SUBMISSION

to

THE SENATE COMMITTEE ON CLIMATE CHANGE, WATER, ENVIRONMENT AND THE ARTS.

INTRODUCTION.

CLIMATE CHANGE. The decimination of the equatorial rainforest belt which affects the PATTERN OF WEATHER IN THE NORTH AND SOUTH HEMISPHERES cannot be reversed in the short term. This is a fact.

GLOBAL WARMING. The causes of global warming are however subject to dispute, although the concensus appears to indicate carbon emissions are escalating the problem.

SUBMISSION.

Why not consider a priority ahead of E.T.S. and the present theoretical carbon capture technology - reduce carbon and methane emissions from rural industries and increase the carbon sequestration enhancement of the biological cycle that humanity depends on now (and even more so in the near future when oil and oil-based artificial fertilizers and fresh water become increasingly scarce)?

Why not at the same time provide meaningful JOBS for the increasing numbers of unemployed?

BACKGROUND.

The application of European farming methods to this fragile old continent has degraded our land and rivers. This continent with its variable rainfall and shallow ancient soils underlaid with salt was originally quite productive due to soil biota and humus content retaining moisture - built up over millennia.

Since settlement in the 1850s, grazing 'management' associated with tree-clearing and altered fire regimes characterised significant changes in the grassy woodlands. By 2000, their carrying capacity had been approximately halved.

Native timber regenerates prolifically after fire; and the regeneration is often very dense. (* Attachment A). This regrowth can have a dramatic impact on pasture growth to the point where the land becomes unproductive from a grazing and logging perspective; and demands on the water acquifers from young trees c.f. older trees and perennial grasses affects stream flows.

Broad-scale tree clearing also results in loss of habitats and valuable timber resources, whilst increasing the potential for environmental degradation. The successful integration of TREE-THINNING and WET-SEASON SPELLING of native perennial pastures has been proven by C.S.I.R.O. to optimise productivity, increase water penetration and bio-diversity both in the soil and above ground - thereby improving CARBON SEQUESTRATION.

EFFECTIVE ACTION.

Supporting landholders and employing unemployed people in a CONSERVATION CORPS to reduce carbon and methane emissions from rural industries and improve CARBON SEGUESTRATION:-

- (1) Support the introduction of <u>WET SEASON SPELLING</u> of perennial native pastures the key to recovery of degraded rangelands (70% of rural lands) to improve <u>CARBON SEGUESTRATION IN THE SOIL</u>, keep moisture, sediment and nutrients in the paddocks and increase production to feed increasing world populations.
- (* Refer enclosed MLA, DPI & CSIRO Brochure -"Wet Season Spelling"attached). (*)
- (2) THIN REGROWTH OF NATIVE FORESTS to an optimum spacing of 80 trees/hectare (CSIRO "Effect of Trees on Grazing Herbage Biomass, Walker et.al. 1986), using tree thinnings for the production of bio-fuels already proven by Apace Research, Nowra, with Greenhouse Office grants to be feasible and cheaper than production from grain.
- (3) Using the CONSERVATION CORPS, harvest Victorian BURNT FORESTS for production of Bio-Char (* Refer C Stock & Land "Why Biochar?" 29.1.09) which stabilises carbon and enhances the biological cycle in the soil on which humanity depends, thereby lowering nitrous oxide emissions from artificial fertilizers by 50-80%.

Regeneration of these deciminated re-growth areas (* Refer Weekend-Australian 14-15/2/2009 attached) (*) should be allowed to regrow from healthy seedlings, later thinned back to the density of the original bush which existed 200 years ago and described by Captain Cook, early explorers and settlers. (* Refer painting enclosed - John Longstaff's "Gippsland, 20/2/1898 in the Victorian National Gallery)

ACHIEVEMENT.

Refer to the Submission of 18/5/2007 "FUTURE DIRECTION FOR N.R.M." attached. Also "Future Biofuels for Australia" RIRDC Publication No. 08/117. (Lignocellulosics) CHALLENGE.

Will Members take this challenge - so important in view of present global economic circumstances and the looming global ecological crisis - warnings of which were forthcoming from world-wide ecologists and others since 2000 - or will they opt for technology that is not in existence yet or act on the E.T.S. not even endorsed recently by Professor Garnaut?

