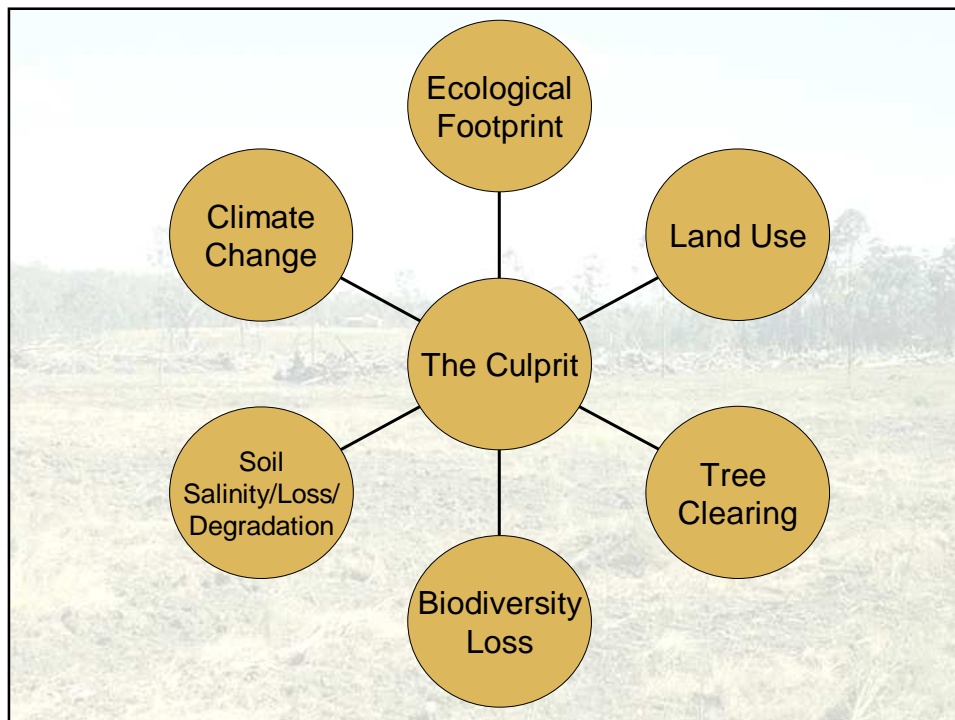


Deforestation and land degradation in Queensland - the Culprit

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Lefki Pavlidis, formerly (Remote Sensing Scientist) of the
Dept of Environment and Resources Management (QLD)





ECOLOGICAL FOOTPRINT



Our Ecological Footprint

- Our attitude to the environment has changed dramatically (eg. 2010 swing to Greens), but
- Our consumption habits have driven planet Earth past its regenerative capacity
- We now consume far more than our planet can provide (WWF 2008).

