

## BIODIVERSITY

*Our world is at a critical crossroad. Our very future and the existence of life depend upon us transcending our limitations by evolving solutions, which are at least one step above the thinking that created our problems.*

Dr Eugene Fernandez, 2014

### SUMMARY

This section proposes the certainty that the Great Southern Forest in southeast NSW would help to halt Australia's increasing rate of native species extinction. It presents a snapshot of national, state and local faunal extinction problem; shows where Australia sits comparatively on the global deforestation front; reports on advice from the WWF; presents accounts of local changing forest integrity; discusses the need for connectivity; explores Environment Pollution Licence breaches and the impact of logging on downstream health.

*If business as usual continues, we will see more Australian species disappear.*  
WWF-Australia CEO Dermot O'Gorman

### Habitat and Species Loss

#### Australia on the World Stage

The Australian Wildlife Conservancy ('AWC') states that Australia is one of the most important nations on Earth for biodiversity. In fact, Australia is one of only 17 'megadiverse' nations and is home to more species than any other developed country. Most of Australia's wildlife is found nowhere else in the world, making its conservation even more important. 87% of our mammal species, 93% of reptiles, 94% of frogs and 45% of our bird species are found only in Australia. The southern forest region ('SFR') hosts many endangered hollows-dependent fauna such as the Yellow Bellied Glider and the Powerful Owl. When the fragile and defenceless Greater Glider loses its home tree it gives up, goes to ground and a predator takes it. Native forest logging destroys this essential wildlife habitat and rotation lengths are too short to allow hollows to form. Hollows don't form in eucalypts younger than 100 years and some species need hollows-bearing trees older than 150 years.

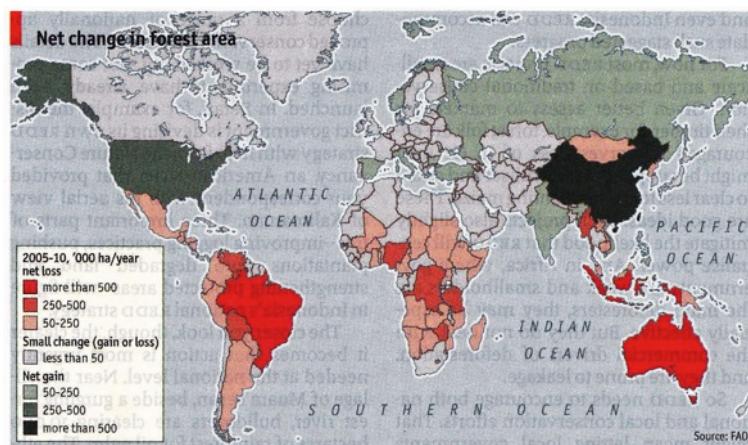
Ironically, the Commonwealth opposes firewood harvesting because Red-tailed Black-Cockatoo, Swift Parrot, and Superb Parrot live in hollows-bearing trees<sup>1</sup>, yet condones logging of hollows-bearing trees in native forests for woodchips. Mature and old hollows-bearing trees also provide flowers, nectar, fruit and seeds and a complex substrate that supplies diverse habitats for invertebrate populations<sup>2</sup>.

Australia is facing an extinction crisis. Australia has the worst mammal extinction rate in the world: 30 native mammals have become extinct since European settlement. To put this in a global context, 1 out of 3 mammal extinctions in the last 400 years have occurred in Australia. More than 1,700 species of animals and plants are listed by the Australian Government as being at risk of extinction. Around 30% of our surviving (non-bat) mammal species are threatened with extinction.

