Evidence-based Approaches in Conservation

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Evidence-based conservation: a useful analogy?

- Medicine and conservation are not the same, but there are some similarities
- Definition of terms and methods is key
- Elements of this approach are already in use
- Follow-through on all steps in conservation appear not to exist
- Focused effort is needed to explore costs and benefits of E-B use in conservation

Medical Metaphors in Land Management Have Endured

- Land health
- Wildlife health
- Ecosystem health
- Watershed health
- Range health
- Forest health
- Environmental Health
- USGS National Wildlife Health Center
- International Society for Ecosystem Health
- Aquatic Ecosystem Health and Mgt. Society

An outline of an evidence-based approach

- Clearly identify the question—what knowledge is needed?
- Systematic search for relevant knowledge, analyze it, and make recommendations regarding likely outcomes of treatments
- Communicate results in accessible forms
- Practitioner meets with patient (and family) to select treatment
- Practitioner monitors and evaluates outcome

Might Evidence-based Approaches be Useful in Conservation?

- So little time, so much to know—the journal glut
- Need for timely and useful response to knowledge needs—2 minute syndrome
- It's not what we don't know, so much as it is what we know that isn't so
- Objective, concise, and systematic analysis of experimental and experiential knowledge is hard to come by

Society for Conservation Biology 16th Annual Meeting *July 14-July 19 2002*
co-hosted by DICE and the British Ecological Society

16. Toward evidence-based conservation practice: a policy framework for co-ordinating science and practice *Abstracts*

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Goals:

To debate the value and timeliness of evidence-based policy;
To identify mechanisms for improving information flow between scientist and practitioner; and,
To reach consensus on the next steps toward providing a greater evidence base to conservation practice.

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Can methods applied in medicine be used to summarize and disseminate conservation research?

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SUMMARY

To ensure that the best scientific evidence is available to guide conservation action, effective mechanisms for communicating the results of research are necessary. In medicine, an evidence-based approach assists doctors in applying scientific evidence when treating patients. The approach has required the development of new methods for systematically reviewing research, and has led to the establishment of independent organizations to disseminate the conclusions of reviews. (1) Such methods could help bridge gaps between researchers and practitioners of environmental conservation. In medicine over the last decade would not have been possible.

Keywords: conservation research, disseminating research, evidence-based conservation, implementing science, science communication, systematic reviews

INTRODUCTION

Pullin and Knight (2001) recently proposed a framework based on evidence-based practice in clinical medicine and public

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Evidence-Based Extension

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BOBWHITES AND UPLAND WILDLIFE

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EVIDENCE-BASED MANAGEMENT

In clinical practice, some doctors use what is called "evidence-based medicine" in diagnosing health problems and prescribing treatment. Evidence-based medicine is based on exacting standards in the interpretation of research results and on the most current, valid results on treatments available.

Quail management, like medical practice, is more likely to be successful if it is based on evidence obtained through quality research rather than on assumption or tradition. The following list provides historical and current evidence on the value of selected bobwhite management principles and practices as determined from research results drawn mainly from articles in mainstream scientific journals. Logical comments not based on research evidence are in italics.

Plant Diversity Effects

There is no evidence that plant diversity (number of different species) affects bobwhite populations.

bushfire CRC
HighFire Project

HighFire: Underpinning Evidence-Based Policy for Fire Management of High Country in SE Australia

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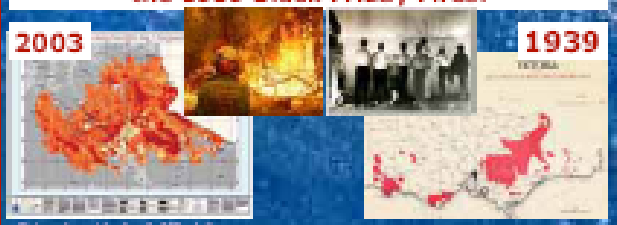
1. Fire in the Australian High Country

As a result of the 2003 Alpine Fires:

- almost 2 million hectares burnt
- 68% of the Alps National Parks burnt
- 551 houses were destroyed
- 4 people died in the ACT
- at least 38 alpine huts were destroyed

The 2003 Alpine Fires are the most extensive in the Australian high country since the 1939 Black Friday Fires.



Following the devastating fires of 2003 the debate around land management became intense with many opposing views, most of which were unsupported by scientific research.

The CRC will, through the HighFire project, create an evidence-base that can be drawn upon by land managers in formulating future policy and practise.

