FAX. (03)8656 3030.

RATHBURNIE ESTATE NATURE REFUGE
[redacted]

Correction:- 2013
24th April, 2013.

Ms Anthea Harris,
Chief Executive Officer,
Climate Change Authority,
MELBOURNE. GPO BOX 1944.

Dear Ms Harris,

Urban Australians seem to have little understanding of the changes that have occurred in rural Australia since white settlement - changes which are outlined in the accompanying Submission for a Sustainable Australia Strategy in 2010.

The original grassy woodlands depicted thrived under the landscape of tall trees. Unfortunately transport 200 years ago depended on horses which required a short "green pick" which required annual burning of the carbon sequestering 3P tall native grasses, causing eventual land degradation and dense regrowth. Such burning continues to this day by many landholders seeking the now elusive green pick and also to control Lantana (one of 20 weeds of national importance) and other weeds.

A further hazard is now caused by bushfires occurring in the canopy of low flash-point eucalyptus REGROWTH, especially in peri-urban communities; and you will note in the enclosed United Nations "Review of Evidence on Drylands Pastoral Systems and Climate Change"(Discussion Paper No,8) a response from C.S.I.R.O. indicates bushfires produce 57.8 CO2-e compared to emissions of a cow eating dry grass.

C.S.I.R.O. "Ecograze" Project shows that a better ecological service in moister environments is provided by the soil fed by surplus plant material (humus) retaining more moisture and fertility to promote more 3P grass growth, carrying capacity (of ruminants to feed increasing world population) and sequester more carbon.

Such grass growth can only be achieved by less dense "bush" regrowth allowing sunlight to reach the ground and promote photosynthesis however.

THE SOLUTION. More people (unemployed and contracted asylum seekers) in Environmental Corps to:-

(a) Thin regrowth, using the lignous cellulose in the thinnings for eco-fuel production
(b) Control noxious weeds including Lantana
(c) Provide reconstruction aid after disasters.
(d) Prepare more fire-breaks.

Landholders are now few on the land, aging and stressed by the rising dollar, low prices and high inputs including wages.

I urge you to please consider .

Yours truly,

(Mrs.)W.D.BURNETT (AGED 86)
TRUSTEE - ESTATE G.C.BURNETT DECD.

De artment use only

Sut mission No:

"The looming scarcity of just about everything necessary to produce l igh yields of food – water, land, nutrients, oil, technology, skills and stable climates woul l mean Australia and the world are going to try and double food production."

The application of European farming methods to this fragile continent has a egraded the lands and rivers. This continent, with its variable rainfall and shallow ancient sc ils under-laid with salt, was originally quite productive due to the soil biota and humus conte nt built up over millennia.

Since settlement in the 1850s, grazing "management" associated with tree-c learing and altered fire regimes, has characterised changes in the grassy woodlands forming the extensive rangelands of Australia.

Native timber regenerates prolifically after fire; and this regeneration is ofte n very dense. On grazing land this can have a dramatic impact on pasture growth to the point w here the land becomes unproductive from a grazing perspective.

Whilst it has become widely accepted that this is the "normal bush", this abn ormally thick regeneration results in wild fires, loss of habitat and valuable timber re sources – young trees require more water than mature trees and sequester less carbon than do 3P perennial grasses which in earlier centuries formed the understorey.

The "original Australian bush" was described by Captain Cook as a "gentlema n's park", and by early explorers and settlers as "a landscape through which you could gallop c horse or drive a horse and dray".

The attached photographs (Weekend Australian 14-15/02/2009,pp. 19, 23; At tachment C) depicts John Longstaff's painting "Gippsland, Sunday Night of February 20th, 18 98" which is housed at the National Gallery of Victori , and the aftermath of the 2009 Black Sat rday fires. (N.B.: there are no large trees in the latter, only regrowth).

Inappropriate fire regimes since European settlement have had consequential d etrimental affects on various Australian eco-systems as outlined by Don Sands, Honourable Re search Fellow, CSIRO, in the attached article, "Fire and Biodiversity", Land for Wildlife SEQ, Jan uary 2007 (Attachment D).