SUBMITTED BY: Mrs. V.D. Burnett (aged 81)

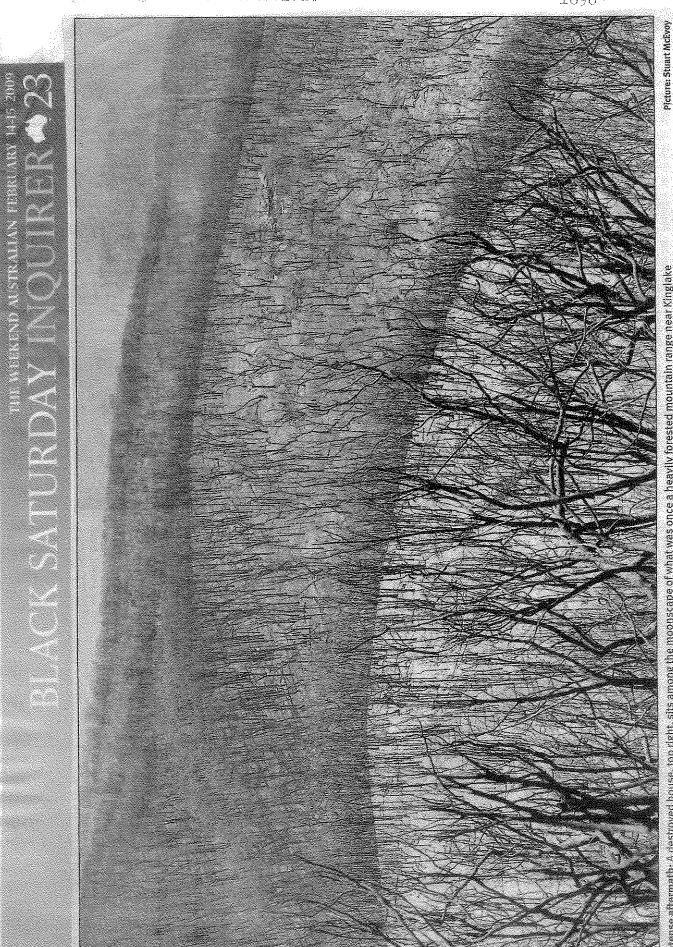
17/4/2009.

Durnell

Captain Cook, early explorers and settlers described it "like a gentleman's park, with WIDELY SPACED TREES and oat-like grasses in the under-storey."



(Refer John Longstaff's "Gippsland, Sunday Night, February 20th, painting for confirmation.



Intense aftermath. A destroyed house, top light, sits among the moonscape of what was once a heavily forested mountain range near Kinglake

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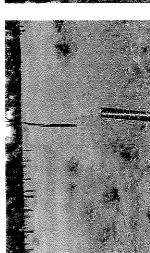
A full wet season rest allows maximum pasture bulk and, consequently, an increased amount of leaf and stem that decays and falls to the gound as litter. The presence of ground cover and litter has a direct and significant impact. On the ability of the soil to soak in rainfall. This is particularly important for indian couch dominated pastures, as Indian couch plants have a small root mass compared to 3P grass tussocks, and therefore have less ability to soak in the rain that falls

66 Gives 3P grasses a chance to recover before being

preferentially grazed. 🤭

MANAGESTOCK NUMBERS TO ALLOW FOR A PLANNED QUANTITY OF PLANT MATERIAL TO BE LEFT AT THE END OF THE DRY SEASON BY SETTING PASTURE YIELD THRESHOLDS WITHIN A FORAGEBUDGET.

The DPI&F Stocktake Monitoring Workshop includes a simple program to enter paddock monitoring details and calculate feed budgets.