Our Ecological Footprint

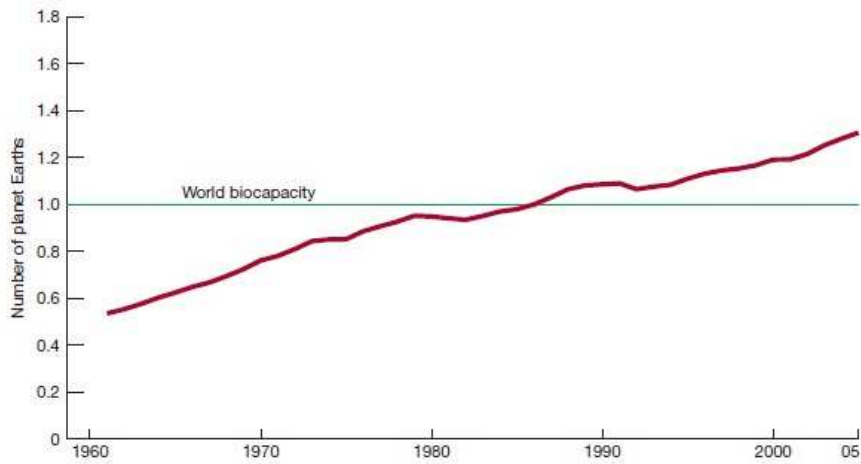
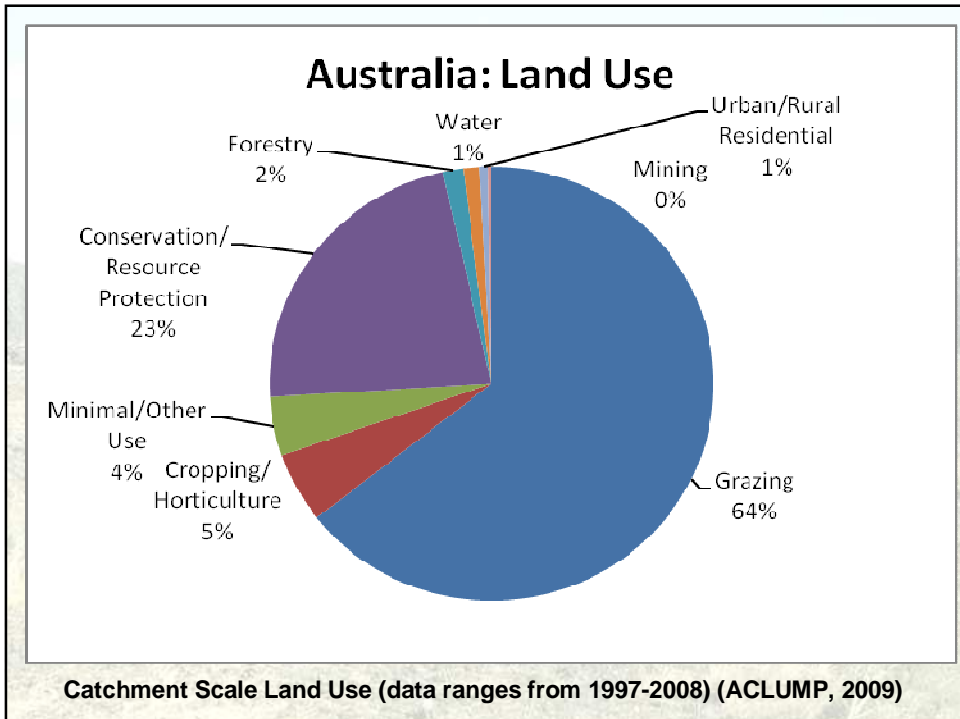


Figure 1: Humanity's Ecological Footprint, 1961-2005 (WWF 2008)

Our Ecological Footprint

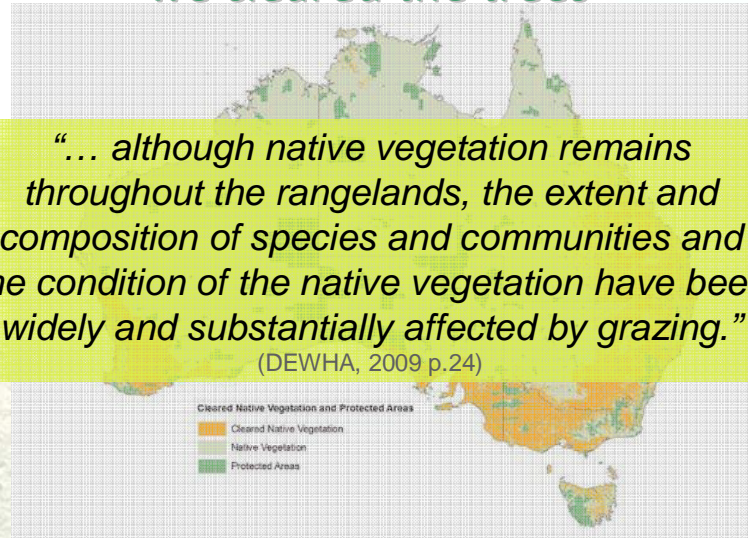
- Since European settlement:
 - more droughts (Nicholls, 2006; McAlpine et al., 2009A),
 - more extreme wildfires (Connor, 2009; Lucas et al., 2007),
 - greater floods, regional climate change (McAlpine et al., 2007, 2009A),
 - soil loss, land degradation (McKeon et al., 2004),
 - water pollution, extinctions, endangered species and biodiversity loss (NRM, 2010).



How we changed Australia – we cleared the trees

“... although native vegetation remains throughout the rangelands, the extent and composition of species and communities and the condition of the native vegetation have been widely and substantially affected by grazing.”