2008

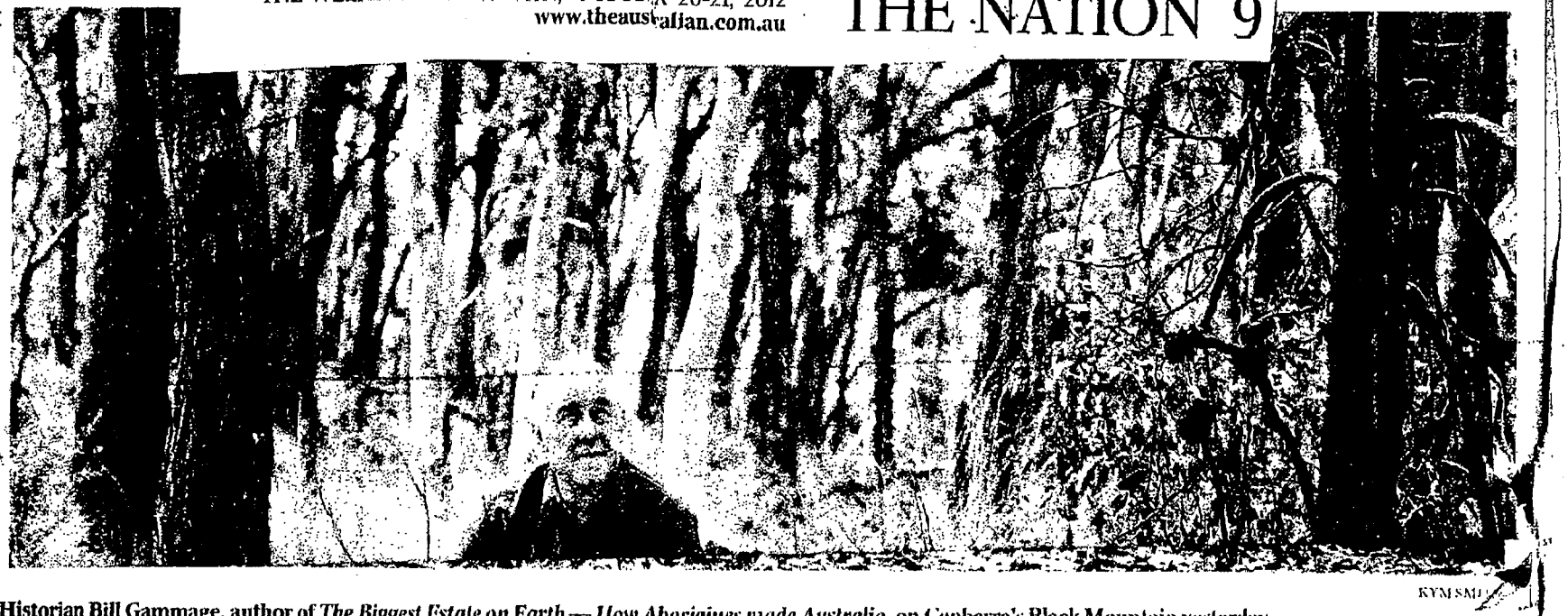
RATHBURNIE ESTATE NATURE REFUGE

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

Intense aftermath: A destroyed house, top right, sits among the moonscape of what was once a heavily forested area

Burn-off debate relit as fire season hits

THE WEEKEND AUSTRALIAN, OCTOBER 20-21, 2012
www.theaustralian.com.au



KYM SMITH

Historian Bill Gammage, author of *The Biggest Estate on Earth — How Aborigines made Australia*, on Canberra's Black Mountain yesterday

The idea of 'pristine wilderness' is one that still divides environmentalists

NICK ARTHUR

"FOR countless generations, people have stared into safe fire. The dancing flames mesmerise, the warm glow is a friend. Not so that other fire, heralded by haze, smoke, red lines in the scrub. That fire is implacable, alive. It roars, races, leaps, kills, devours."

So writes historian Bill Gammage in *The Biggest Estate on Earth — How Aborigines made Australia*, which has now won the $100,000 Victorian Prize for Literature as well as the Prime Minister's Literary Award for Australian history and the Queensland literary award for history. An amalgam of history, philosophy and ecology, *The Biggest Estate on Earth* describes how Aborigines not only lived with the land, but shaped it with constant burning to ensure continuity, balance, abundance and predictability. It is a message — and a challenge to the idea of "pristine wilderness" — not all environmentalists want to hear.

Putting the final touches to a speech for the Australian Environment Foundation, Gammage, an adjunct professor at the Australian National University, says the landscape needs to be burned back to a better natural balance — one that does not lend itself to regular catastrophic bushfires.

