Submission No 22

ASSETS, PREMISES AND FUNDING OF THE NSW RURAL FIRE SERVICE

Name: Mrs Jeanette Davidson

Date Received: 8 May 2024

Dear Legislative Assembly Members,

Australia is drying out from land clearing, fires and goats. Temperatures are rising based on how the NSW FRS and local councils share responsibilities for bushfire management and hazard reduction.

See all six attachments

Restoring native habitats so that soils are healthy and water-retaining, and so that native trees and plants are present in all their variety, makes landscapes less vulnerable to catching fire and reduces the chances of it spreading.

Rewilding and wildfire prevention

Rewilding Britain

https://www.rewildingbritain.org.uk › why-rewild › ho...

biolinks projects that are linking and restoring landscapes at inspirational scales without ongoing destruction contact: James Whitmore jamesw@tfn.org.au

Kind regards,

Mrs. Jeanette Davidson

Mrs Jeanette Davidson
[redacted]
[redacted]
Email: [redacted]

8 May, 2024

Submission About the NSW Rural Fire Service and Tasked the Public Accounts Committee to Look Into the Effectiveness of the RFS's Asset Management and Operations,

https://www.parliament.nsw.gov.au/committees/inquiries/Pages/inquiruy-details.aspx?pk=3028#tab-members

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https://www.rewildingbritain.org.uk › why-rewild › ho...

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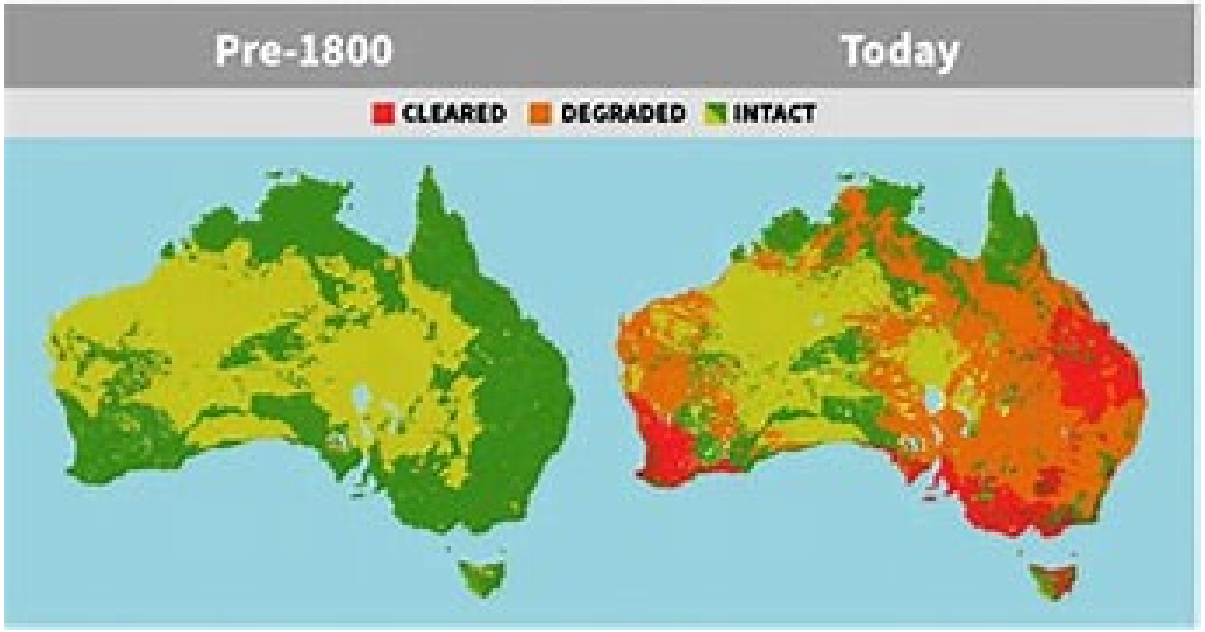
Australia is drying out from land clearing, fires and goats. Temperatures are rising based on how the NSW FRS and local councils share responsibilities for bushfire management and hazard reduction.

How does deforestation lead to a drier local climate?
The water cycle is disrupted by deforestation as the loss of trees means less evapotranspiration, so less moisture is returned to the atmosphere, meaning fewer clouds are formed, and making the local climate drier. Recycling water acts as a cooling system, so without this the climate gets warmer.19 July 2023 tutor2u.net https://www.tutor2u.net › geography › reference › local-...

What is the main reason for land clearance in Australia?
Today, most land cleared in Australia is used for cattle grazing. In the past, large areas were also cleared for crop production. For farmers and other landowners, economic considerations are an important driver of land clearing.
https://www.dcceew.gov.au › default › files › documents



16 Feb 2024 — Australia has a total of ***133.6 million hectares*** of forest, which is equivalent to **17% of Australia's land area.** DAFF
https://www.agriculture.gov.au › australias-forests

What percent of bushfires are caused by humans in Australia? Bushfires are wildfires that burn in grasslands, scrublands, or forests. They are sometimes called forest fires. All through bushfires are often considered natural disasters, more than 90 percent of them are started by people, either accidentally or deliberately. Australian bushfires – Students/ Britannica Kids/ Homework Help britannica.com https://kids.britannica.com>students>article>Australia...

"Experts estimate about 85% of bushfires are caused by humans, and we do virtually nothing to stop it." DAN HIMBRECHTS/AAP

The 2019 2020 fires were started during gale force winds while in a drought. This was the time the North Coast Local Land Service was updating Native Vegetation Maps to allow or not to allow landholders to clear land and subdivide. The use of fires or goats to reduce the fuel load is another method of deforestation to increase the value of land. My local fire brigade even hired someone to push down trees with hollows along roads, private driveways, and even made paper trails on private property without permission to do this. Also, my local fire brigade deliberately burned trees with rough bark and tree hollows. The Clarence Valley Council hired George's Tree Service to cut down thousands of trees along roads.

Some of Australia's most devastating bushfires have fuelled their own fury by creating thunderstorm clouds capable of producing dry lightning, violent winds, black hail and even a fire tornado.

