent the population of ecotourists in South Africa. The survey was conducted at Hilltop and Mpila Camps in Hluhluwe Umfolozi Park, KwaZulu-Natal South Africa. All visitors are required to report at the camp offices and all game drives and guided walks leave from near the office area. The same researcher conducted the entire survey, thus reducing the potential for differing influences on respondents. The questionnaire was administered over a three-day period (11-13 October 2001). The questionnaire was

standardized and all respondents were asked the same questions in the same order. This minimized the chances of differing external factors effecting respondents' answers in different ways. The researcher was aware of the potential for interviewer bias and attempted to reduced this as much as possible by avoiding giving the impression of a 'right' or 'wrong' answer. The questionnaire was kept brief so as not to impose on tourists' leisure time and to increase the likelihood of completion. Wording was kept simple and scientific terminology was avoided to cater for non-English first language speakers. The responses to the questions were recorded in front of the interviewees as the survey was conducted. The questionnaire was administered to 121 tourists, who were interviewed individually. The responses to the four sections of the survey were categorised as positive, negative or undecided and then calculated as a percentage of the whole. The response rate was high with only three (2.5%) refusals.

Parallel mixing of qualitative and quantitative methods was also used to address the first aim. This occurred where certain respondents were particularly interested in the topic and discussions ensued after the questionnaire had been completed. Additional observations were made by 58% of the respondents. Relevant comments made by tourists were recorded. These results were analysed and where common trends emerged they have been highlighted and presented as part of the research results. This aspect of the research was beneficial as both a broader and a more in depth view of the tourists' interests were gained.

Qualitative Methodology

Qualitative methodology of open-ended interviews and participant observation were used to address the remaining three objectives:

- Investigate the opinions and attitudes of selected people working in the ecotourism field to various aspects of including more information regarding invertebrates into ecotourism activities.
- Get an overview of the current levels of the inclusion of information regarding invertebrates within certain types of ecotourism activities.
- Provide recommendations on how to address the lack of invertebrate information in ecotourism and give examples of the types of invertebrates that could be featured

easily in ecotourism, and the type of information that could be included about them.

A total of 25 open-ended interviews were held with a wide spectrum of people working in the ecotourism and conservation fields: ecotourism service providers; owners and managers of ecotourism ventures; employees of conservation bodies; ecotourism guides and trainers of ecotourism guides (Appendix 1).

Participant Observation

Participant observation was used to observe guides and tourists and to get an overview of the types of invertebrates that could be included in ecotourism. Data were collected by participating in:

- Guided night drive: Umfolozi Game Reserve
- Guided game drive: Ndumu Game Reserve
- Guided walk: Ndumu Game Reserve
- Guided Wilderness Trail: Greater St Lucia Wetland Park
- Self guided drives with observation of, and discussions with tourists: Tembe Elephant Park, Hluhluwe and Umfolozi Game Reserves.

Observations were made regarding the type of information guides gave tourists, noting in particular any focus on invertebrates. During these activities the author asked tour guides about some of the more obvious invertebrates to ascertain their interest in, and knowledge of this group. This also served to enable observation of tourists' responses to observation of invertebrates. The data were analysed and are presented in the results section.

Observation of invertebrates

A record was made of any invertebrates easily observed during the course of the guided walk and game drive in Ndumu Game Reserve. This was done in order to ascertain the feasibility of including a focus on invertebrates in these ecotourism activities and to identify examples of the types of invertebrates that could be included in ecotourism. Conclusions were drawn from the

results and recommendations for inclusion of invertebrates in ecotourism have been made.

RESULTS

Responses of tourists

In total 124 people were approached. The response rate was high, with only three refusals. One person refused to participate, stating that they did not like questionnaires, and two people refused because they did not speak any English. All the questions were answered by those that participated. This was possible as the questionnaire was short. For the purposes of the analysis the total number of respondents has been taken as 121. The results of the tourist survey indicated a positive response to four aspects of including a focus on invertebrates in ecotourism activities (Figure 2 & Table 1).