2. Research Scope

Project 1: Fuels and Ecosystem Functions

Project Leader: Mark Adams (UNSW)

This project will address the impacts of wildfire and fuels management on:

- Fuel accumulation
- Carbon & Greenhouse gases
- Water
- Weeds and
- the interactive effects of all of the above in addition to effects of climate change

Project 2: Living with Fire

This project will:

Project Leader: John Handmer (RMIT)

- develop ways of improving the implementation of evidence-based policy
- document local experience and values
- develop ways of improving local resilience

Project 3: Management of Bushfire Risk

This project will develop an evidence-based model for analysing Bushfire Risk in high country Areas

An example of a model used to analyse Bushfire Risk. Source: Media Associates (2003)

Project Leaders

Rick McRae (ESA-ACT)

Rodney Weber (UNSW)

3. Defining boundaries of the High Country

A range of Boundaries

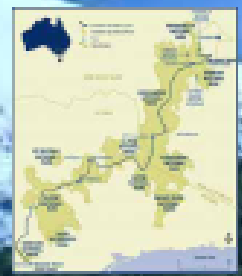


Figure 1. Australian Alpine National Parks. Source: DEH website

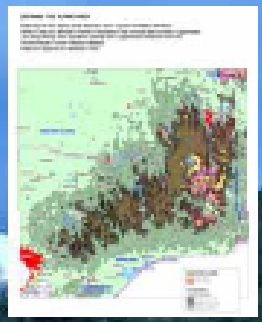


Figure 2: Alpine areas defined by ruggedness. Author: Rick McRae.

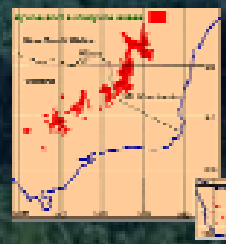


Figure 3. Alpine & Sub-alpine areas. Source: Lost

There is no definitive way of defining boundaries of High Country areas (see Figures 1 to 3). However, in the context of effective fire management the HighFire project defines the high country to include all ecosystem types and terrains including:

- alpine (1600m+)
- sub-alpine (1300-1900m)
- Montane (300-1500m)
- Tableland and Foothill Forests (300-900m)

Central logging. Records page impressions and visitor sessions.

Centre for Evidence-Based Conservation

Homepage

About CEBC

- Background To CEBC
- Introduction to Systematic Review
- Getting involved in Evidence-Based Conservation

The Centre for Evidence-Based Conservation was established in 2003 with the goal of supporting decision making in conservation and environmental management through the production and dissemination of systematic reviews on the effectiveness of management and policy interventions. With support from a wide range of organisations in the environmental and academic sectors the CEBC now acts as both a source of evidence and co-ordinator of a fast-growing collaborative network undertaking systematic reviews. This website acts as the primary gateway to reliable information on effectiveness based on the best available scientific evidence.

LATEST NEWS

Exploring the Medical Analogy

- Diagnosis, prognosis, etiology, and therapy
- Who is the patient?
- Who are the practitioners?
- How are treatment protocols chosen?
- Who evaluates treatment effectiveness?
- Who does the systematic reviews?
- Who does the primary research?
- Who does the clinical research?
- Who pays for each of these?

Gaps in Applying Evidence-based Approaches in Conservation

- Lack of clear identification of knowledge needs—emphasis often “this is what we know” than “here is what you asked for”
- Leap to primary research instead of first determining what is known (secondary research)
- Narrative reviews instead of systematic reviews
- Failure to include systematic analysis of experience-based knowledge (delphi, boards, focus groups, etc.)
- Failure to follow through with practitioner and “patients”
- Lack of seamless programs and adequate funding

Conservation Applications (1 of 2) we already do some things well

- Identification of knowledge needs
- Knowledge discovery
  - Secondary research—research reviews with recommendations
  - Primary research
- Knowledge analysis and synthesis
  - Practitioner oriented status-of-knowledge reports
  - Systematic reviews

Conservation Applications (2 of 2)

- Knowledge delivery
  - Archival
  - Grey literature
  - Electronic
  - Face-to-face
- Knowledge application
  - Practitioners
  - Community based/place based
- Effectiveness monitoring and evaluation (adaptive management)

What is the role of universities/research institutes?

- Objective convener
- Knowledge synthesis
- Knowledge discovery
- Knowledge translation
- Knowledge transfer
- Cooperative knowledge application, monitoring and evaluation
- Central is pursuit of relevant knowledge in direct support of ongoing implementation

Systematic Reviews—A Rigorous Process for Collecting, Analyzing, and Summarizing Information

- systematically identify questions
- specify inclusion and exclusion criteria
- apply these criteria to potentially eligible studies
- evaluate the methodological quality of the primary studies
- select an approach to data analysis
- analyze, interpret, and summarize the information according to explicit rules that include examining how effects may vary in different patient sub-groups
- parallels exist for synthesis of expert knowledge