PROCEEDINGS OF A WORKSHOP

ON

ECOLOGICAL SUSTAINABILITY

HELD AT THE

DEPARTMENT OF CONSERVATION AND

LAND MANAGEMENT

COMO, WESTERN AUSTRALIA

TUESDAY 21 MAY 1991

DEPARTMENT OF CONSERVATION AND LAND MANAGEMENT

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INTRODUCTION

The Department of Conservation and Land Management is responsible for the conservation of WA's wildlife, and for the management of public lands and waters (including national parks, nature reserves and State forest) entrusted to the Department for the benefit of present and future generations. The clear definition of ecological sustainability, and its achievement, are of major importance to this Department and to the State as a whole.

The Department is currently conducting a major review of strategies for nature conservation and forest management. The Ecological Sustainability Workshop was held as an integral part of those reviews, with the following aims.

1 To gain input from members of CALM and the public with as wide a range of interests and specialised backgrounds as possible to consider during CALM's strategic planning for nature conservation and forest management.

2 To achieve definitions of ecological sustainability and sustainable development which are largely acceptable to all interest groups.

3 To identify main issues relating to these concepts relevant to CALM, and the key steps for CALM to take towards achieving ecological sustainability in Western Australia.

These Proceedings contain the outputs from all workshop sessions, a summary of principles and actions identified as necessary to achieve ecological sustainability and ecologically sustainable development, and the opening and closing speeches.

OPENING ADDRESS BY ROGER UNDERWOOD, GENERAL MANAGER, CALM.

This workshop is a key part of two important tasks currently before CALM: First, to prepare a comprehensive strategy on nature conservation and the management of biological diversity. Secondly, to review our forest management strategies and ensure that they rest within the overall nature conservation strategy.

These are logical steps in working towards our overall goal - "to conserve Western Australian wildlife and manage lands and

waters entrusted to the Department for the benefit of present and future generations".

This aim, and the State Conservation Strategy upon which it is based, are endorsed by the Government and are essentially based upon the concept of sustaining nature and natural processes. However, this laudable aim begs two important questions: first, what is nature? and secondly how is it to be sustained, and at what scale and over what time?

These are difficult questions. The more we study nature the more complex we find it to be, and the tougher become the decisions for scientists and managers. The ecology and management of fire provide a good example: I have seen the focus of resources and management shift over 20 years from the effects of fire on birds, to vascular plants, to reptiles and other vertebrates, and now to nonvascular plants and invertebrate animals. With each new layer the overall system and the clarification of impacts on it become increasingly complex - not just because of the huge accumulation of data, but because every layer interacts with every other layer and often these interactions are unpredictable, or they produce "undesirable" side effects.