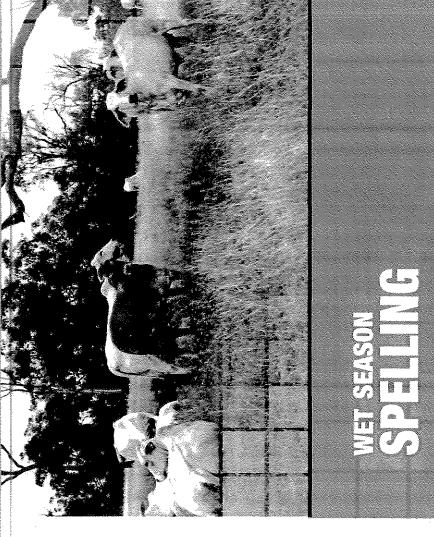




RECOVERING PADDOCKS NEED EXTRA CARE AND ATTENTION COVER UP TO CONSERVE RESOURCES

Recovering C condition paddocks need extra attention to maintain and encourage the processes of recovery. In addition to conservative use of pasture and more regular full wet season spelling, it is important to retain adequate minimum ground cover and pasture reserves at the end of the dry season, to protect the soil surface and encourage rainfall infiltration. Aim for the following levels:

- Retain at least 60% ground cover at the end of the dry season to maximise rainfall infiltration.
- For Coordition Indian couch pasture recovery:
- Retain at least 500 kg/ha of dry freed at the end of the dry season in below average rainfall years and 800 kg/ha of dry feed in better seasons.
- Encourage interbuild-up, 3P grass recover, and the joining of grassy parches through wet season rest.
- Monitor land condition, and balance feed supply and animal demand using the DPI&F Stocktake package.



THE KEY TO RECOVERY

Full wet season spelling, or rest, is essential to recover land in poor condition. To make the most of the precious rain that falls, you need to manage your land in ways that improve condition. This not only keeps sediment and nutrients in your paddocks, it also ensures good pasture and animal production.







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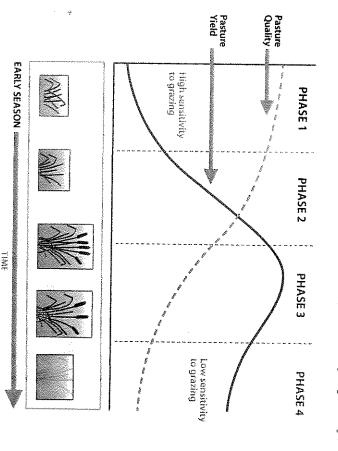
Wet season spelling or rest, provides a period of protection from grazing that allows the plant to replenish essential plant reserves, set seed and allow seedling recruitment. Pastures need to be spelled during the wet season when they are actively growing. Regular wet season pasture rest is essential to ensure long-term beef production.

Typically, pastures are spelled after the first significant rainfall event (more than 50mm over 3 days) until the middle (early wet) or end (late wet) of the rainy season, in cases where it is difficult to shift cattle at the break of season, paddocks can simply be spelled from the last round muster. The benefits of rest, however, will only occur with complete de-stocking of a paddock, and will not be obtained through lighter stocking rates. This is because cattle will preferentially graze the 3P (perennial, palatable, productive) grasses despite other feed on offer.

66 Show us the hidden costs of not allowing our land to recharge its batteries. What will it cost in lost production, soil or biodiversity, if we don't do this? I could maybe get away with not doing this, but my kids might curse me for destroying what I want to leave them. **

WET SEASON REST WORK?

Resting pastures in the early wet season allows the pasture plants to awaken from dry season dormancy and tapidly build depleted energy reserves. The plants are very sensitive to grazing and are of the highest diet quality at this time. Once the pasture is in its green leafy stage of growth with moderate quality (phase 2), continued rest (late wet esson rest) allows the plant to reach its potential leaf and steen builk (phase 3) and move energy reserves into the roots and crowns to drive growth the following season. It is usually during this phase that a pasture plant flowers and seeds. However, this can occur at any stage of pasture growth, and is dependent on the plant species, the land type, and the way rain has failen during the season. Allowing the pasture to store energy reserves also builds plant resilience to grazing and drought.



MANAGING PATCHY RECOVERY

Landscapes do not recover evenly across paddocks. Recovery in C condition landscapes will be patchy, with some areas of a paddock responding quickly in terms of increased cover, pasture yield, 3P species composition and ability to trap water and nutrients. However, other areas may remain static or continue to degrade for some time. Full wet season rest for two years in a row, combined with conservative dry season grazing, is the best way to speed up the recovery process, especially in the early years. Benefit will be seen from opportunistic wet season spelling but, in recovering landscapes, the growth of new 3P grass seedlings and formation of new patches from the initial spell will be delayed and therefore recovery will be slower.