The unpredictable changes brought on by the storms can be extremely dangerous, and make fighting fires even harder.

https://www.abc.net.au/news/2018-11-28/bushfire-storms-can-spark-fire-tornadoes-dry-lightning-and-more/10561832?utm_campaign=abc_news_web&utm_content=link&utm_medium=content_shared&utm_source=abc_news_web

Why don't prescribed burns stop wildfires?
Prescribed burns are a fire mitigation tool used with the aim of reducing fuel load to minimise the intensity and severity of fires. However, while prescribed burns can sometimes decrease flammability in the short term, the way they disrupt forest ecosystems can create longer periods of additional flammability.22 Jan 2024 PreventionWeb https://www.preventionweb.net>news>prescribed-burn...

Goats have been proven not an effective method of fuel reduction and contribute to drying out Australia by destroying habitat:

- Goats are listed as a key threatening process at both State and National level (see attached listings) as they browse and will eat anything, not just weeds, and their hooves impact the natural regeneration occurring through trampling. They also spread weeds through their faeces. When controlled and used in a non-sensitive environment, such as on pastures, they can be a useful agricultural tool for weed reduction. However, they are not suitable in sensitive areas, hence the listing as a key threatening process.
- A letter attached from the Director of NSW NPWS Richard Kingsford clearly states that goats are not an effective method of fuel reduction and actually exacerbate the problem with the spread of weeds and damaging soils.
- Goats destroy habitat and further dry out Australia. Goats were offered to reduce native vegetation by a landholder that received GrantConnect Government Grant. The word goat was not mentioned in writing. Landholders are deliberately allowing their goats eat

native vegetation on their property and neighbouring properties. See photos below of the rural areas classified as the North Coast Dry Sclerophyll Forest with a fully intact understory found in a fraction of the landscape that is currently being destroyed by goats.

- What type of environment are **Sclerophyll plants** adapted to? https://www.britannica.com › plant › sclerophyll
  Sclerophyll is a type of vegetation that is **adapted to long periods of dryness and heat**.
  These adaptations make **this genus extremely valuable in a world that appears to be drying out**.

Our planet's future climate is inextricably tied to the future of natural forest ecosystems.

How are climate change and biodiversity loss linked?

7 Dec 2022 — **Biodiversity loss** and climate change are the great ecological crises of our time. To solve either challenge, we must tackle them together. Natural History Museum https://www.nhm.ac.uk › discover › how-are-climate-ch...

"To restore stability in our planet, we must restore its biodiversity... it's the only way out of this crisis that we have created. We must rewild the world." - Sir David Attenborough

"Jobs Restoring Natural Ecosystems to Mitigate the Effects of Fires and Floods". Rewilding/Restoring Natural Ecosystems are needed to work with Australia's Ecosystem Engineers, wildlife for billions of years have played a key role in soil health and fuel reduction through "bioturbation **"Prepare Act Survive"**: Our health, wealth, survival and success depend on the health, wealth and survival of intact natural ecosystems, Living Masterpieces. This is a natural ecosystem that is home to many endangered Aussies, including ones that live in tree hollows, hollow logs, among rocks, and ones that have a home in the under-story, and ground cover. **Success is living without polluting or destroying our natural ecosystems' life or infrastructure.**

Contact: **Australian Association of Bush Regenerators (AABR)** e: enquiries@aabr.org.au w:aabr.org.au M:0407 002 921 ABN 89 059 120 802 Address: c/-TEC, PO Box K61, Haymarket NSW 1240, Suzanne Pritchard, AABR Executive Officer e: admin@aabr.org.au M: 0438 596 741

Restoring native habitats so that soils are healthy and water-retaining, and so that native trees and plants are present in all their variety, makes landscapes less vulnerable to catching fire and reduces the chances of it spreading.

Rewilding and wildfire prevention

Rewilding Britain https://www.rewildingbritain.org.uk › why-rewild › ho...

What is rewilding Australia?
By rewilding Australia, we aim to improve the resilience and adaptability of our wildlife and landscapes to current and future threats - creating a future richer for both people and nature.

Rewilding Australia - WWF Australia

wwf.org.au
https://wwf.org.au › what-we-do › rewilding-australia

Landscaping is not restoring natural ecosystems. Landscaping contributes to weed problems. We need our intact natural native forests to survive. Not man -made forests that will not survive the extreme weather events that are coming.
Fire trails create bare areas for weed seeds to germinate. These areas are prone to: erosion, the deliberate burning or rough bark on trees or trees with hollows, or pushing over trees with hollows, -The result is a hotter environment that will contribute to ecosystems collapsing, fire storms and fire tornadoes.

Let's get out of the Anthropocene Geological Age. "Over the last 200 years, the people with the most power to shape the world have got things so wrong that we are on track to destroy Earth – and ourselves – unless we make serious changes. Australian Geographic" "CLIMATE CHANGE AND HOW WE WILL FIX IT" by Alice Harman ISBN 978 19258 47956

Kind regards,

Mrs. Jeanette Davidson

Certificate II Conservation and Land Manager and Australian Bush Regenerator Volunteer.

- Threatened Species listing from NSW Bionet Atlas

Data from the BioNet Atlas website, which holds records from a number of custodians. The data are only indicative and cannot be considered a comprehensive inventory, and may contain errors and omissions. Species listed under the Sensitive Species Data Policy may have their locations denatured (^ rounded to 0.1°C; ^^ rounded to 0.01°C. Copyright the State of NSW through the Department of Planning, Industry and Environment. Search criteria : Public Report of all Records of Threatened (listed on BC Act 2016) or Commonwealth listed Entities in selected area [North: -29.94 West: 152.92 East: 153.02 South: -30.04] returned a total of 940 records of 41 species.