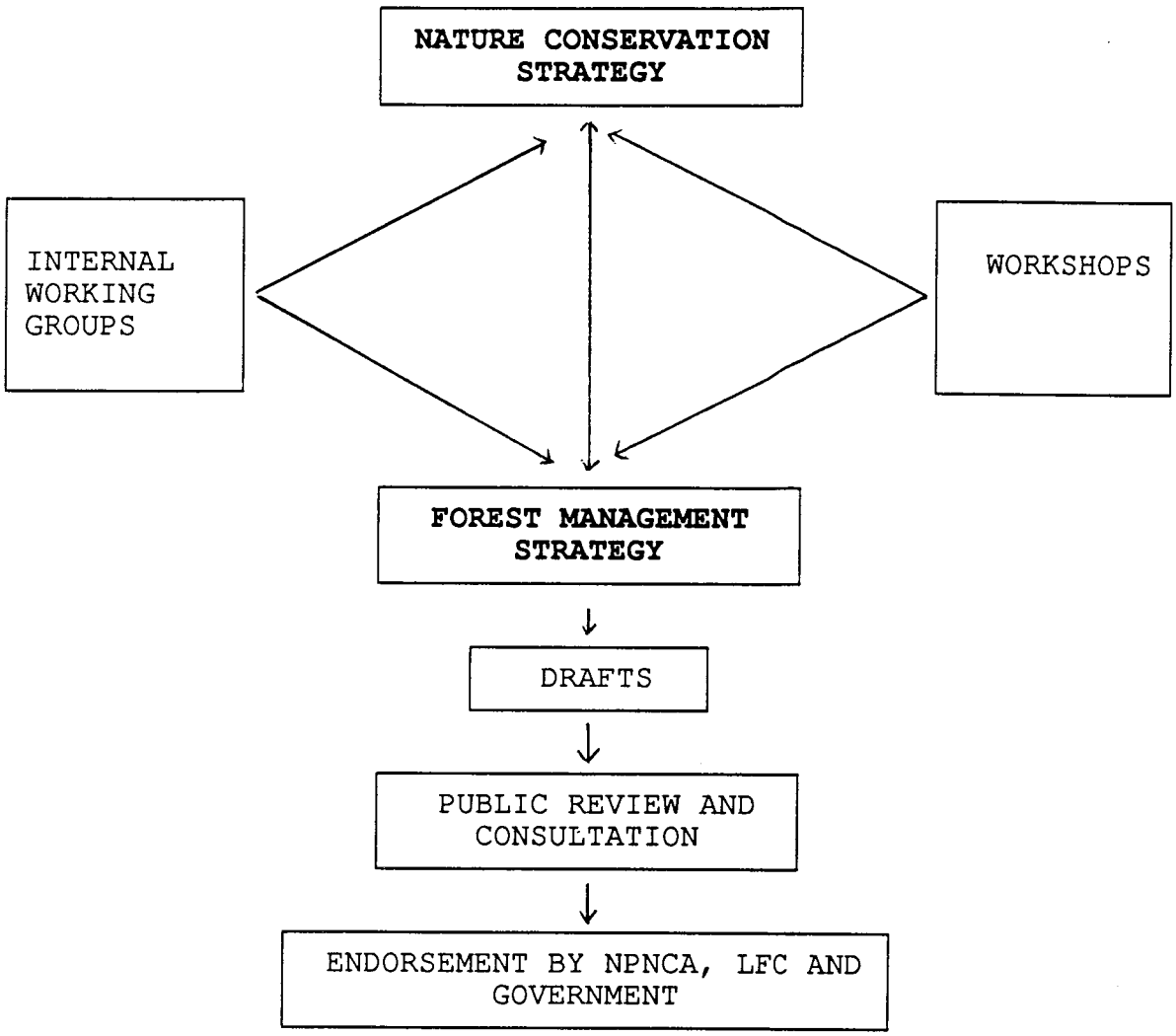
Understanding this complexity, even superficially, is daunting; trying to work out how to sustain it in the presence of human disturbance, is much more so. It would be easy to throw up one's hands at this point, and I sometimes do, but such despair is self defeating - we can't just do nothing. Firstly, doing nothing does not necessarily make ecological sense in this modern world, where even the most remote wilderness areas have feral animals, weeds and visitors. Secondly, there are special challenges to preserve endangered species and protect endangered habitats, including human ones.

On those occasions when I am tempted to despair, I am sustained by a quote from Primo Levi - "We must never feel disarmed: nature is immense and complex, but it is not impermeable to the intelligence; we must circle around it, pierce and probe it, look for the opening or make it."

To meet these diverse and important challenges, we must have a set of guiding principles - this will be provided by our nature conservation strategy. That strategy will change over time, and we will try to match it, as best we can, with the best available information at the time. The important thing is to *try*, and to write down the actions taken and the results!

To improve our efforts, we are trying to use as many experts as possible - those at this workshop. I also want to stress that we see this exercise as very much a community effort - not just a CALM one.

The process of producing and updating these strategies is summarised in the diagram below.



MORNING WORKSHOP SESSION

The six workshop groups considered the definitions of "ecological sustainability" and "ecologically sustainable development". They had the following material as examples.

The Commonwealth Government recently established eight working groups to consider the application of ecologically sustainable development across each of the main industry sectors that use, or have a significant impact on, natural resources. A discussion paper issued by the Government used the following definition:

> "**ecologically sustainable development** means using, conserving and enhancing the community's resources, so that ecological processes, on which life depends, are maintained, and the total quality of life, now and in the future, can be increased."

