Reciprocal Ecosystem Impact and Behavioural Interactions Between Cassowaries, *Casuarius casuarius*, and Humans, *Homo sapiens* :

Exploring the Natural-Human Environment Interface and its Implications for Endangered Species Recovery in North Queensland, Australia.

VOLUME I

Dissertation submitted by
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*The **many books on dead or dying animals** almost seems to lessen the intensity with which one views extinction. Repetition begins to trivialize a terrible event. No matter how much we decry species extinction, nature will remain peripheral to the consciousness of most people. Are these books mostly bought as tokens of a belief that nature does count? Too often treatises on endangered species seem to be mere memorials, with all the finality that this implies, accounts of those animals whose drama has irrevocably ended: the dodo, passenger pigeon, great auk and Steller's sea cow. My own emotions at least cannot respond to the ever-expanding list of dying animals; my capacity for concern is finite.*

Yet there is a justification for these volumes. Telling and retelling is a moral imperative; forgetting is a luxury we cannot afford. Neglect is a form of abuse. There are those who think that if only we can hold on to our biological diversity, all those millions of species of plants and animals, into the next century, destruction will end - yet there is not indication that it will. So we must at least record our experiences with the hope that our writings will encourage action to preserve species and stimulate a unity of compassion. Even in a truly moral world, destruction will not end, but at least we will view nature with finer sentiments, based on a revolution in the spirit of humankind. We would adjust our values and priorities and develop a land ethic that decries waste and needless destruction. Such changes cannot come through passion and strident rhetoric but only through a new concept of ourselves, a new design in the strategy of human survival.

George B. Schaller
1994

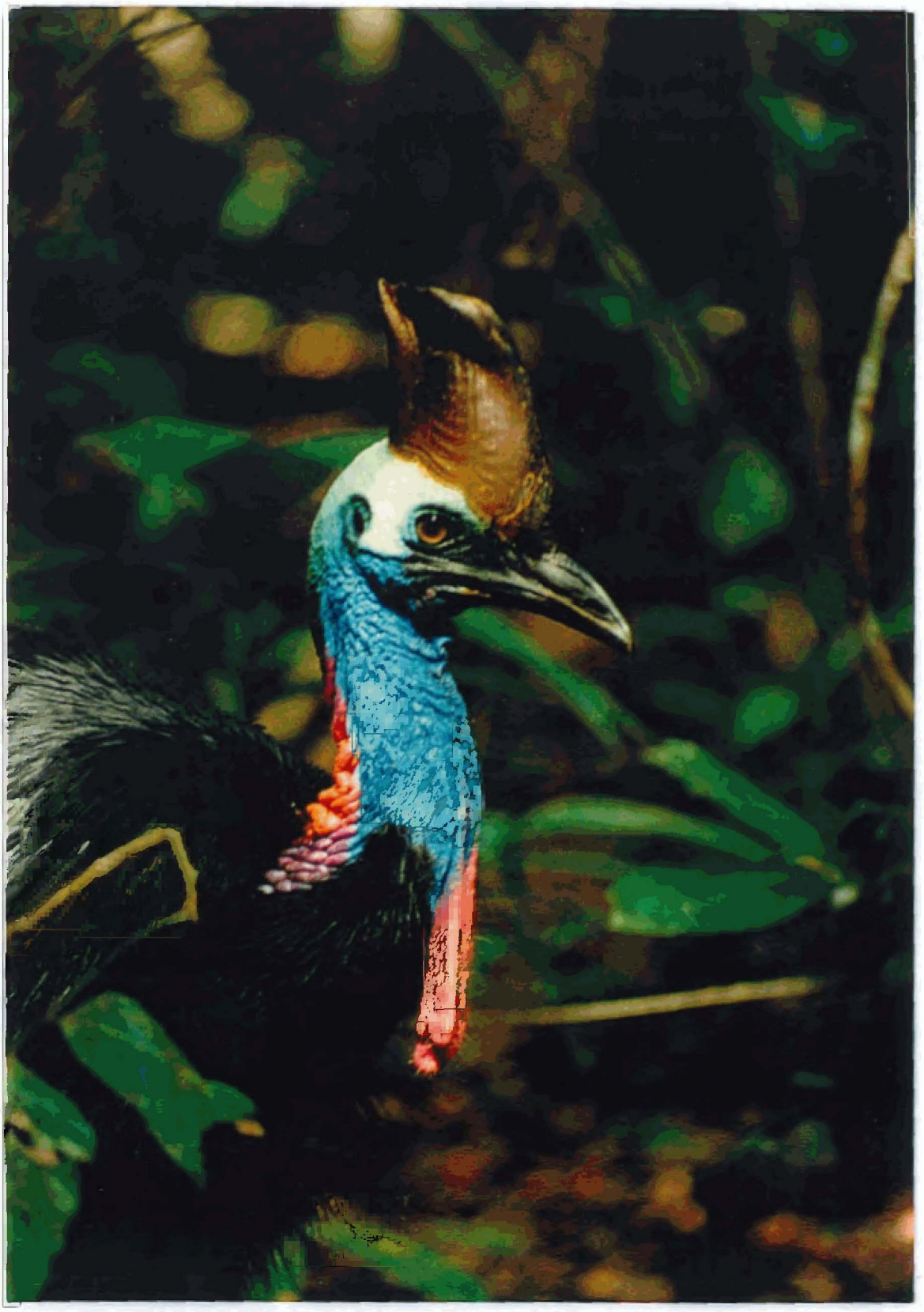

Plate 1 The adult male cassowary, Dillenia.