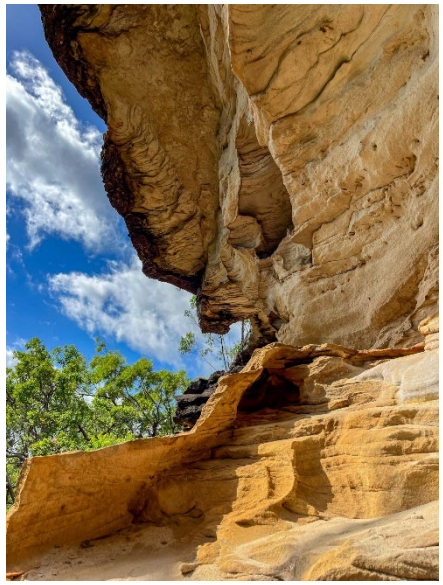
Report generated on 22/04/2024 10:45 AM

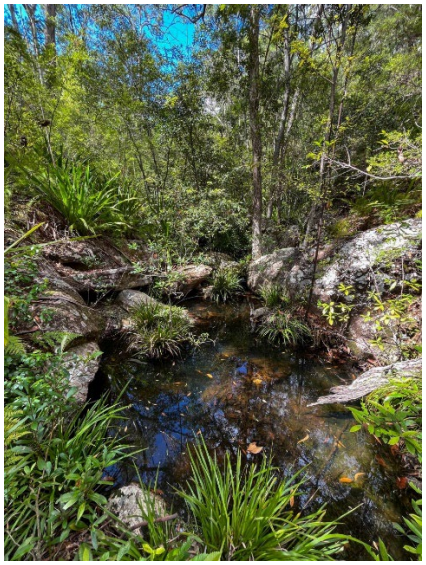
Kingdom	Class	Family	Scientific Name	Common Name	NSW status	Comm. status	Records
Animalia	Amphibia	Myobatrachidae	^Mixophyes iteratus	Giant Barred Frog	V,P,2	V	11
Animalia	Reptilia	Elapidae	Hoplocephalus stephensii	Stephens' Banded Snake	V,P		1
Animalia	Aves	Apodidae	Hirundapus caudacutus	White-throated Needletail	V,P	V,C,J,K	2
Animalia	Aves	Ciconiidae	Ephippiorhynchus asiaticus	Black-necked Stork	E1,P		1
Animalia	Aves	Accipitridae	Circus assimilis	Spotted Harrier	V,P		3
Animalia	Aves	Accipitridae	Haliaeetus leucogaster	White-bellied Sea-Eagle	V,P		1
Animalia	Aves	Accipitridae	Hieraaetus morphnoides	Little Eagle	V,P		1
Animalia	Aves	Gruidae	Grus rubicunda	Brolga	V,P		1
Animalia	Aves	Cacatuidae	^Calyptorhynchus lathami lathami	South-eastern Glossy Black-Cockatoo	V,P,2	V	12
Animalia	Aves	Psittacidae	Glossopsitta pusilla	Little Lorikeet	V,P		8
Animalia	Aves	Strigidae	^^Ninox strenua	Powerful Owl	V,P,3		4
Animalia	Aves	Tytonidae	^^Tyto novaehollandiae	Masked Owl	V,P,3		1
Animalia	Aves	Meliphagidae	^Anthochaera phrygia	Regent Honeyeater	E4A,P,2	CE	3
Animalia	Aves	Pomatostomidae	Pomatostomus temporalis temporalis	Grey-crowned Babbler (eastern subspecies)	V,P		2
Animalia	Aves	Neosittidae	Daphoenositta chrysoptera	Varied Sittella	V,P		6

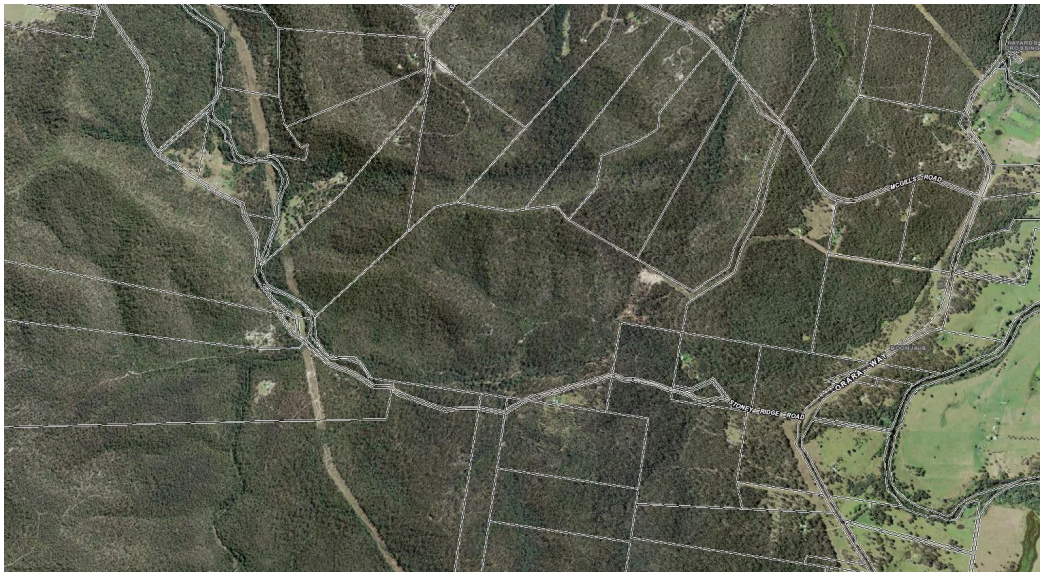
Animalia	Aves	Campephagidae	Coracina lineata	Barred Cuckoo-shrike	V,P		1
Animalia	Aves	Estrildidae	Poephila cincta cincta	Black-throated Finch (southern subspecies)	E4,P	E	1
Animalia	Mammalia	Dasyuridae	Dasyurus maculatus	Spotted-tailed Quoll	V,P	E	7
Animalia	Mammalia	Phascolarctidae	Phascolarctos cinereus	Koala	E1,P	E	2
Animalia	Mammalia	Petauridae	Petaurus australis	Yellow-bellied Glider	V,P	V	1
Animalia	Mammalia	Petauridae	Petaurus norfolcensis	Squirrel Glider	V,P		5
Animalia	Mammalia	Potoroidae	Aepyprymnus rufescens	Rufous Bettong	V,P		2
Animalia	Mammalia	Potoroidae	Potorous tridactylus	Long-nosed Potoroo	V,P	V	1
Animalia	Mammalia	Macropodidae	Petrogale penicillata	Brush-tailed Rock-wallaby	E1,P	V	5
Animalia	Mammalia	Pteropodidae	Pteropus poliocephalus	Grey-headed Flying-fox	V,P	V	11
Animalia	Mammalia	Vespertilionidae	Chalinolobus dwyeri	Large-eared Pied Bat	V,P	E	2
Animalia	Mammalia	Vespertilionidae	Falsistrellus tasmaniensis	Eastern False Pipistrelle	V,P		1
Animalia	Mammalia	Vespertilionidae	Scoteanax rueppellii	Greater Broad-nosed Bat	V,P		1
Animalia	Mammalia	Vespertilionidae	Vespadelus troughtoni	Eastern Cave Bat	V,P		1
Animalia	Mammalia	Miniopteridae	Miniopterus australis	Little Bent-winged Bat	V,P		3
Plantae	Flora	Ericaceae	Melichrus hirsutus	Hairy Melichrus	E1	E	329
Plantae	Flora	Grammitidaceae	^^Grammitis stenophylla	Narrow-leaf Finger Fern	E1,3		4
Plantae	Flora	Lindsaeaceae	^^Lindsaea incisa	Slender Screw Fern	E1,3		8
Plantae	Flora	Myrtaceae	Angophora robur	Sandstone Rough-barked Apple	V	V	340
Plantae	Flora	Myrtaceae	^^Callistemon linearifolius	Netted Bottle Brush	V,3		1
Plantae	Flora	Myrtaceae	Eucalyptus tetrapleura	Square-fruited Ironbark	V	V	2
Plantae	Flora	Myrtaceae	Homoranthus floydii		V	V	115
Plantae	Flora	Myrtaceae	Rhodomyrtus psidioides	Native Guava	E4A	CE	2
Plantae	Flora	Myrtaceae	Triplarina imbricata	Creek Triplarina	E1	E	26
Plantae	Flora	Rutaceae	Boronia umbellata	Orara Boronia	V,P	V	3