TO RECOVER LAND IN POOR (C) CONDITION REQUIRES THE REMOVAL OF ALL GRAZING ANIMALS OVERTHE FULL ENGITH OF THE WET SEASON. FULL WET SEASON RESTFORTWOSUCCESSIVE YEARS IS NECESSARY TO SPEED UP THE RECOVERY PROCESS.

Recovery of poor condition, Indian couch dominated country is likely to be slower and patchier than equivalent paddocks with a higher occurrence or scattering of 3P tussock grasses. 3P tussock grass patches provide the architecture necessary to trap and accumulate resources such as litter, where indian couch pastures have the tendency to collapse during drought conditions. It is important to allow build-up and connectivity between recovering patches to slow the flow of water, capture and retain sediment and nutrients, and reduce landscape leakiness.

MANAGE FOR THE PROPORTION OF C CONDITION PATCHES PRESENT, NOT AVERAGE PADDOCK CONDITION.

infiltration is the process by which water enters the soil The higher the infiltration the faster the water moves into the soil. This means less runoff and less erosion. Different soil types have different infiltration rates, but generally the higher the ground cover, the higher the infiltration rate. 3P tussock grasses increase soil infiltration by slowing down water as it flows across the landscape. They also help to protect the soil against raindrop impact and improve the condition of the soil. If your soil has low infiltration, you need to maintain a higher cover of grasses to restrict runoff.



ARCHAIN LAME STATION TIME

Recovering paddocks remain highly vulnerable to heavy stocking and short duration, intense rainfall events, due to the patchy distribution of plant bulk, ground cover and 3P grasses. Recovering landscapes take much longer to increase the size and number of 3P pasture plants, pasture root mass, organic matter and nutrient reserves than land in fair (B) and good (A) condition.

PREMATURE RETURN TO HIGHER STOCKING RATES COULD EASILY RE-EXPOSE RECOVERING PATCHES TO HIGH

GRAZING PRESSURE AND RE-OPEN LEAKINESS PATHWAYS



64 Nature is strong and recovery will occur providing cattle are removed. 35

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Why biochar?

29/01/2009 10:34:00 PM

Tim Flannery loves it, Malcolm Turnbull wants it on the political agenda, and ancient Amazonian cultures used it to make soil that is still fertile after hundreds of years. Why aren't we knee-deep in biochar?

Biochar is the charcoal created by burning organic waste without oxygen—a charring process that also delivers a biofuel, syngas—to produce a very stable form of carbon that can persist, unchanged, for hundreds or thousands of years.

The technology's fans point out that unlike the end-product of the still-theoretical "carbon capture" technology being proposed for coal power stations, biochar both stabilises carbon and enhances the biological cycle that humanity depends on.

Studies around the world, including in Australia, have shown that adding the char to agricultural soils can boost water and nutrient retention and crop yields, and lower nitrous oxide emissions from fertiliser by 50-80pc.

The history of biochar explains what it is and its benefits.

Hundreds, sometimes thousands of years after they were created by people living in the Amazon basin of South America, the black soils known as 'terra preta,' are still fertile to the point that some, 'like the Magic Pudding,' regenerate after being harvested for potting

Part of terra preta's secret, researchers believe, is the big quantities of slow-burned charcoal that people from ancient cultures dug into these soils.

Science is trying to recreate terra preta soils, so far unsuccessfully. But it seems that some of tera preta's qualities can be recaptured using biochar.

Biochar contains valuable nutrients that help plant growth, but its primary long-term benefit lies in its complex structure that holds big quantities of nutrients, moisture and microbes in a way that is still accessible to plants.

Biochar trials on maize at NSW Department of Agriculture's Wollongbar facility found that when applied at 10 tonnes per hectare, the char tripled the biomass of wheat and doubled that of soybean, while lifting soil pH and calcium levels and reducing aluminium toxicity.

There was more soil biology in the soil containing biochar, better water retention, and less carbon dioxide and nitrous oxide emissions.