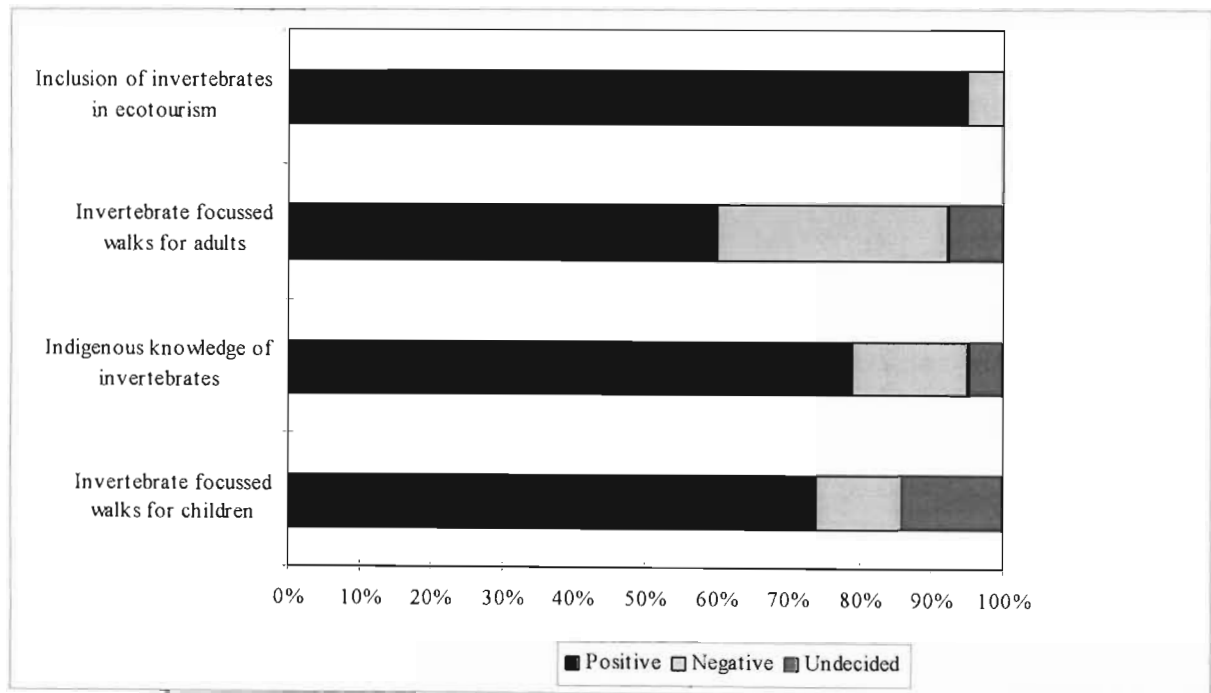


Figure 2: Responses of tourists, expressed as a percentage, to various aspects of the inclusion of information regarding invertebrates in ecotourism activities.

Table 1. Responses of tourists (n=121), expressed in terms of the actual number of respondents, to four aspects of the inclusion of a focus on invertebrates in ecotourism activities.

	Positive	Negative	Undecided
Inclusion of invertebrates in ecotourism	115	6	0
Invertebrate focused walks for adults	72	39	10
Inclusion of indigenous knowledge of invertebrates	96	20	5
Invertebrate focused walks for children	90	15	16

The results of the participant observation and the informal discussions with tourists were analysed. Key themes have been identified and are presented below in tabular form.

Table 2. Results of informal discussions with tourists: key themes.

Key Themes	Number of tourists (n=121)
Priority of seeing big five in the limited time available in a game reserve means any invertebrate focused activity will be secondary	46
Duration of invertebrate focused activity be no more than one hour	41
Need for activities, or points of interest in the camp area	32
The need for a more holistic approach to observation of the natural environment, which would include invertebrates	13
Children get bored and frustrated in vehicles	11
Children are interested in invertebrates	9
Tourists become weary of sitting in vehicles	8
Respondents feel cut off from local people	7
Some guides can be uncommunicative, tending only to point out mammals	5

Ecotourism service providers and protected area managers: responses to various aspects of invertebrates in ecotourism

Table 3. Summary of results of interviews with guides (n=10) regarding inclusion of invertebrates into ecotourism activities.

No. of guides	Level of inclusion of invertebrates in ecotourism activities
1	Offer specific invertebrate focused walks
1	Include information regarding invertebrates in general walks
8	Seldom include a focus on invertebrates

The one guide interviewed who takes specific invertebrate focused walks does so at his own initiative and out of his normal hours of employment. The guide who includes a focus on invertebrates during the course of his normal guided walk noted that he does so because he is interested in invertebrates and has some knowledge of them.