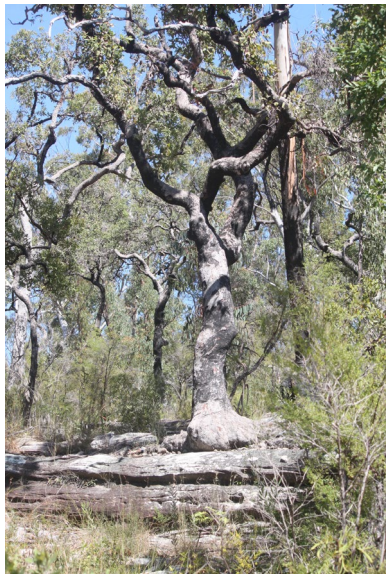
Plantae	Flora	Simaroubaceae	Quassia sp. Moonee Creek	Moonee Quassia	El	E	9

- <u>Photos of examples of the vegetation in the area including my property</u>






MCNEILL ROAD
TOWER RIDGE ROAD



Competition and habitat degradation by feral goats (Capra hircus) - key threatening process listing

The Scientific Committee, established by the Threatened Species Conservation Act, has made a Final Determination to list Competition and habitat degradation by Feral Goats, Capra hircus Linnaeus 1758, as a KEY THREATENING PROCESS in Schedule 3 of the Act. Listing of key threatening processes is provided for by Part 2 of the Act.

NSW Scientific Committee - final determination

The Scientific Committee has found that:

1. Feral Goats, *Capra hircus* Linnaeus 1758, are descended from domestic stock introduced to Australia at various times since 1788 (Henzell 2000). Feral Goats are distinguished from domestic goats by not being permanently restrained by fences or subject to husbandry (Environment Australia 1999). 'Competition and land degradation by Feral Goats' is currently listed as a key threatening process under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*.

2. Feral Goats occur in most regions of Australia, with the majority of their distribution in the arid and semi-arid pastoral regions of Queensland, Western Australia, South Australia and NSW (Parkes *et al.* 1996). Dingos and Feral Dogs are their chief predators and, where wild dogs are not actively controlled, they have been observed to limit the distribution of Feral Goats Parkes *et al.* 1996).

3. Feral Goats are versatile generalist herbivores (Harrington 1986). They will browse shrubs and trees, graze forbs and grass, and eat fallen fruit capsules, bark and other dead plant material (Dawson *et al.* 1975; Squires 1980; Dawson and Ellis 1996). Feral Goats appear to have a high taste threshold for compounds in many trees and shrubs normally unpalatable to other herbivores (Henzell 1993) and can survive on fibrous herbage with low levels of nutrients (Doyle *et al.* 1984). When green foliage is abundant, Feral Goats obtain sufficient water from their food, but during summer and in drought they require drinking ater (Dawson *et al.* 1975; Parkes *et al.* 1996).

4. Feral Goats have a high reproductive potential. Females attain sexual maturity at around six months of age and produce one to three kids every eight months (Henzell 2000), or twice every 12 months under favourable conditions (Menkhorst 1995). In the absence of control, Feral Goat populations can increase by up to 75% per year (Henzell 2000).

5. Feral Goats are usually sedentary when feed is available but are capable of moving large distances when feed is limited Henzell 2000) e.g. a home range of almost 600km2 was estimated for an individual goat in a pastoral area of Western Australia King 1992). Feral Goat movement patterns vary according to topography, harvesting pressure and feed availability Freudenberger and Barber 1999). Individuals move freely through most fences in pastoral areas and are able to reinvade areas from which they have previously been removed. Feral Goats can also utilise many areas that are inaccessible to other large herbivores e.g. rocky slopes and cliff lines.

6. Feral Goats present a potential threat to plant communities given the large number of plant species that are palatable to them and their ability to browse and graze in inaccessible areas such as in trees or in dense thickets (Squires 1980; Henzell 1993; Parkes *et al.* 1996). Landsberg and Stol (1996) found that Feral Goats contribute substantially to total grazing pressure in the

oody rangelands of NSW, and that they probably have the greatest potential for causing grazing impacts in the region. Moreover, the ability of Feral Goats to survive on low nutrient fibrous vegetation (Doyle *et al.* 1984) enables them to continue to feed under adverse environmental conditions, e.g. Wilson and Mulham (1980) found that goats demonstrated a superior ability to survive in competition with sheep during drought, and this was attributed to the ability of goats to browse higher on trees and their willingness to eat fallen leaves. In one study of the impacts of sheep and goat grazing, Feral Goats were not identified as a threat to the regeneration of plant species in chenopod shrublands in South Australia (Tiver and Andrew 1997). However, enclosure experiments have demonstrated the species' potential to overgraze and prevent regeneration of plants (Harrington 1979; Harrington 1986). Such overgrazing is likely to be prevalent during drought or in concert with other introduced herbivores such as rabbits, *Oryctolagus cuniculus* (Henzell 2000). Moreover, the floristic composition of plant communities may be altered as a result of intense browsing by Feral Goats (Harrington 1986).

