Biodiversity Credits: Direct economic reward for sustainable management

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What is Biodiversity ?

"The sum of all living entities including genetic and species diversity"

"The biodiversity of an ecosystem includes the sum of all living and functional components of the system"

The Biodiversity Dilemma

- Humans consume and develop natural resources at the expense of biodiversity
- Sometimes this leads to environmental collapse (salinity)
- Generally most ecosystems remain functional, however, there are warning signals that most ecosystems are degraded

Biodiversity Resource Allocation

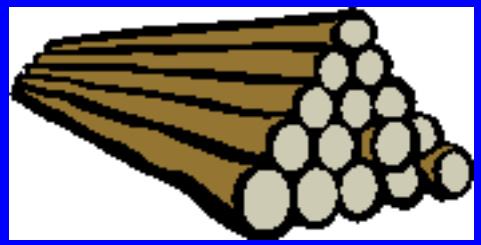
- Currently most resources devoted to biodiversity are channelled to preserve endangered species
- Most biodiversity resources are “owned” by impoverished sectors of society
- Generally this ownership has negative economic consequences

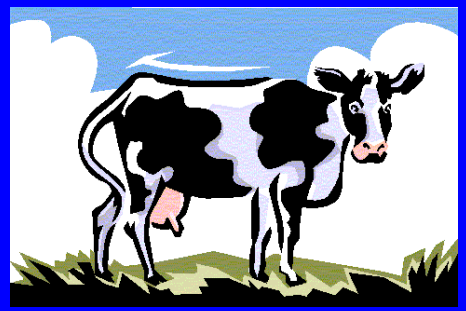
What happens when a land manager in NSW views his options for:

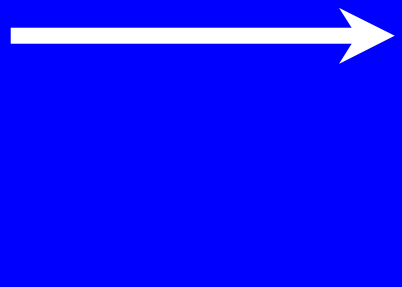
a) Traditional crops

b) Biodiversity

Traditional Agriculture







Biodiversity on your land =

Legislation

NSW Threatened Species Conservation Act
NSW State Environmental Protection Policy
NSW Native Vegetation Act
NSW National Parks and Wildlife Act

Problems

No markets
Competition with domestic stock
Cost of control

Human Impact on Biodiversity

Some human communities carry no biodiversity debt,

but most do …

Environmental Risk

Some human landscapes are relatively functional and stable

However, environmental collapse can occur …

Large Scale Problems

THE WEEKEND AUSTRALIAN

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Murray River pollution reaches its head waters