However, CSIRO soil nutrient researcher Dr Evelyn Krull warns against treating biochar as a magic bullet for either carbon sequestration or agricultural productivity.

"Malcolm Turnbull is jumping the gun here a little bit, by saying that we need to do it now. I say there is potential, but let's get the fundamentals right," he said.

The qualities of biochar differ depending on its parent material, Dr Krull said, and the effects of biochar in different soil types is still to be established.

Nor has it been established that biochar can be produced cost-effectively enough to be attractive to farmers.

On Monday's edition of the ABC's 7.30 report, climate change campaigner and chairman of the Copehagen Climate Council, Professor Tim Flannery, questioned why the Federal government was throwing \$600 million at developing coal carbon capture technology, yet failed to recognise biochar.

"You can quantify (biochar) to the nearest kilogram, you can put it in the soil and know it will stay there for thousands of years, we know it's safe and it's good for agriculture-why wouldn't we recognise that when we're happy to recognise a technology that isn't in existence yet?" Professor Flannery said.

Ironically, biochar development seems to have suffered in Australia because it has been closely associated with agriculture.

"Because we were lumped in with the agricultural sector, biochar hasn't been included in the Carbon Pollution Reduction Scheme (CPRS)," said Adriana Downie, technical manager with BEST Energies at Somersby, NSW.

"At the moment there's no motivation and no funding for anyone to research the true greenhouse accounting balance of this technology."

Using home-grown technology, BEST have developed a pilot plant that demonstrates the feasibility of biochar's mass production from organic waste as diverse as poultry litter, nut shells and woody weeds.

Adding biochar to farm soils is ideal because it creates additional production benefits, Ms Downie said, but the product could equally be put in a hole in the ground: the primary benefit of biochar is that it creates highly stable carbon from organic matter that would otherwise decompose and return carbon dioxide to the atmosphere.

"If you can grow a forest, stablise that forest carbon into biochar, and then regrow that forest, that's a way to really bank those stocks of carbon," Ms Downie said.

"The fact that we were lumped in with agriculture (outside the CPRS) really isn't fair. We want to see it go into farm soils, but the policy makers have got caught up in that and are missing the big picture."

BEST will continue to develop its home-grown biochar technology, but outcomes will be "perverted" in favour of syngas, the biofuel produced during biochar production, because that part of the technology can secure carbon credits to fund ongoing research.



Fleeing the front: Visitors to the National Gallery of Victoria look at John Longstaff's Gippsland, Sunday Night, February 20th 1898





RATHBURNIE ESTATE NATURE REFUG VIA LINVILLE. Q. 4306.

14th February, 2009.

ATTENTION MS. J. BROWNING & G. DOOGUE.

TO: SATURDAY EXTRA A.B.C. NATIONAL RADIO FAX. (02)8333. 227.

BUSH FIRES. 6SATURDAY EXTRA - 14/2/09.

- "ENVIRONMENTALISMS", are not soil biologists nor ecologists. (a)
- THE BUSH today is no longer the same as it was 200 years (b) ago.
- (c) Captain Cook, early explorers and settlers described it like a gentleman's park with widely spaced trees and oat-like grasses in the under-storey.//
- (d) The application of European farming methods to this old and fragile continent has degraded our soils, the land and rivers. This continent, with its variable rainfall and shallow ancient soils underlaid with salt was originally cuite productive due to soil biota and humus (carbon) content built up over millennia.
- (e) Since the 1850s grazing "management" associated with tree-clearing and altered fire regimes characterised significant changes in the grassy woodlands,
- (f) Native timber regenerates prolifically after fire, and this regeneration is often very dense, being attributed to the ash-bed effect when the stress of fire stimulated surviving eucalypts to flower, with seed falling on bare ground:-

NO litter layer to mulch the soil and reduce the potential for seed contact with moist soil. and

NO (or very few) seed-harvesting insects remain after fires to substantially reduce the seed bank. (**)

(g) This regeneration is often very dense and provides canopy fuel for subsequent wild fires.