Given CALM'S responsibilities for nature conservation and land management, and the ecological nature of these tasks, it makes

sense to seek definitions which are based on the nature of ecosystems rather than on a perceived desirable end point.

In this context **ecological sustainability** can be most simply defined as management of ecosystems so that the full suite of biological species, and ecological and evolutionary processes, of each ecosystem is retained in the long term, even though short term changes may occur.

An alternative definition of **ecologically sustainable development** is therefore; conserving, using and enhancing ecosystems so that the full suite of biological species and ecological and evolutionary processes of each ecosystem is retained in the long term, even though short term changes may occur.

Output From Groups

GROUP 1 (FACILITATOR KEN WALLACE)

1 For whom are we defining?

- universal
- state
- operational definition for CALM

2 Term sustainability is defined by scales of time and space. These must be defined first.

SPACE: State, subdivisions
TIME: 200-300 years
jarrah rotation
fire rotation in wheatbelt

Concerns

1 Can man influence evolutionary processes?
- is it desirable to do so?

2 What is the full suite of species - will we ever know? do we need to know?

3 Management - can we manage ecosystems? We have to try.

4 What is a baseline ecosystem?

2 means of defining this:

(a) by time - 1829
- 1991

(b) by ecosystem function

the state of WATER cycle
NUTRIENT cycle
measure of ENERGY flows
" DIVERSITY

5 Ultimately need quantifiable criteria at the operational level.

Summary

Two definitions:

(i) Statewide
(ii) Operational at level of individual ecosystems with quantifiable criteria.

GROUP 2 (FACILITATOR SUE MOORE)

Ecologically sustainable development means using, conserving (and restoring?) the ecosystem's resources, so that the full suite of species and ecological and evolutionary processes, on which life depends, are maintained, and the total quality of life, now and in the future, can be maintained or, if necessary, increased. (Why should we be pre-occupied with enhancing quality of life? Maybe it is adequate here already.)

Should we need to consider ecologically sustainable development in a broader context than area of development (e.g. factory or minesite)? Acid rain and ozone layer depletion are examples of problems which extend well beyond area of development.

Ecological sustainability is the management of ecosystems so that the full suite of biological species, and ecological and evolutionary processes, of each ecosystem is retained in perpetuity (prevents later change of mind).

GROUP 3 (FACILITATOR KEVIN VEAR)

Maintenance of biodiversity and ecological and evolutionary processes of each ecosystem are retained in the long term even though short term changes may occur.

Comments

1 Word "management" inadequate - need to define this and processes of management.

2 Biodiversity to cover diversity across and within species (genetics).

3 Use of resources should be such that ecological sustainability is achieved.

4 Ecologically sustainable development should be based on our definition of ecological sustainability.

5 Issue of scale

- space
- time

6 Issue of measurement of when is ecological sustainability not being obtained.

8 Issue of quality of life etc. driving development.

GROUP 4 (FACILITATOR KEN ATKINS)

Definitions

Conservation: the maintenance of nature.

Ecological sustainability: management of ecosystems to ensure conservation of nature: dependent on definition of nature.

Ecological Sustainable Development: development within context of ecological sustainability.

GROUP 5 (FACILITATOR DAVID COATES)

Disclaimer - not possible to obtain a consensus in the time. Need not be too succinct.

1 Recognising the dynamic nature of ecosystems, *ecological sustainability* is the maintenance in perpetuity of biological diversity within an ecosystem, defined on an appropriate spatial scale.

2 Maintenance of biological diversity involves the conservation of all species and the ecological processes on which they depend.

3 Management is a tool through which biological diversity may be maintained.

Ecologically sustainable development is conserving, using and restoring ...

Refinement of this definition must include an appropriate definition of quality of life consistent with ecological sustainability, and the definition of scale so that diversity of uses might be accommodated.

GROUP 6 (FACILITATOR BOB CHANDLER)

Ecological sustainability is the management of:

populations
species
communities
landscapes
planet

so that the loss of biodiversity and changes in ecological and evolutionary processes are minimised.