When asked why they seldom include a focus on invertebrates six of the ten guides said that the tourists' priority is to see the big five. Four of the guides interviewed added that in addition they are under time pressure to find large mammals during the three hour duration of the game drive or walk and there is little time to focus on anything else. By contrast one of the freelance guides noted that he is with any one group of tourists for as long as three weeks and that he would have the time to include some information regarding invertebrates. He stated that to date he had not done so as he did not know very much regarding invertebrates. This point was echoed by four other guides, who said that they did not have much knowledge of invertebrates.

A common point made by five of the ten guides was that when any discussion regarding invertebrates did take place it would frequently focus on the perceived negative attributes of the animal in question. Guides noted, for example, that discussions frequently concern topics such as whether spiders, wasps or scorpions are poisonous or harmful to humans. These conversations were usually initiated by a question from a tourist. Three guides made the point that many tourists were afraid of invertebrates in general, even of totally harmless orders such

as millipedes.

Table 4. Summary of response to possible future inclusion of information regarding invertebrates into ecotourism activities.

Interviewees	No. of interviewees	Responses
Managers (n=8)	7	Unaware of conservation needs of invertebrates
	8	Acceptance of need for ecotourism activities to include invertebrates
	6	Uncertainty regarding popularity of activities that focus entirely on invertebrates
Guides (n=10)	8	Positive toward the concept in theory
	4	In practice time limits may curtail the ability to include information regarding invertebrates
	6	Seeing the big five a priority for most tourists
Office and reception staff (n=2)	2	Positive
	2	Indicated desire to learn about obvious invertebrates in camp area

Table 5. Summary of response to inclusion of indigenous knowledge of invertebrates into ecotourism activities.

Interviewees	No. of interviewees	Responses
Guides (n=10)	8	Positive to concept
	3	Unaware that tourists would be interested in indigenous knowledge
Managers (n=8)	8	Positive, particularly in regard to perception of tourists interests

Table 6. Response to information regarding invertebrates being included into guide training programmes.

Interviewees	No. of interviewees	Responses
Guides (n=10)	8	Desire to be educated regarding invertebrates, access to knowledge being perceived as empowerment
Trainers (n=7)	7	Positive yet all noted the need for specialist assistance in preparing course material

Discussions were held with management of organisations currently planning to train community guides: Amafa, Ezemvelo KZN Wildlife, European Union Wild Coast Community Tourism Initiative and The Wildlands Trust. All organisations indicated that they would like to include a focus on invertebrates, but would need to be given course material and the sites at which guides would be based would need to be surveyed. The need to employ local people as research assistants during invertebrate surveys was also identified.

Results of observation of ecotourism activities

The researcher participated in one guided walk at Ndumu Game Reserve, a guided wilderness trail in Greater St Lucia Wetland Park, an open vehicle day drive at Ndumu Game Reserve and an open vehicle night drive at Umfolozi Game Reserve. There was no information provided regarding invertebrates in any of these activities. The guides were all very knowledgeable regarding large mammals, particularly the guide at Umfolozi Game Reserve who gave in-depth information regarding behaviour and life cycles of numerous large mammals. The guides of the drive and walk at Ndumu Game Reserve were particularly skilled at bird identification, however, displayed lack of knowledge of invertebrate taxa.

Participation in guided walks and drives highlighted the fact that many taxa can be easily observed while walking and from a slow moving open vehicle. On the game drives frequent stops were made to allow tourists to view game or birds. A range of invertebrates were easily seen or heard when these stops were made, examples of which are given in Table 7 below.

Observation of tourists

Observation of tourists reflected that they do show an interest in invertebrates. Tourists on the Wilderness Trail in the Greater St Lucia Wetland Park commented on the abundance of dragonflies and millipedes and asked the guide regarding certain behaviour of millipedes. The guide was unable to answer the question. Casual conversations with tourists in Tembe, Ndumu and Umfolozi Game Reserves occurred, which also indicated an interest in invertebrates. For example in Tembe, tourists commented on the ‘beautiful large butterflies’ [Green-banded Swallowtails (*Papilio nireus*)]. The tourists said they wondered why the butterflies ‘sit in groups in the roads’ [This behaviour of *Papilio nireus* was frequently observed in Tembe and Ndumu where the butterflies sit on patches of elephant urine in the roads. They drink the urine to obtain nitrates]. The same group of tourists also noted how hard it was to see game due to the dense bush. Tourists on a guided walk in Umfolozi reported that they enjoyed being shown various invertebrates by the guide. This walk was taken by one of the guides interviewed who indicated that he did include a focus on invertebrates, as is recorded in Table 3 above.