(DEWHA, 2009 p.24)

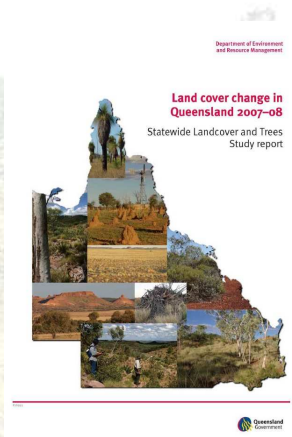


Cleared native vegetation and protected areas (DEWHA, 2009)

TREE CLEARING

The photograph shows a wide, flat field of dry, yellowish-brown grass in the foreground. In the middle ground, there is a long, low pile of cut branches and logs. In the background, a line of tall, thin trees stands against a clear blue sky.

Landmark SLATS QLD tree clearing report



- 20 years of tree clearing 1988-2008 as seen from satellite and on-ground
- 60% original (remnant) forest, 40% re-clearing (excludes forestry)
- **91% of all clearing was for livestock grazing**
- Last 20 years tree clearing averaged 430,000 Ha/year (65x65km/year)
- New laws have reduced clearing to 123,000 Ha/year (35x35km/year)

Landmark SLATS QLD tree clearing report



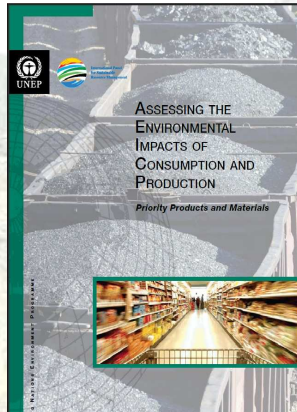
Diagram of total area of tree clearing in Queensland 1988-2008.

What about tree planting?

- Total tree planting = 5,000 Ha/year (includes planting for land restoration, soil stability, riparian revegetation, nature refuges, and carbon offsets) Not including forestry planting (ACF, 2010)
- **Tree planting in Australia is less than 5% of current tree clearing in Qld alone**
- **For every 100 trees cleared, just 1 is planted** (ACF, 2010)

BIODIVERSITY AND SPECIES LOSS

Biodiversity and species loss



- *“Australia ...[has] suffered the largest decline in biodiversity of any continent over the past 200 years and our rate of decline remains one of the highest in the world.”* (NRM, 2010 p.4)
- Assessment of Australia’s Terrestrial Biodiversity - among the biggest threats to biodiversity identified were land use change and grazing pressures (DEWHA, 2009)
- *“Agriculture and food consumption are ... one of the most important drivers of environmental pressures.”* (UNEP, 2010 p.13)
- *“A substantial reduction of impacts would only be possible with a substantial worldwide diet change, away from animal products.”* (UNEP, 2010 p.82)

Biodiversity and species loss

- Over 60% of Australia’s landmass is used for livestock and pastures.
- Domestic animal grazing is responsible for:
 - the direct removal of some species;
 - species fragmentation;
 - alteration to habitat in mid and lower storeys of forests and grasslands;
 - changes to fire regimes;
 - impacts on soil structure;
 - changes to water flow and infiltration. (DEWHA, 2009)

SOIL SALINITY / LAND DEGRADATION

Soil Salinity



- In Queensland, land affected by salinity was
 - In 2000 – 48,000 Ha
 - In 2002 – 107,000 Ha
 - By 2050 - 3.1 million Ha (Brough, 2007)
- *“...salinity problems confronting vast areas of Australia are directly linked with the extensive clearance of native vegetation, past and present.” (ANZECC, 2001 p.6)*

Land Degradation

- Another consequential impact of tree clearing and continuous farming is the loss of topsoil.
- Erosion and loss of topsoil involves the removal of organic matter and that not only means depletion of soil nutrients vital for growing healthy plants but also signifies it's losing its ability to capture carbon (Adams, 2009).
- Soils are the world's greatest carbon store, and Australian soils have seen long term decline in soil carbon, largely due to grazing pressure (McKeon et al., 2004).