7. Feral Goats can cause significant habitat degradation. Removal or destruction of vegetation together with trampling by ungulate herbivores decreases soil stability and contributes to erosion (Henzell 1993; Eldridge 1998). An experiment in the Macleay River gorge system, northeastern NSW, demonstrated that removal of goats resulted in a rapid decrease in soil erosion; this initial rapid decrease was followed by a slower decline in erosion coincident with a relative increase in vegetation Bayne *et al*. in press). Further, a study of high-intensity goat grazing in dunefields northwest of Cobar, northwestern NSW, found that goat grazing rapidly depleted perennial grasses and shrubs and caused the soil surface to become highly susceptible to ind erosion (Green *et al.* 1998).

8. Feral Goat activity can significantly alter the habitat of native fauna and flora e.g. accumulated Feral Goat droppings may degrade the habitat of the endangered Broad-headed Snake, *Hoplocephalus bungaroides* (Murphy 1996); and deposition of goat droppings around waterholes and springs are likely to eutrophy the water and thus affect freshwater biota (Parkes *et al* 1996). Feral Goats trample spinifex clumps while grazing seed heads (Maher *et al*. 1995) and this degrades the habitat of spinifex-dependent lizard species e.g. the endangered Mallee Slender Blue-Tongue Lizard, *Cyclodomorphus melanops elongata*, and the endangered Marble-faced Delma, *Delma australis*. Further, trampling by Feral Goats was recognised as a threat to the Endangered Artesian Springs Ecological Community, and the Endangered sedge *Eriocaulon carsonii* (Pickard 1992).

9. Feral Goats may compete with native fauna for food, water and shelter. In particular competition from Feral Goats has been mplicated as a threat to the endangered Yellow-footed Rock-wallaby, *Petrogale xanthopus* (Lim 1987) and the endangered Brush-tailed Rock-wallaby, *P. penicillata* (NSW NPWS 2001). There also exists unpublished reports of goat musters correlating ith the rapid recovery of Yellow-footed Rock-wallabies following drought (Henzell 1990). However, competition between Feral Goats and rock-wallabies is yet to be demonstrated. Given that goats consume the highly digestible, nitrogen rich parts of plants, and when available, growing tips, fruit and seeds, it is likely that they would reduce the amount of nutritious plant material available to other herbivores. Thus, the capacity of rock-wallabies to respond to improved seasonal conditions following drought might be reduced by the impact of Feral Goats (Henzell 1990).

10. The following threatened species and ecological communities are known or are likely to be threatened by Feral Goats:

Endangered Species	
Ctenophorus decresii	Tawny Crevice Dragon
Ctenotus pantherinus ocellifer	Leopard Ctenotus
Cyclodomorphus melanops elongatus	Mallee Slender Blue-tongue Lizard
Delma australis	Marble-faced Delma
Egernia margaretae	Centralian Ranges Rock-skink

Hoplocephalus bungaroides	Broad-headed Snake
Leipoa ocellata	Malleefowl
Petrogale penicillata	Brush-tailed Rock-wallaby
Petrogale xanthopus	Yellow-footed Rock-wallaby
Dodonaea stenozyga	a shrub
Eriocaulon carsonii	Salt Pipewort
Cynanchum elegans	White-flowered Wax Plant
Grevillea beadleana	a grevillea
Grevillea iaspicula	a grevillea
Homoranthus binghiensis	a shrub
Homoranthus bornhardtiensis	a shrub
Homoranthus croftianus	a shrub
Zieria parrisiae	a shrub

Vulnerable Species	
Acacia carneorum	a wattle
Bertya sp. Cobar-Coolabah	a shrub or small tree

Endangered Ecological Communities
Acacia loderi Shrublands
Artesian Springs Ecological Community
Howell Shrublands in the New England Tableland and Nandewar Bioregions

11. In view of the above the Scientific Committee is of the opinion that Competition and habitat degradation by Feral Goats, *Capra hircus* Linnaeus 1758, adversely affects more than two threatened species, populations or ecological communities, or could cause species, populations or ecological communities that are not threatened to become threatened.

Associate Professor Paul Adam
Chairperson
Scientific Committee

Proposed Gazettal date: 12/11/04
Exhibition period: 12/11/04 - 24/12/04

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More information

NSW Threatened Species Scientific Committee

Preliminary determinations

Nomination, assessment, public exhibition and listing

Search NSW Threatened Species Scientific Committee determinations

Australian Government
Department of Sustainability, Environment, Water, Population and Communities

THE FERAL GOAT *(CAPRA HIRCUS)*

The feral goat has established populations in a variety of habitats across Australia. It competes with native fauna and causes land degradation, threatening plant and animal species and ecological communities. The feral goat can be an agricultural pest but also has commercial value and is harvested for its meat. To protect the environment, feral goat control programs are best undertaken in areas of high conservation value.

History

Goats arrived in Australia with the First Fleet in 1788. As they were small and hardy, ate a range of plants and provided milk and meat, they were convenient livestock for early European settlers. During the 19th century, sailors released goats onto islands and some areas of the mainland for emergency food. Certain breeds were imported for their hair. More recently, goats have been used to keep plantation forests and inland pastoral land free of weeds. Feral herds developed as these domestic goats escaped, were abandoned or were deliberately released.

Feral goats now occur across 28 per cent of Australia. They can be found in all states and territories and on some offshore islands, but are most common in the rocky or hilly semi-arid areas of western New South Wales, South Australia, Western Australia and Queensland. There are at least 2.6 million feral goats in Australia but numbers fluctuate enormously with drought, management programs and high fertility so it is very difficult to accurately assess numbers.