Results of Invertebrate Survey for Ecotourism Purposes

The researcher, assisted by an entomologist, participated in a game drive and walk at Ndumu Game Reserve. A record was made of invertebrates that were easily observed or heard, either from the vehicle or during the course of the walk. The criterion of ease of observation is used for practical reasons as it is held that guides are more likely to incorporate a focus on animals that they can easily find. Suggestions are made here as to the type of features that could be highlighted for each animal. As many taxa have different habits, life cycles and physical features, the type of information included regarding particular invertebrates would differ. In addition it is suggested that information given be kept brief, bearing in mind that the majority of tourists stated that their focus is large mammals and that their time is limited. Note that the list, presented in Table 7, of invertebrates is by no means exhaustive, but is intended as an example of the types of invertebrates that could be featured easily in ecotourism, and the type of information that could be included regarding them.

Table 7. Examples of invertebrates that are suitable for inclusion in ecotourism activities. Information from Picker et al. (2002), van Noort (pers. comm.) and Hamer (pers. comm.).

Scientific name	Vernacular name	Features to highlight for ecotourism
Class Myriapoda	Millipedes	<ul style="list-style-type: none"> • Harmless, critical for soil fertility. • A guide could induce the defensive behaviour - some species curling up, while others imitate snake like actions to ward of predators. • In traditional medicine used to treat a variety of ailments, for example earache.
<i>Rhachistia sticta</i> (family Cerastidae)	Porcelain Tree Snail	<ul style="list-style-type: none"> • Beautiful colourful snails, easily observable at eye height.
<i>Nephila</i> species, (family Tetragnathidae)	Golden Orb Web Spiders	<ul style="list-style-type: none"> • Large conspicuous spiders. • Spin huge golden webs that can span a road, and can trap prey as large as small birds.
Genus <i>Palpares</i> (family Myrmeleontidae)	Lace Wings	<ul style="list-style-type: none"> • Adults are large and conspicuous, with a slow flight often landing on grasses, where they can be observed. • Larvae are known as antlions and make a conical pit in sandy soil, which they use to trap prey. • Lay people are often fascinated that antlions turn into lacewings.
Family Cicadidae	Tree cicadas	<ul style="list-style-type: none"> • Shrill call in the heat of the day in summer. • Explanation can be given of how they make their call using morphological adaptations on the abdomen. • Some species can be caught without causing them

		<p>any harm and could be shown to tourists.</p> <ul style="list-style-type: none"> • Some may require as long as 20 years to emerge as adults.
Family Saturniidae	Emperor moths	<ul style="list-style-type: none"> • Large colourful species that are attracted to light at night.
<i>Papilio nireus</i> (Papilionidae) and species in the family Pieridae	Green-banded Swallowtail, Whites and Sulphurs	<ul style="list-style-type: none"> • These large colourful butterflies are very beautiful. • They are easily observed as they sit in groups on the road on patches of elephant urine, which they drink to obtain nitrates. • Tourists can get very close to them and they provide excellent photographic opportunities.
Family Calliphoridae	Blue bottle flies	<ul style="list-style-type: none"> • Larvae feed on decaying carcasses. Their important role in the ecosystem in terms of decomposition can be explained. • On close inspection the adults are brilliantly coloured.
Family Buprestidae	Jewel Beetles	<ul style="list-style-type: none"> • A number of species are large, colourful beetles. • Conspicuous in flight. • Fly short distances before landing in shrubs, where they can be observed at close range.
Family Scarabaeidae	Fruit Chafers	<ul style="list-style-type: none"> • Large, colourful and conspicuous beetles, often found feeding on flowers and rotting fruit.
Family Cerambycidae	Longhorn beetles	<ul style="list-style-type: none"> • Large, colourful and conspicuous. • Produce a defensive squeaking sound, on being picked up, by rubbing parts of the thorax together. • Explanation of the life cycle (the larvae are wood borers) can be given.