The primary factors causing this loss of wildlife include:

- feral cats and foxes, for example, feral cats kill an estimated 75 million native animals every night across Australia.
- feral herbivores including pigs, goats, rabbits, donkeys, horses, camels, buffalo and feral cattle.
- changes in fire regimes, especially an increase in the extent and severity of wildfires.
- clearing native vegetation and weeds.<sup>3</sup>

Australia continues to use forest and landscape management practices which the world acknowledges are counterproductive to the health of the planet. Fifty percent of our forests have been degraded since colonisation. Waterways have been silted, soil has been lost, forests have become dryer, species have become extinct, imported species have taken over and caused havoc. Natural wet forests (well over 100 years old) are being reduced to more fire-prone dry forests (under 50 years old). Australia's unique hollows-dependent animals are in decline because hollows don't normally appear in Eucalypts younger than 100 years and some species need hollows in trees to be more than 150 years old. Smith's<sup>4</sup> study on forest loss complements the AWC's findings that Australia has the highest mammalian extinction rate in the world.



Map 1: Net changes in forest area 2005—2010 shows Australia's forest loss is one of the world's worst.

In April 2015, the World Wildlife Fund's (WWF) listed Australia as "one of 11 places around the world that will account for 80 per cent of global forest loss by 2030".<sup>5</sup> Thus, eastern Australia joins other deforestation fronts in the Amazon, the Atlantic Forest and Gran Chaco, Borneo, the Cerrado, Choco-Darien, the Congo Basin, East Africa, Greater Mekong, New Guinea and Sumatra. This appalling statistic is a direct reflection of Australia's failure to conserve our natural heritage. 227 864 ha of State Forests in the SFR are logged. Only 18% of temperate forests and rainforests in NSW and Queensland are protected.

WWF-Australia's CEO, Dermot O'Gorman, said the WWF report puts Australia right up there with the worst places for deforestation in the world. O'Gorman said:

If business as usual continues, we will see more Australian species disappear as well as the continuing decline of our water, topsoil and local and regional climate.

It is ironic, given community sensitivity about using products derived from plantations (and orangutan habitat loss) in Borneo for palm oil, that there is less government responsiveness to Australia's native forest loss for woodchips (and koala habitat loss). Barcode scanners for

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identifying products from palm oil plantations are available. A scanner Ap for identifying products from Australia's native forests may alter consumers' purchasing choices.

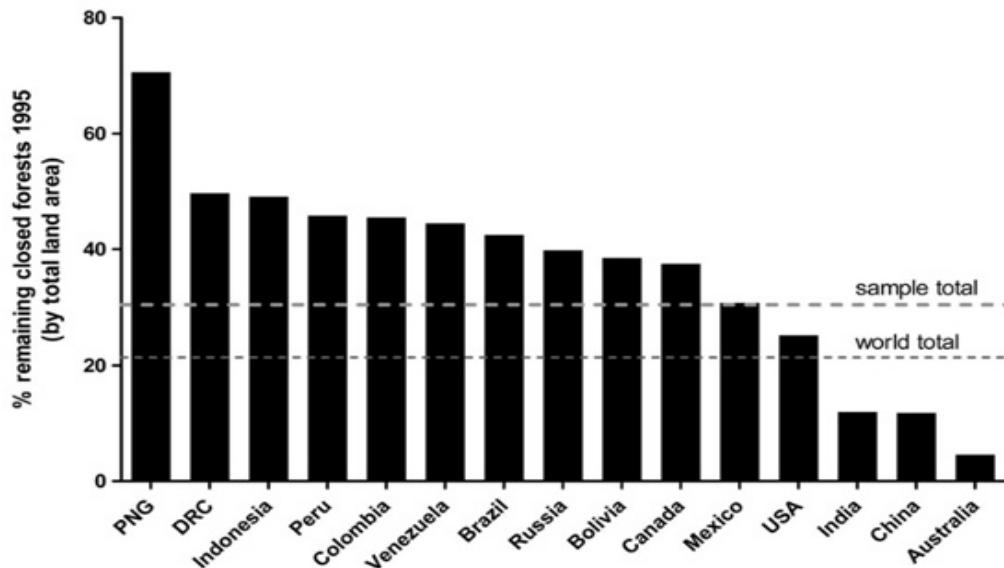
O'Gorman praised the release last year of the Australian Government's draft Asia Pacific Rainforest Recovery Plan, which aims to provide a regional commitment to reduce rainforest loss in places like Borneo. He stated:

But we also need to tackle deforestation in our own backyard. With better planning, management and collaboration at a landscape scale, we can sustainably increase production and meet local development needs, while conserving critical ecosystems.<sup>6</sup>

Victoria's Great Forest National Park (GFNP) aims to protect the critically endangered Leadbeaters Possum by protecting State Forests of Mountain Ash habitat. The State Labor Environment Minister is keen to help. Federal Liberal Member The Hon. Greg Hunt suggested funding with Emissions Reduction Fund (ERF) money and twice called on the Victorian Government to take action.

The Great Southern Forest responds to these ideals by proposing State Forests become large protected areas. Forest management would then be driven by climate sensitive ideals based on economics, jobs, tourism, carbon, forest restoration, habitat and wildlife.

Graph 1<sup>7</sup> shows that Australia has the lowest remaining closed forest areas as a percentage of total land area (4.6%) and is much lower than the sample (30.4%) and world (21.4%) totals. DRC = Democratic Republic of Congo; PNG = Papua New Guinea.



Graph 1: Percentage of remaining closed forests by country for 15 countries sampled in 1995

### New South Wales

Being one of the first regions settled by Europeans and having generally a higher human population than most other parts of the country, much of the removal and damage to forest ecosystems of NSW happened during the 19th century. The most expansive and rapid initial damage occurred on the most fertile soils where agriculture was most favoured, with the less-productive ecosystems within the sandstone and poorest soil areas being left largely intact<sup>8</sup>. Even as late as from 1995 to 2005, NSW had the second highest aver-age proportional land-

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clearance rates among Australia's states and territories, and as of 2009, it is estimated that the State had a total remaining 26 208 000 ha of native forest or 33% of its total area.<sup>9</sup>

Habitat loss throughout NSW has resulted in koalas disappearing from 75% of their former range. NSW has over 1 000 threatened species. The WWF report states that the NSW Government—which has elsewhere 'committed to enhancing the State's biodiversity for the benefit of current and future generations'<sup>10</sup>—is repealing clearing protections, which could re-ignite the single biggest threat to native species in that state.



Image 1: Koalas were recently listed vulnerable to extinction due to deforestation. World Wildlife Fund Report, 2015

### The Changing Integrity of State Forests

It has been 228 years since European settlement in Australia. The eastern forests have changed from wet temperate to dry as we progressively logged, cleared and disconnected these once magnificent, ancient forests. Forests need to function as One Big System. The loss of diversity of all species has exacerbated the forests' inability to literally turn themselves over, to enrich soils, to sequester carbon, to produce rain, to support oxygen, to store water and stop downstream erosion affecting shell and fish stocks in the ocean.

#### Southeast NSW

*An imaginative wildlife management program...could do much to halt the loss of original habitat...*

The WWF Report<sup>11</sup> recommends a range of solutions for stopping deforestation which complements the ideals of the Great Southern Forest and should be applied to protect the State Forests in southeast NSW. These include to:

- promote sustainable forest management practices that provide an economic alternative to forest conversion

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- establish expanded, strengthened and well-connected networks of protected areas
- remove unsustainably produced agriculture and forestry products from global supply chains
- strengthen and clarify land use rights, and
- establish mechanisms that place greater value on ecosystem services like water quality, soil stabilization, erosion control and climate change mitigation.

Within our carbon rich forests of southeast NSW, decades of native forest destruction and consequent harmful effects on biodiversity including soil, water, carbon and wildlife; habitat trees not regrowing after logging; fragmentation of landscapes; canopy reduction increasing susceptibility to wildfire; and, emergence of degraded and uninhabitable ecosystems support Smith's <sup>12</sup> study on forest loss that Australia has the highest mammalian extinction rate in the world.