ISSUES ARISING FROM MORNING SESSIONS

1 Can/should humans influence evolutionary processes?

2 What is the "full suite of species? Can/should it be maintained?

3 What is "management"?

4 What is a "baseline ecosystem"?

5 What is CALM's role in influencing implementation of ecologically sustainable development on CALM and non-CALM lands?

6 What does "quality of life" mean in WA? Should the quality of life be improved?

7 How should success/failure be monitored and judged in pursuing ecologically sustainable development?

8 What are the horizons for "short", "medium" and "long-term"?

9 What is an appropriate "spatial scale" for ecologically sustainable development on CALM and non-CALM lands?

10 Does CALM have a role in issues such as "limiting growth" and establishing "carrying capacity" of humans?

11 How do we manage change in ecologically sustainable development in human context?

12 What are the legislative requirements for ecologically sustainable development?

The above issues were arrived at after discussion during the post lunch plenary session. Two issues were then allocated to each workshop group for discussion, and identification of *principles* by which CALM should be guided in seeking ecological sustainability and of actions that should be taken towards its achievement.

The issues were allocated as follows:

Group 1	Issues 1 and 11
Group 2	Issues 2 and 4
Group 3	Issues 3 and 7
Group 4	Issues 6 and 10
Group 5	Issues 8 and 9
Group 6	Issues 5 and 12

AFTERNOON WORKSHOP SESSION

Group 1

ISSUE 1

CAN/SHOULD HUMANS INFLUENCE EVOLUTIONARY PROCESSES?

A CAN WE - YES

Through
1) Linkage of populations
2) Creation of barriers
3) Loss of species
4) Control exotics
5) Breed new varieties
6) Change selection pressures
   - climatic change
   - exploitation
   - fire regime
   - regeneration
   - Chernobyl
7) Conservation (remnants)
8) Size of populations

B SHOULD WE

	Degraded	OK
Intervene	Yes	No
Minimize change	Yes	Yes

ISSUE 11

HOW TO MANAGE CHANGE

Human Induced	Natural	
To be Managed	Yes	4
	No	6

Group 2

ISSUE 2

WHAT IS A FULL SUITE OF SPECIES?

Goal

- Need to know which and how many species were present prior to Europeans?
  - but we don't know what was present
  - over what scale and successional stages do we assess this?
- Restore to this level and composition.
  - but what was it?
  - we don't know how to restore completely. Rehabilitate better word.
  - maybe we should only aim for grades of rehabilitation.
  - should we interfere with possible natural extinctions?
  - should we interfere with natural dynamic processes?

Principles

- We need baseline data before proceeding with management.
- Human activity should not reduce biodiversity.
- Need continuity of conservation across different areas.
- Maintenance of biodiversity is responsibility of all levels of society.

Action steps

- Collect baseline data for ecosystem.
- Identify areas of high conservation value and/or biodiversity.
- Give priority to 'preserving' least disturbed areas.
- Involve LGAs, Landcare groups, community as a whole.
- Aim for conservation network on and off CALM land.
- Therefore need to educate and involve community in conservation.

- Equal partnership arrangements.
- Present range of views on information provided.

ISSUE 4

WHAT IS A BASELINE ECOSYSTEM?

In the context of definitions we discussed this morning this is probably a hypothetical target.

Principles

- It varies according to scale.
- It changes over time and space.
- They should not be considered in isolation, where does one community end?
- All natural ecosystems have intrinsic value.
- But caution, identifying baseline ecosystems in good condition may imply that other areas are 'substandard' and therefore 'fair game' for development.

Action Steps

- Study functioning and structure of a set of simple ecosystems throughout the State e.g. spinifex, kwongan.
- Find means of inexpensively monitoring structure and functioning of ecosystems.
- Perhaps, to save even more time/money, seek "geomorphological" indicators of ecosystem structure and functioning.
- Encourage LGAs, private developers and others to do their own environmental audits.
- CALM and/or EPA to provide guidelines for audits.
- CALM to provide publicity on value of 'baseline' ecosystems to the community.
- All ecosystems, even if disturbed, require management so that their functioning at least in part conforms to a 'baseline' ecosystem.

Group 3

ISSUE 3

WHAT IS "MANAGEMENT"?