Family Scarabaeidae	Dung Beetles	<ul style="list-style-type: none"> • Give brief explanation of the behaviour of dung beetles: • Some species roll animal dung into balls and can frequently be seen on the roads. They roll the dung to a safe place where they lay eggs in it, the dung providing food for the larvae when they emerge. • Other species are easily seen in a fresh pile of elephant dung where they work on breaking up the dung, taking it underground where they lay eggs. • Ecologically dung beetles play a vital role in breaking down and distributing animal waste.
Family Agaonidae	Fig Wasps	<ul style="list-style-type: none"> • Where fig trees are in fruit a fig can be opened and inevitably fig wasps can be found inside the fruit. • Fully-grown adults only measuring a few millimetres perform vital pollination functions for the fig trees, each being host specific.
Family Pompilidae	Spider hunting wasps	<ul style="list-style-type: none"> • Large, conspicuous wasps, that often make a noise in flight. • Can be observed dragging paralysed spiders to a pre-excavated burrow, where they will lay an egg on the spider.
Many species in the order Odonata	Dragonflies – many different kinds e.g. Banded groundlings	<ul style="list-style-type: none"> • Colourful and easily observed particularly in the vicinity of water. • Can provide an explanation of the life cycle: the nymphs are aquatic predators, exploiting a different ecological niche to the adults. • Can explain that dragonflies are important bioindicators for determining the health of aquatic environments.

<p>Family Formicidae</p>	<p>Ants</p>	<ul style="list-style-type: none"> • Complex social system can be explained. • Large sausage ants (<i>Dorylus</i> sp.) are attracted to light at night. These are harmless male reproductives that have a pseudo stinging action of the abdomen when picked up.
<p>Species in the genus <i>Belanogaster</i> species (family Vespidae)</p>	<p>Paper wasp</p>	<ul style="list-style-type: none"> • The nests are beautifully constructed and if occupied the female adult may be observed feeding the young.

a.



b.



c.

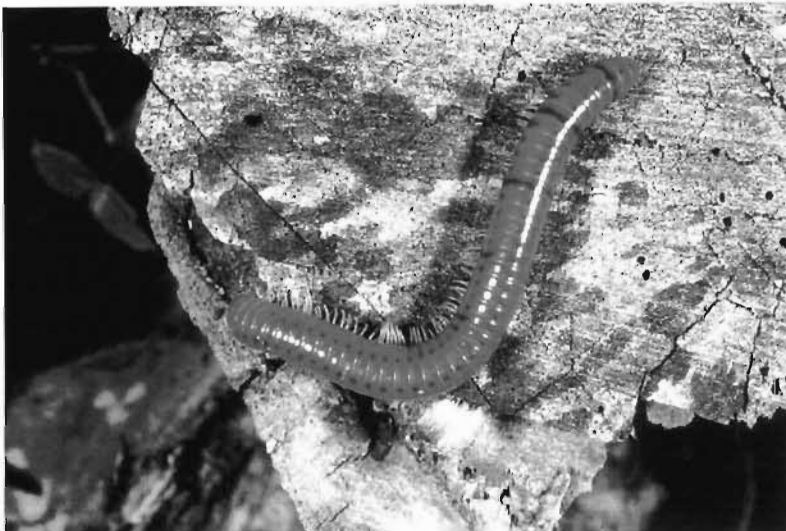


Figure 3. Examples of invertebrates with potential for inclusion in ecotourism activities: a & b) two different types of dung beetle activity, c) charismatic millipede. See Table 4 for details of relevant information (Photographs provided by M. Hamer).

a.



b.



c.



Figure 4. Examples of invertebrates with potential for inclusion in ecotourism activities: a) scorpion, b) dragonfly, c) butterfly. See Table 4 for details of relevant information (Photographs provided by M. Hamer).

DISCUSSION

Tourists' responses to information regarding invertebrates in ecotourism activities

The results of the survey and the additional comments made by tourists indicate that they are receptive to information regarding invertebrates being included into current ecotourism activities. Tourists' comments specifically indicate that the scope of ecotourism can be broadened from its current, rather narrow, focus on large mammals, to include birds, plants and insects. The benefits of doing this would be to raise awareness of the public, and those working in the ecotourism and conservation fields, to the crucial role played by invertebrates in a healthy environment.

With reference to the results, a solely invertebrate focused walk is unlikely to attract many tourists if it is perceived to be too long or to compete for tourists' limited time. However, the concept of a short walk focusing on invertebrates in and around the camp areas of ecotourism destinations should be further explored. The theme of the need for points of interest in the camp area was raised by five respondents from the ecotourism sector. A walk of this type could be self guided, via use of a system of information plaques, or it could be guided. With reference to the comments made by tourists regarding time constraints it is recommended that if walks are guided their duration be fairly short – a time period of one hour being suggested by a number (41) of respondents.