### Bega Valley

An historical review of the ecological impacts of post-European settlement in the Bega district, NSW, Lunney and Leary (1988) explained that:

Most native mammal populations of the Bega district are now confined to the forests on the hilly, least arable country with low-nutrient soils. It is not surprising that most species are currently uncommon or rare. The accumulated evidence demonstrates that European settlement resulted in a decline of all native mammal populations, and the [local] extinction of at least six species of mammals: the eastern quoll *Dasyurus viverrinus*; a rat kangaroo, probably *Bettongia gaimardi*; two 'pademelons', *Macropus parma* and *Thylogale thetis*; the wallaroo *Macropus robustus* and the brush-tailed phascogale *Phascogale tapoatafa*. Four other species of mammals—the koala *Phascolarctos cinereus*, the southern brown bandicoot *Isoodon obesulus*, the spotted-tailed quoll *Dasyurus maculatus*, and the little red flying-fox *Pteropus scapulatus*—have become rare and are threatened with extinction in the Bega district.

Most of the regional losses and declines of mammal species documented by Lunney and Leary for the Bega district were the result of habitat loss and introduced species (in particular, hares, rabbits, and foxes). Lunney and Leary also noted that:

...any initiatives which resulted in reclamation of parts of the valley, such as marginal farmland, for conversion to original forest, would benefit many species. Most importantly, an imaginative wildlife management programme...could do much to halt the loss of original habitat...

The Bega district story has been replicated throughout eastern Australia.<sup>13</sup>

### Eyewitness Account of the Murrah State Forest:

An eyewitness describes the general situation of how our forests were and how they have now become in *Witness to forest change over 30 years*.

I am not a scientist but I would like to speak to you as an eyewitness who has lived in Murrah State Forest for over 30 years.

When we first went there we were besieged by wildlife. The abundance was just amazing. Nothing we planted survived the possums, wallabies, and parrots. The



Great Southern Forest

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bandicoots dug things up and the wombats caved in the best of fences. We kept bees at the time and the sugar gliders; several kinds came in groups at the first sniff of honey, and the bush rats and mice moved in, and bats. We could not leave the windows open in summer because of possums at night, and goannas by day. The bird life was abundant, and hugely varied. The bush just hummed with life. The river had a stony bottom and lush aquatic plant life, small fish and deep pools with eels and redfin, bass, the native cray, and the marron.

Sleeper and mine prop cutters had been through and there had been selective logging. We found huge old stumps. The integrity of the forest had survived these earlier incursions. They had been moderate. Then came the logging for woodchips. After only a short time the river began to silt up. It was gradual at first. Then after a heavy rain event massive amounts of soil came off the slopes. The logging went on relentlessly and the river just filled with sand, over the next 15 years.