"This is a very tough proposition," he said. "It is heading in exactly the opposite direction of what a lot of environmentalists would like. But I think it is necessary to go back to that balance."

At the foundation, executive director Max Rheese agrees. He says Aborigines would never have allowed national park "wilderness" areas to grow into such profusion and would have regarded it as "dirty bush", and intensely threatening.

Mr Rheese says after the Black Saturday fires in Victoria, the foundation advocated a trebling of prescribed burning from 120,000ha a year to 390,000ha a year, but received grudging to no support from other environment groups. The Baillieu government has doubled the burn area since 2009 and is progressively raising it to 390,000ha a year.

Mr Rheese says Gammage's book is a stark challenge to environmental groups that have clung to the idea of 1788 Australia as a "pristine wilderness untouched by man", when Gammage's book showed comprehensively that it was a managed landscape.

On the eve of another fire season, insurers have warned the risk of bushfires around Australia this summer is much higher than in recent years. Insurance Council of Australia chief executive Rob Whelan said wet weather over the past two years and forecast higher-than-average temperatures had created "optimal conditions" for bushfires.

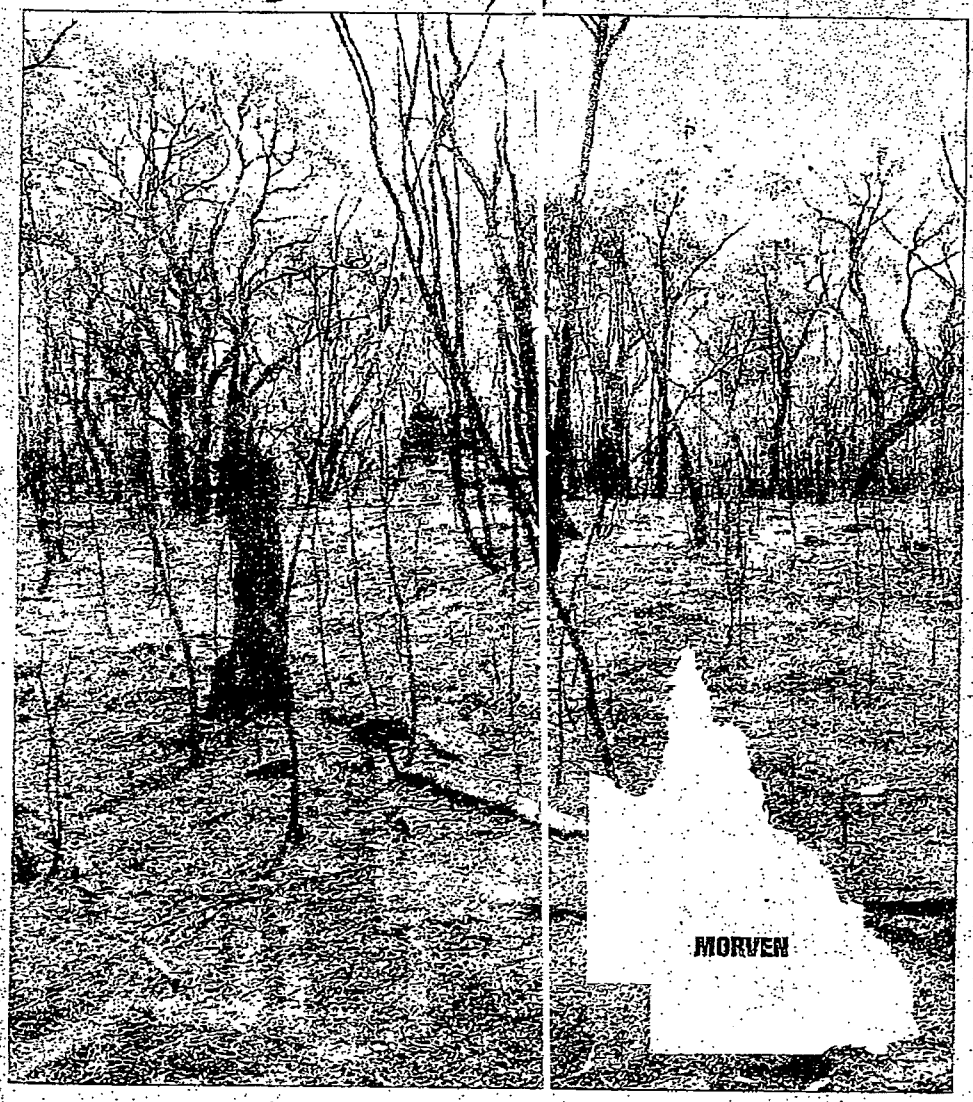
The NSW central coast, Queensland's Darling Downs and Atherton Tablelands and Western Australia had already experienced significant fires. South Australia's Country Fire Service this week imposed total fire bans in parts of the state. In Victoria, Country Fire Authority chief officer Euan Ferguson said fire agencies were preparing for a "more normal" fire season after years of drought, but warned that even in a normal season the state was prone to significant fires.