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Declaration

I declare that this thesis is my own work and has not been submitted in any form for another degree or diploma at any university or other institute of tertiary education. Information derived from the published or unpublished work of others has been acknowledged in the text and a list of references given.

9.5.1998

Joan Marie Bentrupperbäumer — Date

Abstract

The impetus for this research was the endangered status of a salient keystone species, the cassowary, *Casuarius casuarius*, and its habitat, the complex forest mosaics of North Queensland, Australia. The more encompassing objective of the dissertation which gave particular direction and focus to the research was to provide a critical analysis of the nature of the cassowary-human environment interface in this rapidly changing region of the world and the implications of such an analysis for the management of this endangered species.

This dissertation is concerned with the fundamental but persistent obstacle to effective endangered species recovery, the distressingly familiar problem of adequately allotting quality research effort to both biological and human population dimensions of an endangered species recovery process. Accompanying this has been a reluctance in the past to address research problems of diverse and sometimes conflicting studies, limited interdisciplinary communication and collaboration, ineffectual integration endeavours and the unwillingness of many scientists to break down the unfortunate dichotomies of "pure" and "applied" research and the "biological" versus the "social" in the environmental research and management arena. The emergence of a relatively new field of science which unites traditionally academic disciplines with the applied traditions of environmental management, conservation biology, provides the perspective and rationale for the holistic, multidisciplinary approach of this research project. At a conceptual level, an attempt is made to bring together and review theories, models and concepts which address natural-human environment relationships that have been or can be employed to help understand the human connection to the loss of species.

Two independent studies were conducted. The first involved an exploratory investigation of the biology of the cassowary, *Casuarius casuarius*, a large flightless bird which inhabits the wet tropical biogeographical region of North Queensland and isolated forest patches of Cape York. Cassowaries are currently listed as "vulnerable" under the *Endangered Species Protection Act 1992* (Commonwealth), and "endangered" (southern or Wet Tropic's population) and "vulnerable" (northern or Cape York population) under the *Nature Conservation (Wildlife) Regulation 1994* (State of Queensland). The second of the empirical studies involved community surveys of three adjacent human communities, differing in their day to day contact and impact on cassowaries. The research findings relating to the human population characteristics of these three North Queensland communities and their respective attitudes, beliefs, values, concerns, and environmental/conservation behaviours are presented.

Evidence from the endangered species, environmental psychological and environmental management literatures, together with the present studies on the cassowary and human populations, clearly supports the notion that managing the environment or a particular species primarily involves managing people. Essentially this is because major changes in the ecological setting of cassowaries are due to humans and has resulted in an interface between cassowary and human populations that corresponds to high mortality for cassowaries. Furthermore, the social structure and territorial nature of adult birds, their need to regularly access food and water, their movement patterns, and the need for subadults to disperse from natal areas, suggests they will not, in the long-term, adapt to situations that substantially impact on these fundamental requirements. In addition, the results from this research (which evidences substantial male parental investment, low chick survivorship and low annual productivity), suggest that cassowaries would be unable to re-establish a devastated local population after a major disaster, natural or unnatural, or to rapidly recolonise an area from which a population has been eliminated.

The research also showed that a strong public support base for environmental issues and particularly cassowaries exists amongst the communities surveyed. Elements essential to encouraging participation of community members in protection of the environment and cassowaries included the need for managers to work *with* rather than in isolation of the community and to work with individuals as well as groups. This suggests that restricting collaboration to an advisory group only runs the risk of failing to address the interests of the "silent" majority who do not belong to any particular group. The public's emotional connection to the natural environment and particularly cassowaries appeared to play an important role in their perceptions, representations and understandings of this species. Such a result emphasises the importance of utilising emotional content in strategies used to enhance the public's positive evaluation and appraisal of the natural environment and cassowaries rather than relying on the transmission of ecological information alone. It also emphasises the need for managers to be aware of the role emotion will play in any public involvement in decision-making.

Finally, this dissertation situates these two research studies in the broader context of biological and social science literatures and theory on the effective environmental management of endangered species and examines the relative and unique contributions of both the biological and human studies to the recovery process. The analyses allow for a systematic consideration of where and how environmental management authorities and agencies can more effectively address, monitor and intervene in the recovery of the cassowary, and with respect to Wet Tropics conservation in North Queensland, Australia.

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