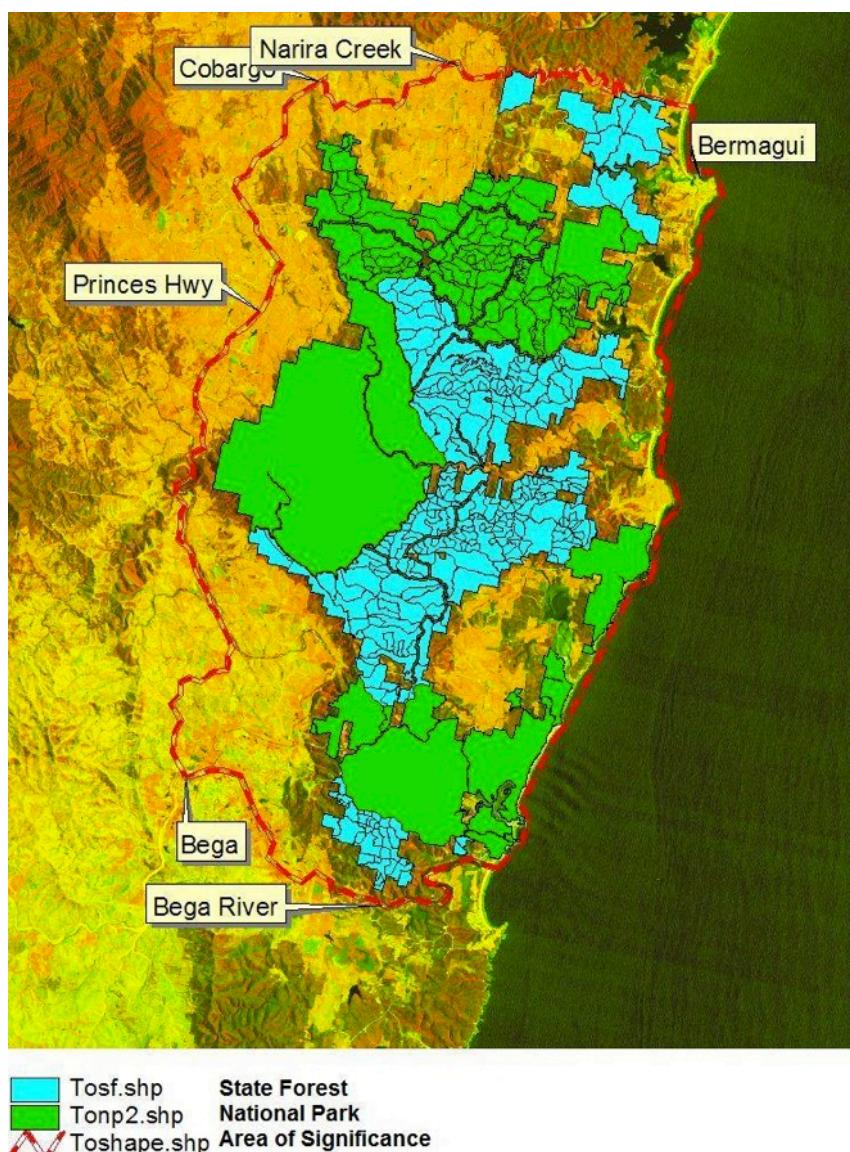
There are no more deep pools and mostly the water is not even visible but runs deep under the sand which is all moving inevitably to the estuary. The wildlife is now so diminished that I can leave home at 6 am and not see one living creature. The poisoning of wildlife after a coupe is logged to stop the regrowth being eaten has been very successful. The flocks of parrots that came in hundreds are now less than a dozen. We only rarely hear the owls and gliders at night. The koala colony in the gully behind us vanished after ForestsNSW demolished their habitat. Of course the follow up burning would have made certain.

Many eucalypt-dependant species like potoroo, Christmas beetles, and cicadas have also gone. The diversity of the forests tree species has been intentionally reduced to a virtual monoculture of silver top ash (*e. sieberi*) and the highly volatile forest casuarinas which outcompete other eucalypt species in a mixed forest. FNSW and DECC knew full well of the presence of those koalas. Just as they know full well that koalas are in the Bermagui compartments now targeted for logging. [The Bermagui compartments have been logged since this was written.] This is a very sorry tale to tell and in the time frame of just 30 odd years. It is just a moment in the life of a great ecosystem. It is a modern tragedy and an environmental crime. This is the story of virtually all our coastal forests and water catchments.<sup>14</sup>

Suzanne Foulkes

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### Fragmentation versus Connectivity



Map 2: This map shows how landscapes are fragmented by the State Forests which adjoin Biamanga National Park. South East Forest Rescue.

*...It's all connected. We connect everything together. It wouldn't be a story; we wouldn't talk about it if it weren't connected.<sup>15</sup>*

Clearing of native vegetation results in fragmentation, the process by which initially contiguous areas of habitat are separated into a number of smaller areas. Fragmentation impacts include the creation of small isolated populations with limited gene flow between populations, leading to inbreeding, depression and reduced potential to adapt to environmental change.

Fragmentation also leads to the loss or severe modification of the interactions between species, including those interactions that are important for the survival of species. Small isolated populations may be subject to local extinction from stochastic events. The hostility of the surrounding (cleared) environment is a major factor in limiting movement of organisms

between patches. The physical environment within patches may be altered as a result of creation of edges and anthropogenic influences.