- arose because of Group 1's question "can we manage ecosystems?"
- use of resources so that ecological sustainability is achieved;
- Acknowledging that natural systems (in WA) now, do not exist outside human intervention, does this mean that we should be managing all systems?

Comments

- based on our definition of Ecological Sustainability;
- issue of scale
  - space
  - time
- issue of measurement of when is Ecological Sustainability not being obtained
- issue of quality of life etc driving development.

Principles for achieving Ecological Sustainability

1 Objective analysis of the need
   - realistic and appropriate analysis of resources;
   - ecological priorities to receive greater and equal weighting than economic priorities;

2 Aim to maximise future options.

3 Limit human populations to carrying capacities - finite levels for each system.

4 Quality of life will be considered.

5 Education processes required to achieve Ecologically Sustainable Development.

Our definition of management

The planning and implementation of processes to achieve a goal. The goal in this case being "ecological sustainability" rather than "ecologically sustainable development".

* Ecological Sustainability being the prerequisite of Ecologically Sustainable Development.

ISSUE 7

IN PURSUING ECOLOGICALLY SUSTAINABLE DEVELOPMENT

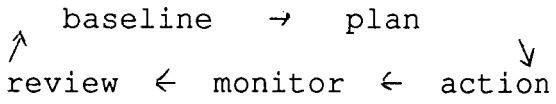
1 How do we *judge* success and/or failure?

2 How do we *monitor* success and/or failure?

(a) Need an *objective* measure

- establish baselines - acceptable change?
- keystone species
- develop an index of change

(b) Confirm that the processes are extremely important.



(c) Must be a 'system' that is open and flexible to public input and new scientific information as it emerges.

(d) recognise limitations of management resources and determine priorities.

(e) Education.

Group 4

ISSUE 6

QUALITY OF LIFE - THREE LEVELS:

1 Preconditions - basic needs

2 Well-being - opportunities to enhance/pursue goal that you consider worthwhile within Ecological Sustainability.

3 "Over the top" exploitation

Action: Work on providing 1 and 2 for everyone.
Move from 3 to 2 - using education and improved technology

ISSUE 10

CALM's ROLE IN ISSUES SUCH AS GROWTH AND CARRYING CAPACITY

Yes - Where impacts encroache on natural environment.

Action

More binding role of nature conservation and interests in planning.

Carrying capacity - need proactive steps.

Sustainability requires access of humans to be rationalised.

Principles

1 CALM to be proactive in defining and regulating the carrying capacity for a development to be ecologically sustainable.

2 Nature conservation values and interests to have greater input and planning (via CALM etc.)

3 Establishment of objective base-line standard for management - need to define "normal" and have reference sites for ecosystems.

4 Community to be involved in ecologically sustainable development and policy - require education and understanding.

Group 5

ISSUE 9

SPATIAL SCALE

1 Do we have adequate and appropriate information?

2 In absence of above can we identify area on key or keystone species?

3 Spatial scale may be dictated by what is left over on which we apply biogeographic information.

4 Recognise repeated patterns.

5 Immediate needs dictate what information we gather.

6 Size/time/linkage - a process.

7 Example of rural lands:

- wildlife in the home paddock
- linked with habitat corridors.

8 Whole community approach.

9 Species
Community/Ecosystem
Genetic base
Process - long term.

ISSUE 8

TIME HORIZONS - SHORT, MEDIUM, LONG

1 Must have the word "perpetuity" in the definition of Ecological Sustainability.

2 Ways of defining time

(a) generations (anthropocentric)
(b) years

in a nested fashion.

	a	**b**
short	here and now management plans	0-5/10
Medium	children/grandchildren	20
Long	beyond grandchildren	100 +

but recognising the vision - which is the long term biocentric philosophy. We are also talking about systems which have a continuum of scale and it may not always be fruitful to define time scales.

Information may change our vision.

Rural example covers time and space.

Nothing is too small.

Repeated patterns have some disturbance, but spatial scales are the same.

Vision - wildlife corridors.

Size, time, linkages and processes are all important.