In the ACT, Rural Fire Service chief officer Andrew Stark said there was low potential of fire in the high ranges of the Brindabellas, but "phenomenal" grass growth posed risks.

In Darwin, Joe Morrison, chief executive of the North Australian Indigenous Land and Sea Management Alliance, said it was hoped savanna burning would become an income earner for Aboriginal people through the Carbon Farming Methodology.

He said *The Biggest Estate on Earth* was not only welcome recognition of how Aborigines "made Australia", but a warning for people living in volatile fire-prone areas.

QCL P4 8/11/2012



Morven blaze burns 32,000ha

MORVEN landholders, who have spent the past two weeks working to contain a major fire to the Chesterton Range National Park north of the town, will be hoping that a forecast change brings some decent rain this weekend.

The fire was ignited by a lightning strike two weeks ago and has burnt an estimated 32,000ha.

Ongoing efforts by rural fire crews from Morven and Mungallala, local landholders and the Rural Fire Service saw the fire contained to the park, with the exception of some small breakout fires into Mt Maria North and Winneba, north of Morven.

Rural Fire Service area training support officer Phill Young said concerns about the fire had eased early last week before the fire began moving again on Friday.

"We were particularly concerned about the heritage-listed Mt Mobil homestead which is in the southern end of the park," he said.

"Three parks crews and five primary producer brigades back-burnt around the homestead in an attempt to save the property before back-burning commenced on the southern flank of the park on Saturday.

"Efforts to save the old homestead were successful.

"All reports so far this morning (Tuesday) are that all containment lines are holding."

Mr Young extended his thanks to all personnel who assisted to bring the fire under control.

"It's been a massive effort by all involved," he said.

"We're all just praying for some rain now."

Mr Young said the Rural Fire Service was also monitoring several fires south-east of Charleville.

"We believe one of these was an escaped hazard-reduction burn which burnt into a neighbouring property, but it has been contained by the landholders," he said.

"We would certainly like to remind people that conditions on their permit are there for a reason and that the local fire warden writes these conditions to help manage fires.

"All landholders should ensure that before they light a fire, they check the three to five-day forecast, because the conditions on the permit are for the life of the permit and not just for the day of the lighting." – *Story: PENELOPE ARTHUR. Picture: LUCINDA ZAC.*

'The long, slow burn over learning to live with nature

Fire control is a source of great heat among forestry experts and greenies

TONY BARRASS

DAVID Packham's intriguing observation comes from a lifetime of confronting the ferocity and unpredictability of fire.

"Australians have lost the capacity to live in Australia," the retired CSIRO scientist tells Inquirer. "We have now become so urbanised we have lost the knowledge to live in the bush and properly protect ourselves."

Now without the shackles that come with senior public service, Packham has plenty to say about the timidity of state governments and their refusal to properly implement efficient fire management policy across the country.

2010 - BUSH GETTY
(1788)

A sign stands in front of scorched trees on Orchard Ramble, Margaret River, after a bushfire last month that destroyed 30 properties and 4000ha of forest

D

fire & biodiversity

Insects, Small Animals and Fire in Southeastern Queensland

Article by Don Sands
Honorary Research Fellow CSIRO, and
Christine Hosking
Land for Wildlife landholder

Fire moulded the survival and evolution of fauna and flora in Australia long before the arrival of humans. The impacts of fire on the environment were not uniform across the continent and they varied with climate and from one ecosystem to another. Fires were almost exclusively caused by lightning. Fires varied with season, frequencies, intensities and distribution.