Important variables that must be considered in assessing the impacts of fragmentation include the distance apart of the fragments, the area of the fragments and their shape. Increasing the edge/area ratio increases the impacts of edge effects such as changed microclimate and susceptibility to invasion by non-indigenous species. This response of particular species to fragmentation is affected by the mobility of the species (both as adult and in dispersal stages) and the scale of the fragmentation relative to the environmental scale of the species habitat.<sup>16</sup>

<sup>16</sup>

Map 2 shows how logging coupes in State Forests fragment landscapes. In this particular area, Biamanga National Park, forests are still recovering from severe pre-RFA logging events. Turquoise coloured State Forests are divided into logging coupes. Murrah State Forest seems to me to be a 'dead' forest as no native animals are seen and birdcalls are scant. This forest has been overlogged and loggers have stated that they doubt it will ever recover.



Image 2: Local community in silent protest at Bermagui, 2010. Sam Davis

## Logging Breaches

### Case Study, Environment Pollution Licence (EPL)

*There's plenty of paper protection, and that is great, but it is not being adhered to on the ground. We have endangered ecological communities being logged we have rocky outcrops being logged, we have you know breach after breach after breach.*

The following post-logging interview by an Australian Broadcasting Commission journalist, with two conservationists at Tantawangalo State Forest, highlights the nature of breaches of the EPL in logging operations. It was held in a now desolate logged compartment in southeast NSW where post-logging erosion had caused a logging truck roadway to collapse.<sup>17</sup> The interview demonstrates that the native forest logging sector's on-ground operations are not squeaky

clean. The actual process of destroying<sup>1</sup> a tree is exacerbated by the consequential damage caused by the need to access it and the damage left after its extraction.

This interview describes multiple breaches of the EPL in just one logged coup. The conservationists being interviewed would be hard pressed to say that 'this logging coup is a one off situation'.



Image 3: Stills from Video clip

Interview begins.

Strong female voice's echoing yell across a hollow treeless 'amphitheatre' which was once a forest from A1 to A2:

### **"968 EPL breach"**

Q: What are we looking at here?

A1: It is an EPL breach, a breach of the pollution licence that ForestNSW (FNSW) log under. When we find a breach we GPS the coordinates and write them down as well and take a photo and then send that in to the Office Environment & Heritage (OEH), the NSW regulator.

Q: And what is the nature of this particular breach here?

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<sup>1</sup> The terms 'harvesting', 'logging', 'felling', 'clear-felling', etc are all euphemisms for 'killing' which is what actually happens. Forests are killed. If you harvest something, it means you planted it to harvest and replant.

- A1: It is erosion, it is washed away and obviously the alleged measures FNSW put in place to stop this kind of erosion happening have failed. So we have failure of the actual road itself.
- A2: Oh yeah, they'd probably argue that "the storm washed it away and that it didn't have the usual planning capacity to cope, so it is just an unfortunate occurrence that the road is washed away" and the road is also washed away down there at the creek crossing which wasn't even sort of a mapped crossing of any description according to the harvest map.
- A1: But these compartments were designated 3BC for water catchment, surely they have some sort of you know measures in place for big storm events.
- A2: It does show there's some design flaw in what they do.
- Q: Would it be the need to do with lack of follow up after rain events?
- A2: Obviously they haven't followed up to try to remediate the episodes here.
- A1: That happens quite often so we go into a compartment and we find this and we tell the regulator and the regulator tells forestry and then maybe forestry will come and fix the road.
- A1: OK so we've found some tracks that may or may not be Spotted Quoll tracks they [camera clicking] are endangered on the EPBC Act List, they are nationally endangered. On the harvest plan according to FNSW there were no animals in this compartment; however, we did find Flame Robins when were here last time with the OEH, so its interesting. Sometimes I wonder if you don't look for something you wont find it.
- A1: So I'm taking a photo of this orchid. I mean the reason that rocky outcrops are important is because there are five flora that specifically only like to live around a rock; they've got to be kept cool and moist. Basically what we do is that if we find stuff that looks interesting we give it to botanists, ecologists or the OEH and ask them, what is this thing?
- A1: So we go into a compartment and we look for things like debris around the retained trees. So Forestry must keep a certain amount of habitat trees or recruitment trees in case the habitat tree dies and what is happening in every compartment we have been in so far is that there is debris pushed up against trees that have been retained. Now that must not sound like much...well, so what? However, once forestry have logged then they burn and if debris is pushed up against a tree it will catch fire. So quite often these habitat trees that they have marked to be retained end up dying.