It is worth noting that not only was there a high positive response rate to the concept of including indigenous knowledge into ecotourism activities, but that the respondents were very enthusiastic regarding the concept. As has been further explored in the section on indigenous knowledge, any proposed use of indigenous knowledge in ecotourism must be done with the sanction of the owners of such knowledge and due recognition must be given to any intellectual property rights. In addition means must be sought for owners of indigenous knowledge to benefit from its use. Comments made by the owners of two of the private ecotourism organisations interviewed highlighted their awareness of the need to incorporate local communities in various aspects of ecotourism development. Interviews with staff of the

provincial conservation authority, Ezemvelo KZN Wildlife concur, indicating that there is good potential for sensitive and responsible incorporation of indigenous knowledge into ecotourism. As indigenous knowledge regarding invertebrates, such as cultural and medicinal use is usually very area specific, applicable information is likely to differ between ecotourism destinations. It is suggested that area specific indigenous knowledge should be perceived as an asset, as it contributes to an area's unique sense of place.

In terms of long-term biodiversity conservation, children are the conservationists of the future and thus it is crucial to explore various means of educating children regarding biodiversity and the need for conservation. The structured survey section of the research indicated a strong interest in invertebrate focused walks for children and it is recommended that this be seen as an opportunity to educate and raise awareness. The findings of the structured survey were further corroborated during the open-ended interviews, specifically the interview with the person responsible for the guided trails at the Botanical Gardens, Pietermaritzburg, who noted that the invertebrate focused walks were particularly popular with children and that parents were drawn to the educational aspect of the walks as they perceived this to be beneficial to their children. Parents' awareness of, and appreciation for, invertebrates can also be raised through the education of their children.

Inclusion of information regarding invertebrates in ecotourism activities

It is significant that not only is there a low percentage (20%) of guided walks that include a focus on invertebrates, but where this does occur, it is at the initiative of the guides who have a personal interest in and knowledge of invertebrates. Of the guides that do not include a focus on invertebrates, one of the main reasons cited for this was lack of knowledge of these animals. It is held that this can be addressed by including information regarding invertebrates in guide training courses.

A significant theme noted by eight out of ten guides was that most tourists prioritise seeing the big five. The importance of this theme is that it illustrates the fact that large mammals are perceived to be more important than small animals, such as invertebrates. The findings of this research have corroborated those of the literature review: that there is a need to raise public

awareness regarding the importance of invertebrates. It is held that this obstacle to invertebrate conservation can be addressed to some extent by education through ecotourism directed at stressing the ecological importance of invertebrates. Relating to this is the need to counteract the public's negative perceptions of invertebrates. A theme raised by five of the ten guides interviewed refers: discussions regarding invertebrates frequently focus on their perceived negative attributes. The significance of this is that it illustrates the problem that exists in terms of public perceptions of invertebrates. Again this obstacle to invertebrate conservation can be addressed through education. A pre-requisite to meeting this requirement is that of addressing the need to train guides regarding invertebrates. Five guides noted that they were not well informed regarding invertebrates. There is a need to address this and equip guides to challenge negative perceptions of invertebrates with factual information. For example they could illustrate that very few species are actually harmful to humans, while human activities are responsible for the current biodiversity crisis with invertebrate animals suffering the greatest losses.

The theme of there being a lack of time to include information regarding invertebrates is interesting in that it illustrates a lack of understanding of the abundance of invertebrate animals at most ecotourism sites. It would not take 'time' away from finding large mammals to include a few brief observations of invertebrates. It is held that it would give an extra dimension to a tour, and would be particularly useful for guides in instances when mammals are hard to find.

The results of the interviews and discussions with guides were confirmed during the participant observation where no information was given regarding invertebrates in any of the ecotourism activities participated in by the researcher. This is particularly significant in that the walks and game drives all took place in areas that are rich in easily observed invertebrate fauna. For example, during the walk and drive in Ndumu Game Reserve the guides completely overlooked the abundant invertebrates such as dragonflies, butterflies and spiders, which are easily observed, while the larger mammals were actually very difficult to see due to the thick vegetation. When asked regarding the invertebrate fauna the guides gave short responses that displayed a lack of knowledge and possibly a lack of interest in these animals. As has been discussed above, training of guides could address this issue.