Please <u>refer</u> to my letter "IN THE NATIONAL INTEREST" 6/2/09 to Professor Bill Mitchell of University of Newcastle Centre for Full Employment & Equity faxed to you on 12th February; and also article on "Fire & Biodiversity" article by Don Sands and Christine Hosking attached. (**)

Also I suggest you watch LANDLINE" on A.B.C. T.V. at noon on Sunday, 15th February, when Dr. Christine Jones (Soil Biologist who has lectured in U.S.A. and South Africa) will appear on this subject. quuet

(Mrs.)V.D.BURNETT. (ELDER AGED 81)

TRUSTEE ESTATE G.C.BURNETT (DECD)

Allachment to Submission (F) grand DD Buziett. 14/4/2009.

Telephone/Facsimile: (07) 5424 8140

The Homestead
Rathburnie Estate
1166 Mt Stanley Road
LINVILLE QLD 4306
Upper Brisbane River Valley

18th May 2007

The Chairman & Delegates
UBRCN'S FUTURE DIRECTION FOR NRM MANAGEMENT REVIEW
Woodford Community Hall – 24/5/07
c/- 'The Hub" Landcare Centre
KILCOY QLD 4515

Dear Delegates

FUTURE DIRECTION FOR NRM MANAGEMENT REVIEW SUBMISSION

Due to prior commitments, I am unable to attend the above Meeting; but as an invitee I would like to nominate Jim Slingsby as my proxy to present this Submission to Delegates at the Meeting.

1. A SUSTAINABLE REMEDY FOR RANGELANDS (INCLUDING CATCHMENTS)

STAGE 1 THE FOUNDATIONS (THE BASE ECO-SYSTEM)

(a) Perennial Grasses

As outlined in the CSIRO "ECO-GRAZE" PROJECT (ISBN-0-9579842-0-0) "A wet-season spelling regime (P.37) can support <u>higher overall</u> <u>utilisation rates</u> than continuous grazing without damaging the key perennial grasses."

Where wet-season spelling can be implemented using fairly simple two, three or four paddock grazing systems, followed by 50% utilisation, it recovers native tussock perennial grasses in poor condition pastures, even during drought years;

but

"As perennial grasses are lost through over-grazing, the rainfall effectiveness declines, pasture productivity is reduced and the system becomes desertified".

..2/

STAGE 1 THE FOUNDATION

(a) Perennial Grasses cont.

This objective of LONG-TERM SUSTAINABILITY of the RANGELANDS (70% of land usage in Australia) has many benefits – the surplus pasture, manure and litter will mulch the soil surface thereby minimising evaporation, erosion and excessive run-off whilst feeding the soil biota capacity and penetration of surplus water to the aquifer to feed ground water and year-long stream flows, and increase the carbon levels in the soil instead of in the atmosphere (eligibility for carbon sequestration credits).

Implementation. The Eco-Graze Project established "wet-season spelling regime was cost effective" and the tested the long-term sustainability of this grazing system; on P.37 "it was assumed that considerable amounts would need to be spent on fencing and water in order to implement this sustainable rotational grazing system".

Funds from the Federal May Budget could provide LOW INTEREST LOANS to landholders for provision of materials needed for such infrastructure; and to establish-a Conservation Corps (similar to that President Franklin Roosevelt used comprising unemployed to transform the Tennessee Valley pre-War) to provide the necessary Labour Force.

(b) Native Woodlands

The assumption has been that the original native vegetation was forests; and people have said you've got to replant a lot of trees. Early explorers described 'travelling through country where the grass reached the horses' bellies — an open grassy woodland with widely spaced trees, that you could gallop a horse through, or ride through with horse and dray."

Queensland's "New Code applying to Native Forest Practice on Freehold Land" should be introduced to all Freehold Lands (Freehold is freedom from paying rent to the Crown not freedom to damage the National Estate – the Land) wherein a limited number of non-commercial regrowth trees are regularly thinned to ensure less demand for water and to favour trees with better commercial potential- thereby protecting the soil resource from degradation by maintaining good pasture growth (under a wet-season spelling regime) to ensure the land does not become unproductive from a grazing or timber perspective, maintaining wildlife habitats, protecting ground water and stream flows, drainage lines, wetlands and springs and controlling salinity, erosion and evaporation.