Image 4: Logged debris pushed against a tree which caught fire. Bermagui State Forest. 2010.

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Image 5: Habitat? Trees, Gnupa State Forest.

Of course the other issue is that we've found quite often that trees haven't been marked up—there's no marking up in the compartment. FNSW currently say their rotation times are between 5 and 30 years. Some compartments they are going into again and again and again and they say that is because the State Forest Officer got the markups wrong or you know...yeah, it is definitely quite a lot of breaches that we've found in lots of compartments. Things like logging in creeks, things like rocky outcrops. It is well worth going and having a look at the regulations and seeing what they can and what they cannot do.

Q: Do you see evidence of the prescriptions to some degree do work?

A1: As you can see by this compartment, and this one is no different to really any other compartment we've been in, I don't believe that the prescriptions are being adhered to. I don't think that there is much protection for our forests on ground. There's plenty of paper protection, and that is great, but it is not being adhered to on the ground. We have endangered ecological communities being logged we have rocky outcrops being logged, we have you know breach after breach after breach.

Q: But is the percentage of breaches greater the more remote the operation is?

A1: Absolutely, absolutely. However, and what is interesting is that in compartments that say were quite, or are quite, in the public eye—quite close to you know residences, say Bermagui 2001 2002, Mumbulla and with people on ground every day, it would be my understanding that if you had so much you know, of the spotlight on those compartments you would try to ensure that you did adhere to the prescriptions. However, even in those compartments where we had, say in Bermagui 2001 2002, they are surrounded by the Black Lagoon Marine sanctuary zone, and the marine sanctuary zone is the highest kind of protection that a marine area can have, but FNSW gave it a hard 50m buffer. However, they breached that and that is with people on ground saying "don't log".

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Image 6: Logging close to a Lagoon at Bermagui

So you know there's debris around retained habitat trees um I just find it really it is quite not understandable why it keeps happening. You know if penalties are low and if you are in a remote area and chance of being caught are low, then people will take risks so, I believe that you know, the penalties must be increased. Look basically what it comes down to is, whether they are abiding by the law or not, really is almost a moot point at this stage because what we know about climate change, the facts and the figures and the science says forest logging land degradation must stop if we are to protect the planet and protect our future. We can't eat money. So basically that's the bottom line for me. It is unsustainable.

- Q: Lets talk about the question of sustainability and whether logging is sustainable.
- A1: State forests are publicly owned, we the people of the State own the forests and they are held in trust by the government and they are supposed to be managed for the benefit of the public. We've been watching the Auditor General's (AG) Report year after year. And the AG has shown that the loss that FNSW are making, the economic loss has been increasing. So we went from, say, in 2008 to a \$14 m loss in the native forest logging sector, to a \$16m loss the year after that. Surely if an industry is running at such a loss, I would state at this stage that FNSW in their native forest logging sector is haemorrhaging money. That can't be in the public interest.
- Obviously any kind of logging should be sustainable. I don't believe native forest logging as we have it can be sustainable. FNSW were legislated, required to do their sustainable yield audits which means that they were required to provide data on what they could and couldn't log by 2004 in the Eden Region and by 2006 in the Southern Region, and they haven't done that. They are operating in the dark, so you know, from what we've seen on the ground, the forest is not regenerating, the devastation is quite immediate, once a forest is logged, it is never going to be the same.
- A1: These RFAs were to be reviewed from enactment in 2004 and 2006 and that didn't happen. They weren't reviewed. What the Government did was roll both Eden and Southern into one review process and that started in 2009 and it still hasn't been finalised. And now the AG has been requesting FNSW since 2009 for required data that still hasn't been provided to the AG so that's why I say that FNSW, whenever they make a statement about how sustainable they are, or how good the logging is, or when a minister makes a statement about how robust the RFAs are, whether it is a Commonwealth Minister or a State Minister, I would say they are erroneous because they are operating in the dark the data has not been provided. Not only have you started