There is convincing evidence from palaeoecological research and observations from early non-indigenous settlers that traditional Aboriginal land managers used landscape fires very differently and often far less, than current European practices. While fire is undoubtedly "part of Australia's heritage", 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.

Inappropriate fire regimes

Certain species become threatened when the frequency of burning is unnaturally increased or decreased. With fire-adapted insects, most need many years after being burnt to reach stability as plants and other food sources build up their biomass and reach maturity. Times between fires vary with each insect but most of the common herbivore species may require more than 10 years after fires before the food and habitat is sufficient in an area to sustain breeding colonies.

Seasons for burning

Fires are particularly destructive to subtropical (SEQ) insects in winter and early spring because most insects are inactive and in suspended development during the cooler months. Tropical insects tend to be actively breeding or mobile during winter when low temperatures do not persist to decimate the over-wintering stages. Subtropical insect life history strategies are mostly different to tropical insects, with over-wintering 'diapause' as part of their immature suspended development. Most are without wings in winter, currently the time most often chosen for fuel reduction burns.

Before European occupation, winter fires in the subtropics would rarely have been started by lightening and the late spring storms were usually the first for the season, accompanied by extinguishing rain. Fires are also most destructive to lizards in winter when they are inactive, and the greatest impact on small mammals is during spring and early summer, when offspring need food, (i.e. invertebrates) shelter, and they are too young to flee.

Mobility helps escape fires

A few mobile insects and many large mammals are able to escape being burnt and react positively after fires by migrating back into the areas to feed on re-sprouting vegetation. However, if their food sources are specialised or become depleted, their chances of recolonising are reduced. Plants as hosts for herbivorous insects only become suitable if allowed to reach the age required without being burnt. Adequate corridors are necessary and movement back into recovering areas may depend on several years of growth before insects can breed adequately.

Poorly mobile invertebrate species are most affected. At any time of the year wingless insects or those that have very small 'closed' breeding habitats are unable to escape or easily re-populate in fragmented landscapes unless they are species that shelter underground (e.g. ants). Local insects are especially at risk in smaller, fragmented landscapes. Insects do not always colonise plants or plant communities that appear to be favourable. Subtle symbiotic relationships with other organisms frequently limit the areas needed for breeding sites.

Small ground-dwelling vertebrates can also be placed under intense pressure because they must compete for food in an unburnt area and they are also in symbiotic relationships [illegible]

A disused gold-mining test-site on Mt. Coot-tha. Such sites are used by micro-bats for night roosting. Micro-bats are repelled by smoke and forced to disperse, particularly in cases such as this when the hazard reduction burn continued for two weeks. In addition, their prey (moths) will be depleted. Photo by Christine Hosking.

established environment. One example is micro-bats. They are repelled by smoke, forced to disperse and have to find new roosting sites. Fire and smoke are particularly detrimental if a burnt area contains a maternity roosting site. Micro-bats also lose important food sources if invertebrates such as moths are burnt.

Leaf litter insects: the importance of senescing plants

Some small oecophorid moths are very prone to local extinctions when extensive patches are burnt. Their larvae feed on, and decompose dead eucalypt leaf litter on the ground and can take years to re-colonise after fires. Therefore, their loss leads to decreases in recycled nutrients, increases in accumulating leaf litter, and increases in the "fuel load".

Poorly mobile and wingless insects that live in senescing timber that is prone to burning, logs on the ground and leaf litter, require prolonged years of vegetation growth (>15 years) before they can move back into areas that have been completely burnt. Many other small animals depend for food on insects fo[illegible] in these micro-habitats. So[illegible] from SEQ are band[illegible] planigales a[illegible] such as [illegible]

Insects adapted to senescing plants are declining in the 'closed' protected areas of SEQ. Larvae of larger longicorn beetles and wood-boring moths (Cossids, Hepialid and Xyloryctid moths) are important in food chains for vertebrates (e.g. Yellow-tailed Black Cockatoos) as they tunnel into old trunks and limbs of ageing shrubs and trees, especially *Acacias*. If the trees are not allowed to age more than 15 years, many of these insects can not breed. Some of the most important habitat trees for such wood-boring larvae are 'black wattles' which can live to 25-30 years, especially in deep gullies where they have avoided fire. A matrix of mixed ages of vegetation is essential to support a healthy diversity of invertebrates and other invertebrate-dependent fauna.