The <u>Conservation Corps</u> could be gainfully employed in thinning regrowth and harvesting the thinnings and milled tree-heads for production of Ethanol and Bio-Diesel from the wood chips. (This is now proven by Apace Research at Nowra in conjunction with the Tennessee Valley Authority, and in Europe by Shell.) Production of bio-fuels from woodchip/waste will not disrupt the costs of grains for animal production etc.

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STAGE 1 THE FOUNDATION cont.

(c) Fire and Biodiversity

Don Sands, Hon. Research Fellow, CSIRO, in an article "Fire and Biodiversity" in the January, 2007 issue of "Land for Wildlife" states

"Observations from early non-indigenous settlers provides – together with palaeoecological research – convincing evidence that traditional Aboriginal land managers used landscape fires very differently and often far less, than current European practices. Not all Australian ecosystems are dependent on fire, need fire, or become healthier after fires. Some plant and animal species respond positively after fire, others are detrimentally affected and some are unable to tolerate any exposure to fire".

The <u>Conservation Corps</u> could be gainfully employed in weed control and in preparing fire-breaks to prevent fires occurring more frequently than 15-30 year intervals; and to thin regrowth in national parks to the lesser density to prevent wild canopy fires predicted under Climate Change, and subsequent forest regeneration that uses more water than the mature forests they replace.

STAGE 2 THE WINDOWS. (THE SECONDARY ECO-SYSTEM)

Once the initial BASE SYSTEM has been established, the present fragmented projects can be built on this foundation, involving the "THE GUIDELINES AND THRESHOLDS FOR SUSTAINABLE GRAZING LANDS" as outlined in the CSIRO Grazed Landscapes Management Project "Understanding and Using Landscape Thresholds in Property Planning — Balancing Conservation & Production" which could then be initiated by Catchment Authorities rather than the past decades 'tyranny of small decisions" (Simon Smith, NSW Department of Environment — Weekend Australian P.17 14-15/10/2006).

STAGE 3 ADMINISTRATION AND MONITORING OF BOTH ECO-SYSTEMS (THE ROLE OF CATCHMENT AUTHORITIES.)

Once the Foundations are in place, Stage 2 could also be monitored by the Catchment Authorities who would recommend Eco-Credits as they accrued on each property – perhaps credited through Shire Council Rate Rebates, but funded by NRM.:-

- Improved soil structure
- Improved timber resources
- Improved biodiversity, and habitat
- Improved water efficiency
- Improved carbon sequestration
- Controlled burning regimes
- Reduction in water requirements
- Reduction in evaporation
- Reduction in salinity
- Reduction in erosion
- Reduction in artificial fertilizers & chemicals
- Reduction in weed infestation

2. SUSTAINABLE REMEDY FOR AGRICULTURAL LANDS

I refer Delegates to "CARBON & CATCHMENTS – inspiring REAL CHANGE in natural resource management" – presented to the International Workshop 'Defining the Science and the Practice' at Bungendore, NSW on 31/10/2006 and 1/11/2006 by Dr Christine Jones

and

I also refer Delegates to Professor Stuart B Hill's presentation "REDESIGN FOR SOIL, HABITAT & BIODIVERSITY CONSERVATION" — Lessons from Ecological Agriculture & Social Ecology — to the Nature Conservation Council of NSW Soils Campaign, 6th April, 2002

Both these papers have been lodged with Bruce Lord and The Hub and I trust Delegates will source them accordingly.

3. CLIMATE CHANGE - CARBON SEQUESTRATION

In a "Landline" Interview with Professor Tim Flannery on 11/2/2007 he stated:

"Carbon trading represents one of the great opportunities for farmers in Australia. But what we really need in order to maximise the opportunity is some good Government policy. We also need a proper account system for carbon. One of the great opportunities in Australia is sequestering or storing carbon in the soil There are a number of ways that this can be done, but essentially it's all to do with good management of your soil.! think it will be a major industry world wide in future and whoever has access to broad acres will be very advantaged in that The broad figures are that we can store enough carbon in the living biosphere, to offset all of the carbon emissions since the beginning of the industrial revolution".

I commend these scientifically backed remedies to the Meeting.

Yours truly

(Mrs) V.D. BURNETT

(TRUSTEE – ESTATE G.C. BURNETT DECD) BENEFICIARY – World Wildlife Fund Australia)