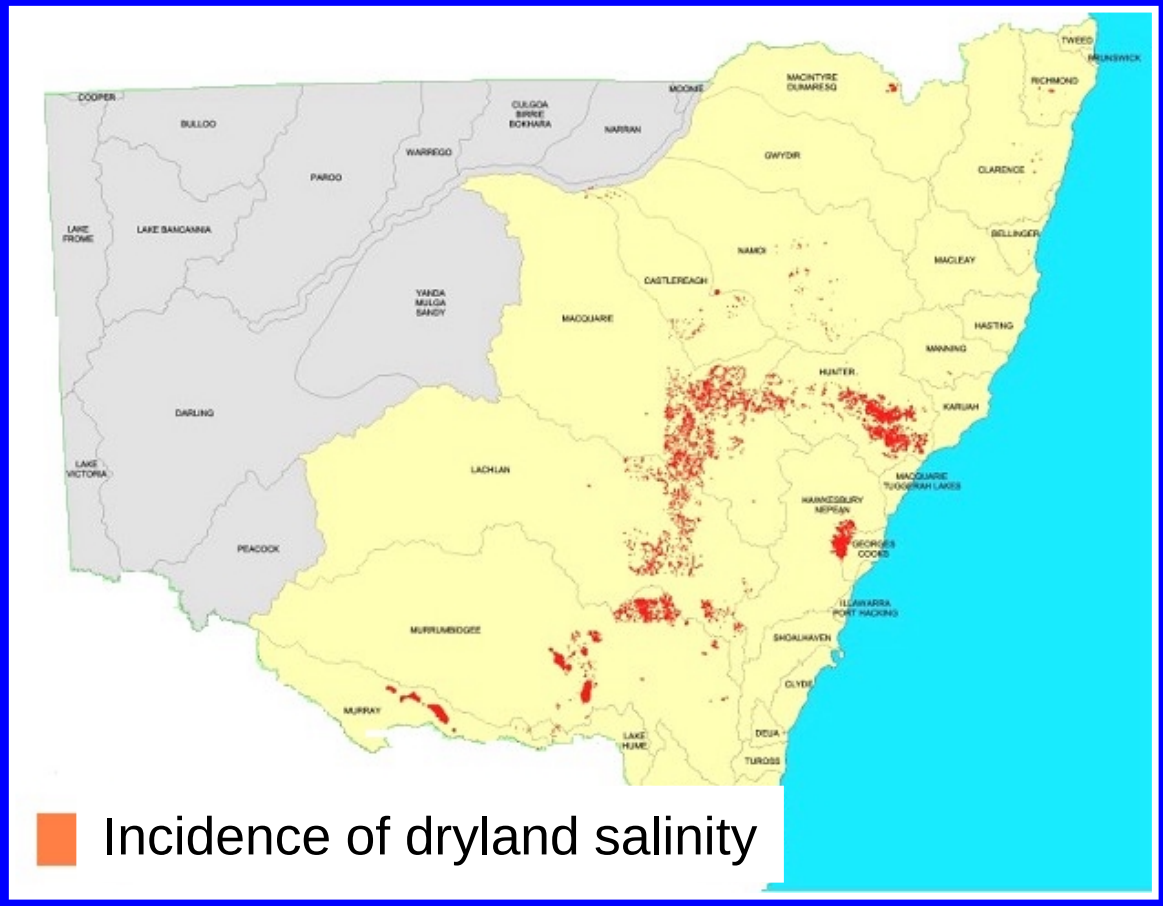
Fouled from source to sea

SAVING the MURRAY RIVER

"Australia's greatest river is polluted by the legacy of human habitation."

requiring large scale solutions …

Dryland Salinity in New South Wales, Australia



6.3 million acres of land currently affected in Australia
Expected to increase to 38 million acres next century

Major Issues

- What measures are required to manage remaining biodiversity resources ?
- How will these measures be financed ?
- How will the social forces and political processes be generated to enact these measures ?

Relevant Parameters
Scope and Scale
Time Scale
Current Solutions

The Drivers

- Few economic or social drivers that will resolve the biodiversity issues

- Social and economic actions will not change in time to deal with ecological management issues due to the temporal and geographic scale of biodiversity management

One Approach

- Measure biodiversity values
- Market these values
- This biodiversity market will drive management to sustainability

Measures of Biodiversity

The BIOS

$$B = EC^r * P * U * 1 / D * C$$

where :

EC^r = Ecological Community (species composition); r is a measure of rarity based on the components therein

P = a productivity measure

U = taxonomic uniqueness

D = distance to next EC

C = condition

Extant Biodiversity

Clearing for traditional agriculture

Management contracts for environmental services (water, air, soil)

The Alternatives

Rehabilitation

Long term decline in productivity

Example

Camphor Laurel

Fuel

Hardwood plantation

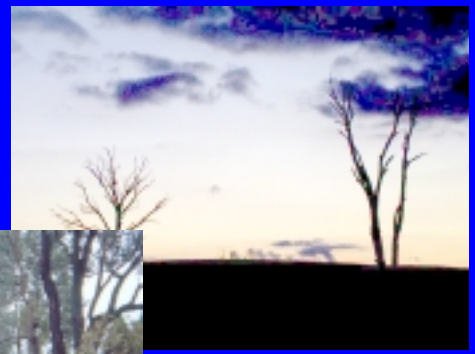
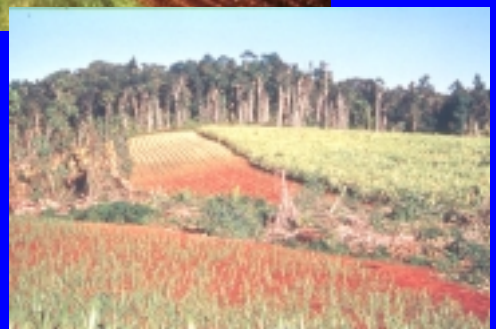
Grazing land

Native vegetation

$$ credits

Conclusions

- Environmental catastrophes can occur and will cause immediate reaction from society and business.
- Ecological degradation is an essential component of environmental catastrophe.
- Ecological degradation is a large scale problem in spatial and temporal terms.

CONCLUSIONS

- Current resources for ecological management (biodiversity) are small, and directed to listed or charismatic species.
- Giving direct economic reward for positive biodiversity management is one solution.
- Objective measurement of biodiversity values is an essential to implement any system of economic reward for biodiversity.