Spatial scale is often dictated by what is left over. Biogeographical importance of remnants whould be assessed it in terms of what we have.

Principles

1 Need to have a long term vision and requirement for review.

2 There must be an integration between anthropocentric and biocentric philosophies.

3 Whole of community approach is required.

4 To maintain diversity - it must be demonstrated that habitats are replicated.

Actions

1 Plan conservation areas on ecological boundaries.

2 Assess what is remnant on non-CALM lands.

3 Speed up the legislative changes to include habitat protection for fauna.

4 Assess -

How does it fit?
Acquire/management agreement.

5 Greater inventory to include inshore environment.

6 Is it fish or fowl.
Clarify definitions in Wildlife Conservation Act.

Group 6

ISSUE 5:

CALM'S ROLE IN INFLUENCING IMPLEMENTATION.

1 Communication and cooperation

- conservation estate consists of CALM and non-CALM lands;
- CALM lacks resources therefore need to have community based conservation management/cooperative management;
- friends of conservation;
- need to inculcate conservation ethics in staff and in community;
- CALM staff need to be active in communications - tithing.

- research communication needs to be relevant;
- corporate philosophy needs to be considered.

2 Set research priorities.

3 Constantly reassess corporate philosophy in light of analysis of goal achievements - contribute to government policy.

4 Resources are limited and clear priorities to achieve efficient use.

5 Management by example.

6 Research communication.

ISSUE 12

LEGISLATIVE REQUIREMENTS.

Need control over or more input into:

catchment
pastoral leases
cultural requirements (Aboriginal aspirations)
urban development
who administers various types of legislation affecting conservation? e.g. Mines Department.
resources accounting
Soil Conservation Act (land clearing requirements - guided by agricultural considerations).

SUMMARY OF PRINCIPLES AND ACTIONS ARISING FROM AFTERNOON WORKSHOP AND PRESENTATIONS AT LAST PLENARY SESSION

Group 1

Can/should humans influence Evolutionary processes.?

Principles

1 Intervene in degraded ecosystems only.

2 Minimise changes in both degraded and "natural" systems.

How to manage change (separate "natural" from human induced)

Principle

3 Aim to minimise changes which are human induced.

Action

1 Train managers to recognise and manage human induced change.

Group 2

What is a full suite of species?

Principles

4 Reference time - since European settlement.

5 Restore to pre-European state (but how to know what it was and how to restore).

6 Need better baseline data before proceeding with management.

7 Human activity should not reduce biological diversity.

8 Want continuity of conservation actions across areas with different management regimes and priorities.

9 Maintenance of biological diversity is whole community responsibility.

Actions

2 Gather baseline data for systems.

3 Identify areas of high conservation value/high biological diversity.

4 Give priority to least disturbed areas.

5 Involve LGAs, LCDCs etc and inform and involve communities.

6 Implement nature conservation program across all lands.

7 Ensure equal partnership arrangements.

8 Present a range of options and views for management.

What is a baseline ecosystem?

Principles

10 All natural systems have intrinsic value.

11 No ecosystem should be considered in isolation.

12 Even disturbed ecosystems may have nature conservation value.

13 LGAs, LCDCs, developers etc. to do own environmental audits.

14 All ecosystems, even modified ones, can/should be managed to retain some nature conservation/ecological values.

Actions

9 *Study structure and function of a set of simple, representative ecosystems.*

10 *Improve monitoring of ecosystem "state".*

11 *Seek indicator groups and species.*

12 *CALM and/or EPA to provide audit guidelines.*

13 *CALM provide publicity material on "values" of "baseline" ecosystems.*

Group 3

What is management?

Principle

15 Management is the planning and implementation of processes to achieve the goal of ecological sustainability.

[Note ecological sustainability as prerequisite for ecologically sustainable development.]

How do we judge/monitor success or failure.

Principles

16 Concentrate on processes.

17 Must be a system flexible and open to public input, and new information.

18 Realistic, appropriate resource assessment, not just based on economic factors.

19 Decisions should be largely on ecological bases: should equal or outweigh economic.

20 Maximise future options.

21 Limit human populace to carrying capacity of each system.

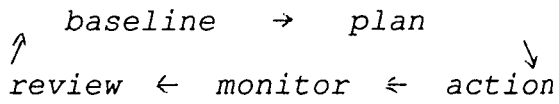
22 Broad quality of life considered.