The interviews with managers of protected areas highlighted a number of key themes, one being

that many managers are unaware that invertebrates have specific conservation needs. This is of concern in terms of invertebrate conservation and highlights the need for education regarding invertebrates and their conservation needs for those in management positions in conservation and ecotourism. For example, the owner-manager of a private nature reserve indicated that he did not realise that invertebrate populations may be adversely affected by the regular block burning as practised in his reserve. This parallels comments made by other conservation and ecotourism managers interviewed who noted that they assumed efforts to provide conservation for the larger mammals and certain vegetation types would automatically also provide for the conservation needs of invertebrates. The need to educate those in management is particularly urgent due to the far-reaching effects of ill informed conservation practices. The second and third key themes that emerged are inter-linked: managers were in agreement that in terms of conservation and overall biodiversity awareness it would be beneficial to include a focus on invertebrates, however, they were unsure how to go about doing so. They were also unsure how tourists would respond to this inclusion. This research has highlighted the fact that there is a gap in communication between tourists and managers of ecotourism destinations, most managers being fairly surprised to learn tourists had indicated an interest in being shown invertebrate fauna.

While the guides interviewed were all positive regarding the theoretical need to include information regarding invertebrates in ecotourism activities, there were differences in their perceptions regarding the extent to which they would actually be able to do so in practice. As recorded in the results, time constraints are a factor which guides perceive to be a limitation to invertebrate inclusion in ecotourism. This perception is challenged as it is held that what is included in ecotourism activities is to a large extent a combination of what presents itself in nature and the guides ability to interpret this. It is held that if guides receive training regarding some of the types of invertebrates in their areas they will be enabled to include information regarding invertebrates in their tours as and when the opportunity presents itself. A related theme that is challenged is that of the importance of seeing the big five. While both tourists and tour guides say the tourists' priority is to see the big five, walks that include a focus on invertebrates have proved very popular and those only focusing on mammals have received criticism. In addition to this is the fact that finding and observing the big five is unpredictable,

and that in most reserves this takes time. This time can be constructively and enjoyably used observing and learning about a whole range of smaller animals. As a number of tourists stated, observation of nature is an holistic experience and it is held that within the content of ecotourism, activities should reflect this. In addition, being able to comment on invertebrate activity would give a tour an extra dimension and enable guides to constructively make use of time between large mammal location.

Inclusion of information regarding invertebrates into guide training programmes

The research indicated that there is good potential to include a focus on invertebrates into ecotourism guide training programmes. The concept met with approval from all the trainers interviewed, however they all noted the need for specialist assistance in preparation of course material. This need was echoed by the organisations that plan to train guides in the future, which indicates that gaining access to information regarding invertebrates is perceived to be difficult. In addition entomology is perceived to be too large and complicated to down scale into a form that trainers and trainees can accommodate in a general ecotour-guide training programme. It is recommended that means are sought to overcome this obstacle. There is a need to present information regarding invertebrates to trainers of guides in an easily accessible manner. It is suggested that rapid invertebrate biodiversity assessments be done in areas where guides will be based, to identify the types of orders that would be of interest to tourists. It is suggested that the focus be on orders that are easily seen or found as has been suggested in Table 7. Species that are especially prolific in an area as well as those endemic to areas should also be highlighted, as should threatened species, as these are of interest to tourists and their presence is of conservation importance.

It is significant that of the guides interviewed, even those who noted that they felt they did not have the time to include much information regarding invertebrates on their tours, indicated that they would like to receive training regarding invertebrates. The reasons given for wanting training centred around the fact that gaining access to more knowledge is beneficial, both for the guides' education and interest, and to use in the event of clients showing a particular interest in invertebrates. One bird watching guide noted that he was occasionally asked

regarding invertebrates and found it very embarrassing to not be able to answer tourists' questions (Nkosi 2001 *pers. comm.*)

RECOMMENDATIONS

The results indicate that practically it is quite feasible to include information regarding invertebrates into ordinary game drives and walks. In addition, it has been established that there is a positive response, both from tourists and ecotourism service providers, toward an inclusion of information regarding invertebrates into ecotourism activities. Based on this the following recommendations are made for implementation:

- Rapid biodiversity assessments need to be undertaken at suitable ecotourism sites to identify the presence of species or orders suitable for inclusion in ecotourism.
- The emphasis of the rapid biodiversity assessments should be on highlighting the presence of easily seen, endemic, new, charismatic or iconic orders or species.
- The presence of these orders or species should be used as draw cards to attract attention to the invertebrate fauna.
- Vernacular names should be used, where available, as this has been identified as an effective way of increasing public awareness (Czechura 1994, Samways 2002).
- Information regarding invertebrates should be kept fairly brief, bearing in mind that the main focus of many tourists is large mammals, and time is usually a limiting factor.
- Interesting features such as unusual behaviour, nesting, breeding or feeding habits should be highlighted for different invertebrates.
- Ecological interactions should be highlighted to stress the crucial functionality of invertebrates with regard to ecosystem services such as pollination, decomposition and purification.
- The concept of short, self-guided or guided, invertebrate focused walks in and around the camp area of ecotourism destinations should be further explored.
- Short, guided invertebrate focused walks for children should be offered alongside the more traditional ecotourism activities. The research indicates that parents would welcome this as an educational opportunity for their children providing an active, as

opposed to passive occupation, for their children.