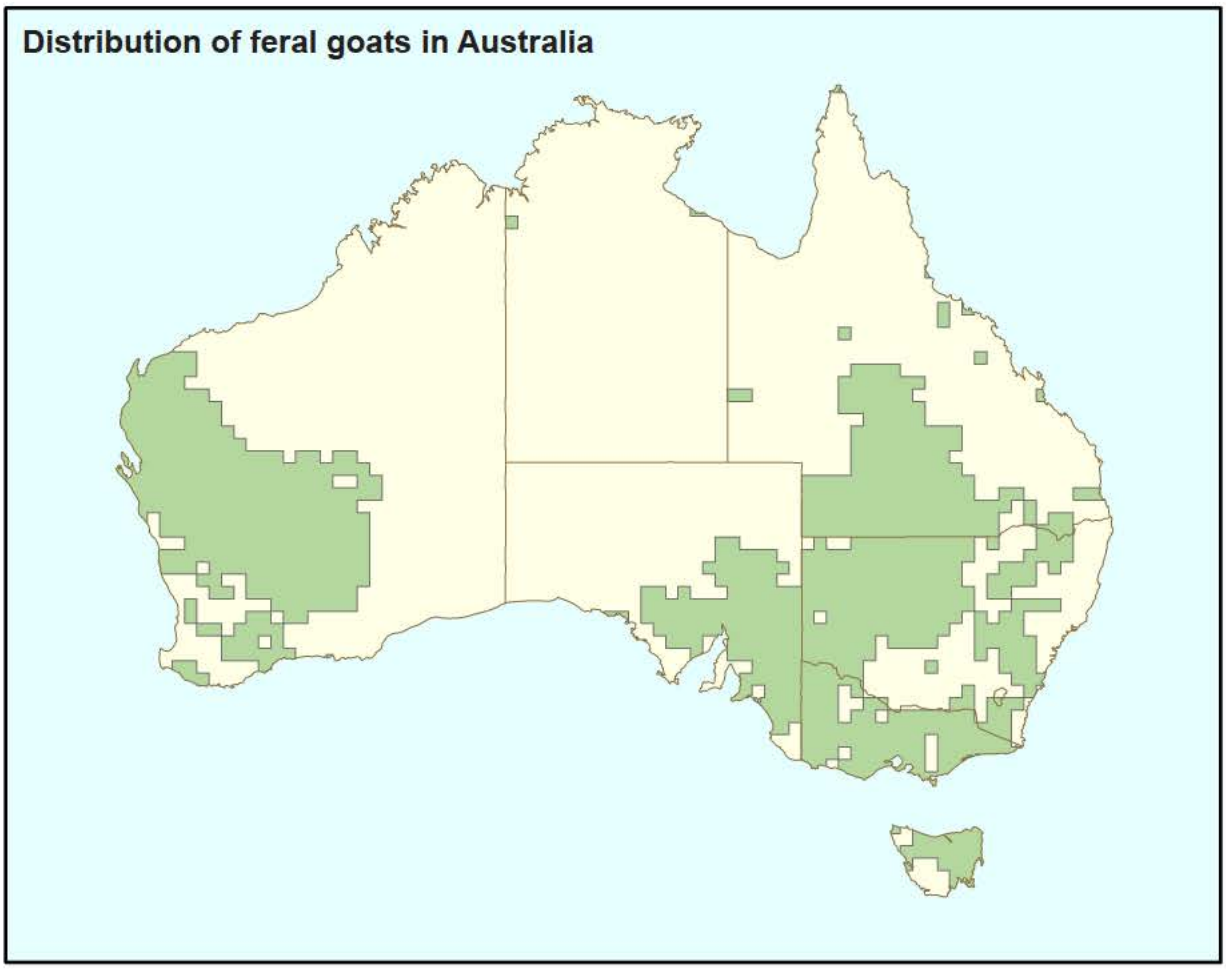
Ecology

Where dingos and wild dogs are present, feral goats generally do poorly. However, they are often found in sheep-grazing areas, where dingos and wild dogs have been removed or heavily controlled by pastoralists.

Feral goats live in herds and, although males and females live separately for much of the year, they share about one kilometre square under good conditions, but a larger area when food or water is scarce. The two groups only mix together during the breeding season in autumn and winter, with females becoming sexually mature in their first year. Feral goats can breed twice a year, with twins and triplets being common.

Feral goats have a varied diet — leaves, twigs, bark, flowers, fruit and roots. They will eat most plant types in pastoral regions and often consume vegetation that is avoided by sheep or cattle.

Distribution of feral goats in Australia



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Impact

Feral goats have a major effect on native vegetation through soil damage and overgrazing of native herbs, grasses, shrubs and trees. This grazing can cause erosion and prevent regeneration. They foul waterholes and can introduce weeds through seeds carried in their dung.

Particularly during droughts, feral goats can compete with native animals and domestic stock for food, water and shelter. For example, they may threaten some yellow-footed rock wallaby populations by competing for rock shelters and food, leaving the wallabies exposed to a greater risk of predation by foxes and wedge-tailed eagles.

Feral goats carry footrot, and can infect or reinfect sheep through their contact with sheep. They could also carry exotic diseases such as foot-and-mouth disease, should there be an outbreak in Australia.

Control

Control of feral goats is a complex issue. While they are a major environmental and agricultural pest, they also have some commercial value and are used as a game species by recreational hunters. Feral goat populations tend to recover well from culling and, except on islands, eradication is usually not possible. To protect the environment, control is best focused on areas that contain threatened native plants, animals and ecological communities.

In arid and semi-arid country, feral goats are sometimes mustered for slaughter and young females may be sold as breeding stock for mohair flocks. In inaccessible areas, shooting from helicopters is the most humane and efficient method of removing small numbers of feral goats.

When looking for food, feral goats centre their movements around the availability of permanent water. In times of drought, they need to drink more and stay closer to water. This makes the water source an ideal place to trap feral goats by surrounding it with goat-proof fencing and using one-way gates that allow the goats into the trap to drink but does not allow their movement out again.

A technique known as the 'Judas goat' method can be used to locate small herds. A feral goat is caught, fitted with a radio collar and released to join a herd. Signals from the radio reveal the location of the herd.

How the Australian Government is dealing with a national problem

'Competition and land degradation by feral goats' is listed as a key threatening process under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). Under the EPBC Act, the Australian Government, in consultation with the states and territories, has developed the *Threat abatement plan for competition and land degradation by unmanaged goats*.

The threat abatement plan aims to reduce the impacts of feral goats on native wildlife in an number of ways:

- Preventing unmanaged goats occupying new areas in Australia and eradicating them from high conservation-value areas.
- Promoting the maintenance and recovery of native species and ecological communities that are affected by competition and land degradation by unmanaged goats.
- Improving knowledge and understanding of the impacts of unmanaged goats and their interactions with other species and other ecological processes.
- Improving the effectiveness, target specificity and humaneness of control options for unmanaged goats.
- Increasing awareness of all stakeholders of the objectives and actions of the threat abatement plan, and of the need to control unmanaged goats.