23 Education processes fundamental change to achieve ecologically sustainable development.

Actions

14 *Seek objective measures of :* *baselines*
acceptable change
keystone species
index of change

15 *Monitoring and assessment should be an iterative process, as follows:*



16 *Involve the public in monitoring and assessing*

17 *Recognise resource limitations. Determine priorities.*

Group 4

What is quality of life

Principle

24 There are three levels of needs and wants which contribute:

i) basic needs

ii) well being - aesthetics, culture, etc.

iii) "over the top" consumerism

Action

18 *Emphasise i) and ii) - encourage people to move from iii) to ii) by educating and providing information.*

CALM's role in "societal" issues such as growth etc.

Principles

25 CALM has a role if impacts on natural environment are occurring or likely.

26 CALM should be proactive in defining and regulating carrying capacity of people.

27 Nature conservation values etc. should be given greater input in planning.

28 Community should be involved in economic development and policy

Actions

19 *CALM should take a leading role in planning for development, including identifying carrying capacity.*

20 *Education to improve understanding.*

Group 5

Temporal Scale

Principles

29 Retain in perpetuity or indefinitely as overall goal.

30 Define times.

Short		0-5-10
Medium	(generation children/grandchildren)	~ 20
Long	(beyond grandchildren)	> 100

31 Note need for long term, biocentric philosophy (allow for revision).

32 Systems have a continuum of scale.

33 Vision may change with different information e.g. rural landscape and remnants. Future "hope".

Spatial Scale

Principles

34 Scale may be dictated by what is left.

35 Need to recognise repeated patterns and to provide replication to ensure protection of biological diversity.

36 Ensure size/time/linkages as a process.

37 Whole community approach needed. Integration between anthropocentric and biocentric philosophies.

Action

21 CALM conserve on ecological boundary basis.

22 Protect non-CALM remnants.

23 Speed legal changes (especially for fauna). Clarify definition in Wildlife Conservation and related Acts.

24 Improve "acquisition" system.

25 Improve inventory including inshore environment. Assess remnants on non-CALM land. Collect adequate and appropriate information on spatial patterning. Attempt to identify keystone species.

26 Support vegetated corridors on agricultural land.

Group 6

CALM's role on CALM/non CALM lands

Principles

38 Conservation estate should not be dictated by land ownership (i.e. biota do not recognise ownership or vesting).

39 Need broad-based community conservation management ("community ownership" in ethical sense).

40 Research should be practical, relevant, based on ecologically sustainable development priorities.

41 CALM to set example of ecologically sustainable management.

42 Importance of liaison with other agencies and research groups.

Actions

27 CALM help to develop ecological ethic communications programme (communication "tithing" in duty statements).

28 Link researcher with management development (extension systems need to be vamped up).

29 Set measurable goals, monitor, reassess priorities of Department, contribute to Government policy.

Legislative Requirements

Principles

43 Cultural requirements (Aboriginal aspirations).

44 Nature conservation values must be considered and recognised as a factor in land clearing including urban development.

45 Overall need to coordinate acts and statutory responsibilities.

Action

30 CALM should be involved in "Catchment management", and other large area management as in pastoral area.

CLOSING ADDRESS BY BARRY WILSON, DIRECTOR FOR NATURE CONSERVATION, CALM.

First, I want to say thank-you to all of you who have spent so much time and effort participating in today's workshop.

Also, if it is not too pompous, I would like to commend you as a group on the congenial, serious, but good natured, spirit in which you all contributed.

The subject of discussion is among the most fundamental global issues of our day. It is essential that all communities, ours as much as any other, must come to terms with it. It is obvious that there is little consensus among even this group as to the ways in which this should be done. As a result, a Department like CALM has great difficulty in choosing a path for action in matters like this.

A question was asked this morning about whether today's exercise was directed towards establishing operational guidelines for CALM, or whether we are aiming more broadly than that.