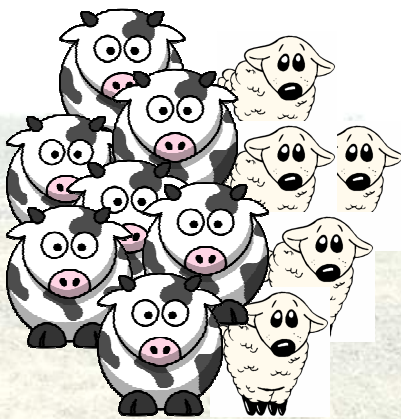
CLIMATE CHANGE

Climate Change Impact



- Deforestation through agricultural expansion has led to less than 10% of original native vegetation – impacting hydrological cycle and the climate. (McAlpine et al., 2009B)
- These land use and land cover changes also have biogeochemical impacts namely through the release of carbon dioxide (CO₂), methane (CH₄) and nitrous oxide (N₂O) into the atmosphere. (McAlpine et al., 2009B)

Climate Change Impact



(Livestock **216 Mt CO₂-e** > Coal Stations **180 Mt CO₂**)
(Russell, 2009)

Population pressure – not people, but livestock

- For every person in Australia right now there are (DAFF, 2009) :
 - 1.5 cows
 - 5 sheep
 - 25 chickens
 - Pigs, turkeys,
 - many fish
- Imagine every person you see on the street had these animals following them!
- It's not the 22 million people, it's the 700 million+ livestock, due to our western diet, that are ravaging our environment and climate.

Population pressure? Livestock => due to Western diet

“...undue demand on land, water, and other resources required for intensive food production, which makes the typical Western diet not only undesirable from the standpoint of health but also environmentally unsustainable.” (WHO, 2002 p.14)

The Culprit

Nitrous Oxide emissions

Carbon Dioxide emissions

METHANE emissions

Water pollution
(FAO, 2006)

TREE CLEARING
environmental degradation;
biodiversity loss; regional
climate change; severe
droughts, floods & bushfires
(Deo et al., 2009B; ACF, 2010; ACLUMP,
2009; McAlpine et al., 2009B).

Brief Review

- Clearing responsible for:
 - Massive species loss;
 - Regional climate change
 - Severe droughts, floods & bushfires
 - Land degradation;
 - Soil loss;
 - And water pollution. (Deo et al., 2009B; ACF, 2010; ACLUMP, 2009; McAlpine et al., 2009B)
- QLD broadscale clearing laws - reduced tree clearing significantly but clearing rates still far too high and replanting programs too little to stop the environmental debt we are creating (ACF, 2010).

What's the solution?

- Each of us has the power to reduce our collective ecological debt simply through our food choices.
- By moving towards or, better yet, fully adopting a plant-based diet would:
 - **stop 200,000 Ha of tree clearing each year** (DERM, 2009; DCC, 2009);
 - **encourage native vegetation re-growth over 64% of Australia** (ACLUMP, 2009);
 - **slow, and ultimately reverse, species and biodiversity loss** (DEWHA, 2009; McKeon et al., 2004);
 - **reverse regional climate change** (McAlpine et al., 2007);
 - **reduce Australia's greenhouse emissions by at least 30%** (Foran et al., 2005);
 - **halt soil degradation and loss** (FAO, 2006);
 - **stop pollution of water systems** (FAO, 2006); and,
 - **make us all healthier too!** (Russell, 2009; WHO, 2002).

Some nations are acting

European Parliament has officially called for reduced intake of meat

"2050 – The Future Begins Today"

City of Ghent population 240,000 – estimated if all citizens of the city participated in **Veggie Day for a year**, the equivalent in **CO₂ savings** as **taking 20,000 cars off the road for a year**

Sweden National Food Administration and the Environment Agency guidelines...*"to eat less meat"*

Environmentally Effective Food Choices

The **City of Darebin** *"avoid or minimise GHG intensive foods such as red meat."*

Darebin Community Climate Change Action Plan

The Lord Mayor of **Sydney** encouraged residents to cut down on their meat consumption.

September 2009 'Livegreen' newsletter

What about the farmers?

- Farmers do their best to produce food according to consumer demand, and farmers do a great job of adapting to changing markets.
- Decrease in consumer demand for animal food products -
-> higher demand & consumption for vegetable foods,
 - creates jobs in other sectors of the production cycle,
 - provides opportunities to move into different areas of agriculture (Goodland et al., 2009).
- Reduction in subsidies
 - lower demand for animal products due to higher costs
 - remaining funds used to assist farmers – sustainable, greener and organic practices

Final Thought

“Basically we should stop doing those things that are destructive to the environment, other creatures, and ourselves and figure out new ways of existing.” ~ Moby

**A Vegan diet has the least impact on
Climate Change and the environment.**

The end



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