Feral goat control programs need to be co-ordinated with other activities such as on-ground protection of threatened plants and animals and the control of other invasive species such as rabbits and feral pigs. The threat abatement plan provides a national framework that promotes the best use of the resources available for feral goat management.

The Australian Government will continue to work with the states and territories in dealing with this national problem.

More information about the threat abatement plan can be found at http://www.environment.gov.au/biodiversity/invasive/publications/feral-goat.html

Further reading

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Photo Credits: Goat with horns (Peter O'Brien, NSW DII), Goat herd (Quentin Hart, CES)

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REWILDING by George Monbiot and Rebecca Wrigley Pages 348-351 from **"THE CLIMATE BOOK"** created by Greta Thunberg

'The time has come for us to tell this story, and perhaps even change the ending.' WHAT WE MUST DO NOW

'How do we sustain ourselves in a broken world? How do we prevent ourselves from succumbing to despair, when so much of what we love is disappearing before our eyes, and when the prospect of systemic environmental collapse threatens every hope and ambition we might have entertained? How can we look our children in the eye when we know they might live to witness the toppling of our life support systems?

These are questions that almost everyone seeking to protect life on Earth now confronts. Not only must we contend with the enormous political, economic and technical challenge of seeking to prevent this existential disaster, we must simultaneously navigate the psychological impacts of understanding what we face. Somehow, we must keep finding the energy, the determination, the joy required to carry on. But How?

We need, even when facing the most frightening aspects of this multifaceted crisis, to sustain in our minds the prospect not just of preventing catastrophe but also of creating a better world. Perhaps our best hope of psychic survival and our best hope of planetary survival can be found in the same place: by seeking the mass restoration of damaged ecosystems, and of our relationship with them.

Anyone who has taken a party of children to the countryside or the seaside for the first time in their lives will testify to something wonderful: a thrilling and spontaneous engagement with these unfamiliar places. Children who have never entered a forest before, or never stepped on to a rocky shore, immediately and instinctively begin to explore them: curiosity and wonder overtake them. They appear to possess an innate desire to engage with the living world.

Almost all of us have a great capacity for delight and enchantment. But most of us live, in circumstances in which we can scarcely exercise them. As we disengage from the natural world, we tend to forget the joy that nature has to offer: its spontaneity and serendipity, its capacity to shake us out of our frustrations and humiliations. Unfortunately, even when we do step into what we call 'nature', we often find ourselves in places as disciplined, managed and dismal as the daily grind we might be trying to escape. It is hard to have magnificent experience in nature, to leave ourselves and our troubles behind, if scarcely any of it is left.

But there is a way that we can begin to mend the living planet and our relationship with it. It is a variety of positive environmentalism which offers the hope of recovery, of re-enchantment with a world that often seems crushing bleak. It is 'rewilding': the mass restoration of the planet's ecosystems. In essence, rewilding means allowing natural

processes to resume. It involves, where people agree, reintroducing missing species, removing fence, blocking drainage ditches and controlling especially virulent invasive exotic species, but otherwise, to the greatest extent possible, allowing nature to find its own way. It means allowing forests and other depleted ecosystems to regenerate. At sea, it means creating meaningful reserves from which extractive industries, especially trawling and dredging, are excluded. Because marine animals tend to be highly mobile during at least one stage of their lives, ocean ecosystems, if left alone, can quickly restore themselves.

To understand what we could restore, we need to see what we are missing. Some countries, such as ours (the UK), have lost almost all the large 'keystone' species – the ecological engineers – that create habitats and drive the dynamic processes which other lifeforms need to flourish. Once, like almost everywhere on Earth, ecosystems here were dominated by enormous beasts: elephants, rhinos, hippos, lions and hyenas. But we have lost not only our megafauna but also most of the mid-sized creatures that used to be abundant here, such as wolves, lynx, moose, boar, beavers, white-tailed eagles, pelicans, cranes storks. Some of these species are now, slowly and tentatively, being reintroduced, and while their restoration is sometimes controversial, many people respond to them with delight and awe. We have begun to see how simplified, depleted ecosystems can spring back to life when the ecological engineers return.

It's easy to forget that even the empties seas once swarmed with living creatures. The waters around the UK were among the most abundant on Earth. Armies of bluefin tuna stormed our coasts, harrying shoals of mackerel and herring many miles long. Halibut the size of barn doors and turbot like tabletops came into shallow water to feed. Cod commonly reached a length of almost 2 metres; haddock grew to a metre. Pods of fin whales and sperm whales could be seen from the shore, while Atlantic grey whales, now extinct, sifted the mud in our estuaries. Gigantic sturgeon poured up the rivers to spawn, pushing through packed shoals of salmon, sea trout, lampreys and shad. On some parts of the seabed the eggs of the herring lay a metre and a half deep.

Almost everywhere on earth, living systems were so rich and abundant that if we encountered them today we would scarcely believe what we were seeing. A recent scientific paper estimates that only 3 per cent of the earth's land surface should now be considered 'ecologically intact'. The disappearance of so many of our natural wonders diminishes not only ecosystems buy also our own lives. We live in a shadowland, a dim, flattened relic of that there once was, of what there could be again.

As living systems recover, some of them, particularly forests, peat bogs, salt marshes, mangroves and the seabed, could draw down vast amounts of carbon from the atmosphere. **While such natural climate solutions should never be used as a substitute for decarbonizing our economies, we now know that a green industrial and economic transition is not enough: even if we cut our emissions almost to zero very quickly, we are likely still to exceed the temperature limits proposed in the Paris Agreement. So we also need to recapture some of the carbon we have already released. The restoration of living systems is a surer, cheaper and less damaging means of doing so than any of the technological alternatives. It enables us to tackle two of our existential crises at once: climate breakdown and ecological breakdown.**

The recovery of certain animal populations could radically change the carbon balance. For example, forest elephants and rhinos in Africa and Asia and tapirs in Brazil are natural foresters, maintaining and extending their habitats as they swallow the seeds of trees and spread them, sometimes across many miles, in their dung. If wolves were allowed to reach their natural populations in North America, one paper suggests, their suppression of herbivore populations would store as much carbon every year as between 30 and 70 million cars produce. Healthy populations of predatory crabs and fish protect the carbon in salt mashes, as they prevent herbivorous crabs and snails from wiping out the plants that hold the marshes together. Protecting and rewilding the world's living systems is not just a delightful thing to do. It is an essential survival strategy.