In SEQ wood-boring species occur most abundantly in moist eucalypt woodlands that have not been burnt for 30 years or more, where shrubs and trees have been allowed to age. Ageing trees with hollows and furrows also provide habitats for gliders, possums, micro-bats and hollow-dependent birds.

Leaf litter decomposing Oecophorid moths. Such moths require unburnt areas of leaf litter to breed and contribute to the food chain as prey for small reptiles, micro-bats and other small mammals. Photos by CSIRO Entomology.

Rainforest insects need protection from fires

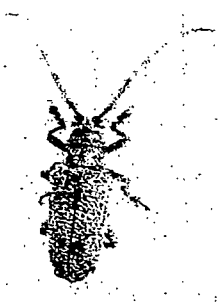
Many insects have evolved a total dependence on plant communities that were never naturally burnt. Fires when deliberately lit during drought, or at times of the year when rainforests are abnormally dry, can have serious impacts on rainforest-dependent insects. Rainforest insects often feed only on one plant or group of plants and need a particular plant age, architecture and shade. They cannot survive or breed, even when coppicing plants regrow in some rainforests years after burning. If these rainforest species are destroyed, the food-source for numerous vertebrate species that depend on rainforest habitats is depleted.

Fuel reduction burns in SEQ need to consider the peculiarities of subtropical insects to avoid major impacts on the insects, the plants and vertebrate fauna that are dependent on them. This will become more urgent as prolonged drought, climate change and fragmentation greatly increases the impacts on biodiversity in urban and fringing bushland.

Small animals are the best indicators for environmental disturbance. Insects and their food plants are often the first organisms to disappear from natural bushland following increased and unseasonal fire frequencies. This then leads to reduced food and habitat for those species next in line in the food chain and so the impacts continue throughout the ecosystem.

Micro-mosaic patch burning (1-2 hectares)

Small patches should be excluded from burning to protect [illegible] habitats and to allow natural dynamic succession. Micro-mosaics burn the age litter and senescing trees, and moist gullies that act as natural fire breaks must be identified and protected in pre-burn inspections. This is a safer and practical way of maximising survival of insects, small ground-dwelling mammals and reptiles. Such fire breaks are completely adequate for protecting life and property. Since European settlement we have seen the losses of vertebrates and plants but are mostly unaware of the on-going impacts on the "smaller animals", including the invertebrates, that make up 99% of all animals.



Longicorn beetles can be active during day or night or both. All longicorn beetles are active fliers and some may be attracted to lights at night. This species shown above has wood-boring larvae. Photo by Don Sands.

Longicorn beetle larvae are long, white grubs found in dead and dying wood. Photo by ForestrySA.

[illegible]

Photo by [illegible]

[redacted]

H Hartman E to Page 3 of the Submission re Sustainable Population

With Compliments

(Mr) [signature]

Review of evidence on drylands pastoral systems and climate change

LAND AND WATER DISCUSSION PAPER 8

E

LAND AND WATER DISCUSSION PAPER

THE FOOD & AGRICULTURE ORGANIZATION OF THE UNITED NATIONS.
Rome, 2009.

Suggest downloading of this very interesting Paper No.8 from Web site: http://www.fao.org (via Google.)

Review of evidence on drylands pastoral systems and climate change

Implications and opportunities for mitigation and adaptation

The review highlights the significant untapped potential for climate change mitigation and adaptation associated with improved management of grazing lands in pastoral systems and rangelands. Grasslands and rangelands deserve greater attention, not only for their large extent, widespread degradation and limited resilience to drought and desertification, but also for their potential capacity to sequester and store carbon in soils. Degradation of the land base negatively affects the accumulation of carbon in the soils. Thus, reversing land degradation in extensive dryland areas through improved pasture and rangeland management would contribute to restoring the soil carbon sink while also improving livelihoods of pastoral and agropastoral peoples. The review also highlights the multiple benefits of enhancing ecosystem services and processes for improving livelihoods while contributing to adaptation to climate change impacts. Realizing this potential will require increased awareness and coordinated global efforts alongside interventions that address associated socio-political and economic barriers, such as land tenure constraints and inadequate services for, and political marginalization of, pastoral and agropastoral communities. The opportunity to support climate change mitigation in drylands that will simultaneously contribute to climate change adaptation and reduced vulnerability of pastoral societies should be a key area of focus in post-Kyoto mechanisms.