My own perception is that we, that is CALM, would like to see a set of community principles established with respect to this matter so that we can set our departmental objectives and operations accordingly.

We believe that in our Department we have great depth and technical expertise in this field, and many thoughtful people who have input into our policies. Nevertheless, it would be quite inappropriate for us to believe that we know all the answers.

That is why an event like this is so important. It has to some extent been a fishing expedition, exposing us to a wide range of views, some of which have been new to us, some variations on views we have held before.

It has been a very valuable exercise from our point of view. I hope you have all gained some insights from it as well.

There will be two main outcomes. John and Alan have advised that a record of today's discussions will be circulated and each of you will have opportunities for further input.

Ultimately, we will be attempting to incorporate the ideas which come from it in a document later in the year which will be called "Nature Conservation: a strategy for maintaining biological diversity in Western Australia" and in a matching one on forest management.

We see these two complementary policy statements as a culmination of the thinking and planning which have gone on within CALM, the National parks and Nature Conservation Authority and the Lands and Forests Commission over the past few years. A lot of things have come together lately and it is CALM's view that we are now in a position to produce a concise

and comprehensive statement about nature conservation in this State. Today's effort has been a significant step in that process.

There is a common perception that conservation is something that Government will (and should) deal with. In fact, it is a matter for everyone. Each of us in our own way must play a part. A first step is to write down a statement for everyone to relate to, which not only becomes operational for CALM, but becomes a model for everyone to consider.

Many thanks to John and Alan for the efficient and friendly way the workshop has been run, and to you all for contributing so effectively.

INVITATION LIST - WORKSHOP ON ECOLOGICAL SUSTAINABILITY

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*** denotes those people who attended.**

SETTING PRIORITIES FOR ACTIONS

Name: .....

Affiliation: .....

.....

Please place a number from 1 to 30 against each of the actions listed below; 1 for most important, 30 for least, and RETURN TO:

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1 *Train managers to recognise and manage human induced change.* ☐

2 *Gather baseline data for systems.* ☐

3 *Identify areas of high conservation value/high biological diversity.* ☐

4 *Give priority to least disturbed areas.* ☐

5 *Involve LGAs, LCDCs etc. and inform and involve communities.* ☐

6 *Implement nature conservation program across all lands.* ☐

7 *Ensure equal partnership arrangements.* ☐

8 *Present a range of options and views for management.* ☐

9 *Study structure and function of a set of simple, representative ecosystems.* ☐

10 *Improve monitoring of ecosystem "state".*

11 *Seek indicator groups and species.*

12 *CALM and/or EPA to provide audit guidelines.*

13 *CALM provide publicity material on "values" of "baseline" ecosystems.*

14 *Seek objective measure:*

baselines
acceptable change
keystone species
index of change

15 *Institute an iterative monitoring/review scheme: e.g.*

baseline → plan
↑ ↓
review ← monitor ← action

16 *Involve the public in monitoring and assessing.*

17 *Recognise resource limitations. Determine priorities.*

18 *In pursuing quality of life, emphasise the provision of basic needs and real improvements to well-being (aesthetic, cultural etc.) and move away from "over the top" consumerism. Educate, provide information.*

19 *Greater role for CALM in planning for development, including identifying carrying capacity. CALM's lead role.*

20 *Education to improve understanding.* ☐

21 *CALM conserve on ecological boundary basis.* ☐

22 *Protect non-CALM remnants.* ☐

23 *Speed legal changes (especially for fauna). Clarify definition in Wildlife Conservation and related Acts.* ☐

24 *Improve "acquisition" system.* ☐

25 *Improve inventory including inshore environment. Assess remnants on non-CALM land. Collect adequate and appropriate information on spatial patterning. Attempt to identify keystone species.* ☐

26 *Support vegetated corridors on agricultural land.* ☐

27 *CALM help to develop ecological ethic via communications programme (communication "tithing" in duty statements).* ☐

28 *Link researcher with management development (extension systems need to be vamped up).* ☐

29 *Set measurable goals, monitor, reassess priorities of Department, contribute to Government policy.* ☐

30 *CALM should be involved in "Catchment management", and other large area management as in pastoral area.* ☐