It's important to remember that rewilding is not a replacing for the conservation of existing, rich habitats but a supplement to it. There's no substitute for old-growth\ forests, long-established reefs of coral, oysters or honeycomb worms; braiding, meandering rivers full of snags and islands; or undisturbed soils reamed by roots and holes. 'Replacing' an old tree is no more meaningful than replacing an Old Master painting. When a trawler ploughs through biological structures on the seabed, they can take hundreds of years fully to recover. When a river is dredged and straightened, it becomes, by comparison to what it once was, an empty shell. The loss of these ancient habitats

is one of the forces driving the global shift from large, slow-growing creatures to the small, short-lived species able to survive our onslaughts.

Rewilding seeks to allow our complex natural architectures to recover. It attempts to build a new and deeper respect for the entanglements of nature. It seeks to create the ancient ecosystems that only our grandchildren will see. It does not try to restore the living world to any prior state, but simply to allow it to become as rich, diverse, dynamic and functional as possible.

But it also about us and the improvement of our lives. It's about people coming together to find ways to live and work within healthy, flourishing ecosystems. Local communities need to be at the heart of any decisions about land and marine-use change. Nothing should be done without the involvement and consent of Indigenous peoples and other local people. By using a localized people-led approach we can help to create economies that are regenerative and restorative by design, which support human prosperity within nature's flourishing web of life.

To do so, we must start working with nature instead of against it. We would like to see governments, public bodies, businesses, farmers, foresters, fishers and local communities coming together to develop collaborative place-based visions for the ecological restoration of our land and seas, which catalyse the economic restoration of communities. We believe that a new and thriving ecosystem of employment can be built around the healing and rewilding of nature. For example, recent analysis by Rewilding Britain reveals that, across England, rewilding projects have resulted in a **54 per cent increase in full-time-equivalent jobs.** Not only has the number of jobs increased, so has their diversity. Rewilding can enrich lives and help us to reconnect with wild nature while providing a sustainable future for local communities.

Rewilding enables us to begin to heal some of the great damage we have inflicted on the living world and, with it, the wounds we have inflicted on ourselves. And this could be our best defence against despair. **We can replace our silent spring with a raucous summer.'**

CLARENCE BIODIVERSITY IN GLOBAL SPOTLIGHT

September 06, 2023 THE CLARENCE VALLEY INDEPENDENT Issue: Nº. 1473/421 Wednesday 06.09.2023

Caption: Bellingen based ecologist Mark Graham lead 30 of the world's leading botanists on a tour of the Clarence Valley last week prior to this week's International Association for Vegetation Science 65th annual symposium at Coffs Harbour. Image: contributed

RODNEY STEVENS

The globally unique extraordinary biodiversity of the Clarence Valley has been on show for 30 of the world's top botanists who have sampled the region's spectacular flora from the headwaters of the Clarence River to Yuraygir National Park.

The botanists have descended on the region to attend the International Association for Vegetation Science 65th Annual Symposium, which is being held in Coffs Harbour this week.

Tour director for the International Association of Vegetation Scientists, a world industry group for botanists and vegetational experts, ecologist Mark Graham said last week he led 30 of the world's leading botanists on a discovery tour around the region.

"We travelled from Coffs Harbour and Dorrigo, through to the high parts of the Clarence River on the Dorrigo plateau, Point Lookout, the Orara Valley, through to the coastal parts of Yuraygir National Park to Yamba, then to Tabbimoble and the Border Ranges, then we cut across from Kyogle to the Nightcap Range and Lennox Head, then we go to Iluka on our way back," he said.

"These botanists come from 13 or 14 different nations, they are esteemed experts who research and publish around the world, and they are absolutely loving experiencing the botany of the Clarence Valley and the adjoining valleys."

Mr Graham said the Clarence Valley and surrounding locations were chosen to explore as it is one of the most biodiverse environments on earth.

"It has thousands of native plant species, the best examples in all evolution of eucalypt forests and rainforests and heathlands," he said.

"Yesterday we passed though and identified about 42 species of eucalypts, which was a source of great wonder for the participants and for some of that we were finding a different eucalypt every minute.

"It's been amazing, these are world class botanical experiences."

In addition to the botanists experiencing these globally significant wonders, Mr Graham said they were also looking at native vegetation clearance, industrial logging, weed invasion and fire, to look at the ways of managing biodiversity.

"Some of this will be discussed at the conference and the intention is these esteemed guests will learn about management of our globally significant biodiversity," he said.

"It's a learning experience that may then help them apply lessons in their own nations and in their research collaborations around the world."

Exploring in the lead up to the congress has given the botanists a new appreciation of the incredible biodiversity of the region, while understanding the challenges faced to maintain the biodiversity.

Mr Graham said there was strong support for ending logging on publicly owned land from the international experts on the tour.

"The delegates and the participants have been absolutely astonished by what they have seen, their experiences, but they've been really horrified at the logging they've seen done by the Forestry Corporation and they have also been alarmed by native vegetation clearance," he said.

"In particular, the logging on the Dorrigo plateau in the regional water supply catchment area and the conference delegates want to make a statement about that expressing their international condemnation of the Forestry Corporation's industrial logging practices.

"We looked at a number of areas that were recently logged and there was a great sense of horror and disgust.

"These are forest management experts from multiple nations in the European Union, in North America and in south-east Asia and they are gobsmacked that the NSW government would treat forests as the Forestry Corporation does."

From the incredible sights the botanists had witnessed, Mr Graham said there was the opportunity for the Clarence Valley to introduce tourists to its botanical wonderland.

"It's a real honour and a great delight that we are able to host this great opportunity, the botany that we are seeing is world class in terms of the plant diversity, the nature, the biodiversity and there are amazing opportunities for the Clarence Valley to have tourists come to the valley to explore this amazing botanical wonderland," he said.

"There are amazing tourist opportunities for our botany because we are so special on a global scale, and we can make money from looking after our bushland.

"I am hoping to promote further that we might bring more and more people to the region to look at the wonders that we live amongst, day in, day out."