Edited by

C. Neely
S. Bunning
and
A. Wilkes

Land Tenure and Management Unit (NRLA)
Land and Water Division

Contents include:-

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Refer CSIRO "Ecograze" Project results in SPELL GRAZING on 3P Native Pastures during the prevailing wet seasons.
and
"Effect of Trees on Grazing Herbage Biomass" (optimum spacing of trees c.f. grass) Walker J. et al. 1986 Division of Land & Water, C.S.I.R.O.

Fires worse than rumens

SOME back-of-the-envelope figures from CSIRO suggest that bushfires deliver a far worse greenhouse gas outcome than a cow.

Tony Lovell of Soil Carbon Australia asked CSIRO scientists what the comparative greenhouse gas implications would be of feeding a tonne of dry grass through a cow's rumen and a bushfire.

The emailed response, but not published in the scientific literature, was that a tonne of grass put through a cow would deliver around 16kg of carbon dioxide equivalents (CO_2-e) of emissions.

The same tonne consumed by a bushfire would produce 57.8 CO_2-e, or 3.6 times as much as the cow.

Mr Lovell theorises that in a dry rangelands environment, an animal's rumen provides a moist, microbe-rich environment to break down dry vegetation — an ecological service that in moister environments is provided by the soil.

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    2002 S.E.Q. Biodiversity Conference
    "Soil Biodiversity – the Base of the Pyramid of Life on Earth".
    - Mrs V.D. Burnett, "Rathburnie Estate" Linville Qld

13. Dr. W.F.Burrows, Woodland Ecologist ex DPI.
    [redacted]

RATHBURN E ESTATE NATURE REFUGE

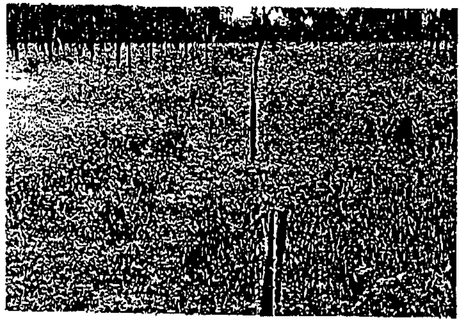
[redacted]

INCREASE LITTER COVER AND
INCREASE INFILTRATION OF RAINFALL

A full wet season rest allows maximum pasture bulk and, consequently, an increased amount of leaf and stem that decays and falls to the ground 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.

> "Gives 3P grasses a chance to recover before being preferentially grazed."

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 [illegible] dry season, to protect the soil surface and encourage rainfall infiltration. Aim for the following levels:

WET SEASON SPELLING

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.

<u>Note</u>: Also addresses problem of run-off to Great Barrier Reef.

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CSIRO
DAVIES LABORATORY
Townsville - Phone: (07) 47538500

(F.)

ALLOW THE LAND TO
RECHARGE ITS BATTERIES

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.

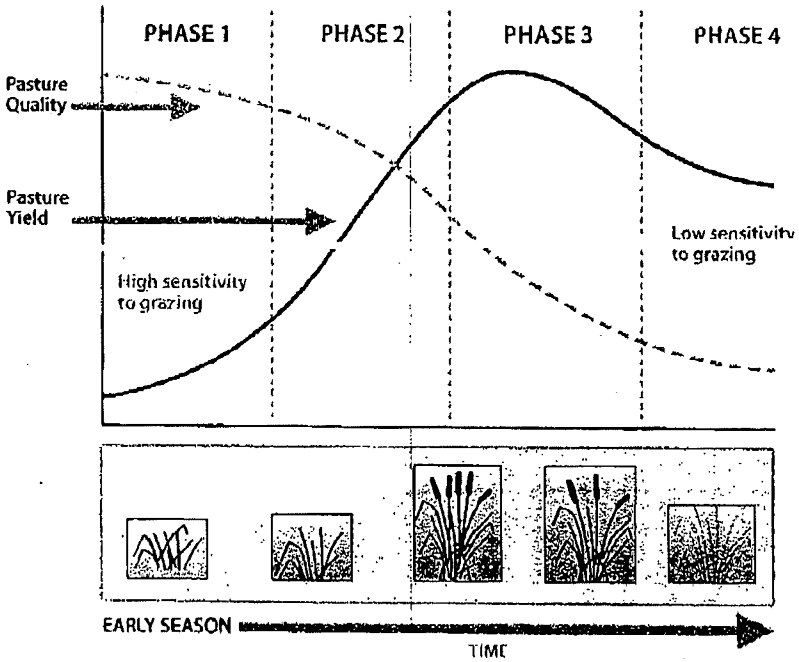
RATHBURNIE ESTATE
LINVILLE
QLD. 4306

“ 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. ”

Burdekin grazier, 2006

HOW DOES
WET SEASON REST WORK?