- Indigenous knowledge regarding invertebrates should be included where possible and where appropriate, however, as stressed in the section on indigenous knowledge this should only be done with the sanction of the community from which it originates.

Recommendations for Training of Guides

- For future inclusion of invertebrate related information into ecotourism activities, it is recommended that information regarding invertebrates should be included in ecotour guide training courses.
- Trainers of ecotourism guides should be taught about the importance of invertebrates and provided with course material regarding invertebrates.
- Course material regarding invertebrates should be developed and presented in an accessible way, both for the training of guides and the subsequent presentation to tourists.
- Course material should include indigenous as well as western/scientific knowledge.
- Course material should consist of a core component of generic material regarding invertebrates as well as information that is unique and specific to each ecotourism area. This is because many invertebrate species are site specific and much indigenous knowledge is area specific.
- Training should seek to equip guides to challenge common negative perceptions regarding invertebrates and should stress the importance of invertebrates in a healthy ecosystem.

Limitations of the research

The weaknesses of this research are those typical of qualitative research. Firstly the issue of bias and secondly the fact that qualitative data are hard to analyse (Arksey & Knight 1999). A concerted effort has been made to minimise these drawbacks by being aware of the potential for bias particularly when interviewing. In addition a system of checks has been used to validate information gathered, as in addition to the structured surveys and open-ended interviews, field

notes and participant observation are used to further present a compelling case. It is held that weaknesses have been minimised and that the qualitative and quantitative research methods have complimented and corroborated each other. As the research topic covers a number of different fields it was not possible to explore each area in depth within the limitations of a mini-dissertation.

RECOMMENDATIONS FOR FURTHER RESEARCH

Based on the findings of this research it is recommended that further research be done on:

- Indigenous knowledge of invertebrates.

The NRF has identified the need for research into indigenous knowledge systems (2003) and ethno-zoological research in particular is needed, as this area has, to date, received very little attention (Herbert *et al.* In press).

CONCLUSION

The findings revealed that there is currently negligible information provided regarding invertebrates within ecotourism activities. However, research showed that there is potential to increase levels of information, in the light of the positive response to the concept of including invertebrate knowledge within ecotourism activities, from both ecotourists and ecotourism service providers and protected area managers. It is recommended that ecotourism includes a focus on invertebrates. This will serve the dual purpose of increasing the scope of ecotourism and raising public awareness and hence the conservation status of invertebrates.

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REPRESENTATIVES OF ORGANISATIONS INTERVIEWED

Organisations that Control Protected Areas Visited by Tourists

- Ezemvelo KwaZulu-Natal (KZN) Wildlife
 - Umfolozi Officer in Charge (OIC)
 - Umfolozi Office Staff at Reception
- Private Ecotourism Organisations
 - Thula Thula Game Reserve: owner/manager
 - Inyati Nature Reserve: owner/manager
 - Tembe Safaris: manager
 - Tembe Safaris: owner
- Amafa (Heritage) KwaZulu-Natal
 - The Director
 - The Head of Archaeology

Other Conservation Related Organisations

- Wildlands Trust
 - CEO

Trainers of Tour Guides

- Birdlife South Africa
 - Manager and Trainer
- Entabeni Environmental Training School and Education Centre
 - Director and Trainer
- EU Wild Coast Community Tourism Initiative
 - Project Manager and NGO Trainers
- Amafa (Heritage) KwaZulu-Natal
 - Trainer
- Ezemvelo KZN Wildlife

- Training Officer
- Private Trainers
- Tribe Africa

Ecotourism Guides

- Pietermaritzburg Botanical Gardens
 - Guide
- Birdlife SA
 - Guide
- Ezemvelo KZN Wildlife
 - Umfolozi
 - Open vehicle drive guide
 - Walking trail guide
 - Ndumu
 - Walking trail guide
 - Open vehicle drive guide
 - Hluhluwe
 - Open vehicle drive guide

Private Operators

- Freelance guide
- Private tour guide
- Tembe Safaris guide