Resting pastures in the early wet season allows the pasture plants to awaken from dry season dormancy and rapidly 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 season rest) allows the plant to reach its potential leaf and stem bulk (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 fallen during the season. Allowing the pasture to store energy reserves also builds plant resilience to grazing and drought.



RECOVERING POOR CONDITION LANDSCAPES
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 OVER THE FULL LENGTH OF THE WET SEASON. FULL WET SEASON REST FOR TWO SUCCESSIVE 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.

WHAT IS
INFILTRATION?

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.

Recovery of C condition land
VIRGINIA PARK STATION 2006

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.

“ Nature is strong and recovery will occur providing cattle are removed. ”

with compliments

mla
MEAT & LIVESTOCK AUSTRALIA

Visionary Thinking and Generosity Lay Foundations for Sustainable Farming Education and Innovation

Valmai Burnett,
Rathburnie Environmental Estate
Brisbane River Valley, Queensland

I am determined to see my late husband Graham's visionary thinking on sustainable land management live on.

Prior to retirement we produced Angus cattle and organic hay on our 1700-acre property 'Rathburnie', in the upper Brisbane River Valley.

In 1987 Graham bequeathed the property in trust to the World Wide Fund for Nature Australia (WWF) to make it available for "research, demonstration and education into integrated economic and ecologically sustainable farming practices." In 1973 he donated five acres of land to facilitate the building of Lions' Camp Duckadang. With accommodation and a large meeting hall, it was established on an Aboriginal campsite above a deep waterhole.

I remain living on the property, which is under long-term lease. As trustee of Graham's estate I'm in the process of transitioning full control to WWF.

Our hope has always been that the property will inspire landholders to rethink land management in this ancient continent and educate city dwellers on the importance of sustainable farming.

Graham was ahead of his time when it came to sustainably managing farmland. Born in 1910 at Colinton in the Brisbane River Valley he had an affinity with the land. He purchased 'Rathburnie' – then a bullock paddock – in 1932.

Returning home following World War II, where he was taken as a POW in Greece, he realised the Valley had degraded during his absence – something not obvious on a day-to-day basis to those remaining.

Early on, he recognised the value of surface mulch which, when incorporated in the soil humus (compost) by soil micro-organisms, increased soil fertility and improved its moisture-holding capacity. (9)(10)(12) REFS.

He also saw the damage that uncontrolled burning in the previous 200 years had caused to the landscape, leading him to eliminate deliberate burning to preserve the surface mulch and biodiversity. (13) REFS.

After visiting South Africa's Bloemfontein Research Station in 1979 Graham grazed native pasture paddocks on a 'wet weather spell grazing system', whereby alternate paddocks are spelled during the prevailing wet season for two successive years in every four to allow native pastures to set seed before the cattle are allowed to return. This system was later proven to greatly increase carrying capacity by the CSIRO's 'Ecograze' project. (6) REFS.

He also supported thinning native forest regrowth forest to the optimum (2) spacing of 80 trees/ha, advocated by a CSIRO project, to allow pastures to prosper, as well as timber and biodiversity. Wasted thinnings could be used for bio-fuels or turned into pellets as a substitute for coal, providing jobs.

The property was declared a fauna sanctuary in 1973; and registered under permanent title as a nature refuge by the Queensland Government in 2008.

'Rathburnie' is home to many native species, including koalas, wallabies, platypus, wedge-tail eagles and lungfish.

The grass is rich and matted. It holds the rain and the mist and they seep into the ground feeding the streams. . . . It is well-tended, and not too many cattle feed upon it; not too many fires burn it, laying bare the soil. Stand unshod upon it, for the ground is holy, being as it came from the Creator. Keep it, guard it, care for it, for it keeps men, guards men, cares for men. Destroy it and man is destroyed. . . .

—Alan Paton, Cry, the Beloved Country

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REFERENCES 1-12 ATTACHED. P.3.

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