with a flawed process then, to build on that it hasn't been reviewed and again I would suggest it is like surveys...if you don't want to find something...you don't look for it.

Q: Should Australia be sustainable in its timber supply and if so, what's the method?

A1: Our group's objective is to end native forest logging. With what we now know about the link between climate change and deforestation and land degradation, the time is over for business as usual. We need to stop native forest logging...there's enough plantation in Australia to service Australia's needs, both softwood and hardwood.

End of interview.

See: Appendix A: ForestNSW. Allegations, Failings and Penalties

South East Forest Rescue

## Water, Soil and Downstream Marine Health

There is evidence that logging is having a severe impact in the Eden and Southern RFA areas on water flows in rivers and tributaries.<sup>18</sup> This is consistent with studies which have demonstrated that logging practices can have serious impacts on the hydrology of forest ecosystems and water quality in some areas, resulting in downhill movement of disturbed soils, muddying of watercourses and the silting of lakes and dams.<sup>19</sup> Water is the highest value product that can be obtained from the native forest estate and so re-growth forests should be managed towards their old growth state.<sup>20</sup>

Logging also results in forests dominated by perpetually young trees that have much higher transpiration rates than mature forests, three times as high. High transpiration rates in immature forests starve the soil, streams, lakes and other vegetation of their 'normal' water supply for up to 150 years.

The removal of vegetative cover and litter lowers infiltration thereby increasing surface run-off. This is further increased by heavy machinery used in logging compacting the soil. Modern intensive logging practices, including extensive construction of roads, tracks, clearing for log-dump sites and clear felling logging methods expose the soil surface. This increases evaporative losses in the upper layer which forms a dry crust resistant to wetting.

Logging in southeast NSW typically results in up to 25% of a site being heavily disturbed and partly compacted, with at least 5% of the site so badly compacted that no regeneration can occur naturally. When forests are cut, the salinity of the soil can greatly increase. As a result, saline water draining from such areas can affect downstream or downslope water quality. Some slopes that are too steep for machinery are still being logged by other methods. The result of such practices includes:

- massive downhill movement of disturbed soils
- muddying of watercourses
- silting of lakes and dams
- death of scale fish and shellfish
- increased water supply costs from filtration and chlorinating.

Catchment studies have shown that discharge from run-off increases immediately after logging. For years later, a dense cover of even-aged regrowth vegetation uses far more water than a mature forest, and discharge is reduced. Studies in the Yambulla and Wallagaraugh catchments in southeast NSW indicate that water yield initially increases as a

result of industrial logging, for up to six years, and then declines steeply for about 20 years, only returning to pre-logging levels about 100 years after logging.<sup>21</sup>

A 16-year study of water yields in Eastern Australian forests of predominantly Sydney Blue Gum (*Eucalyptus saligna*) and Silvertop Ash (*E. sieberi*), showed water yield reductions of up to 600mm a year after 16 years in logged and regrowth forests compared with pre-logged forests.<sup>22</sup> Another study of *E. sieberi* stands, demonstrated that a 14-year old forest will transpire three times as much water as a 160-year old *sieberi* forest.<sup>23</sup> These high transpiration rates in immature forests starve the soil, streams, lakes and other forms of vegetation of their 'normal' water supply for up to 150 years.

In the Eden area, the Nullica River and its many tributaries in the Nullica State Forest now rarely flow. In the Southern RFA area, the Tuross River also ceases to flow during prolonged droughts. Given the dependence of coastal communities on hinterland catchment for reticulated water, continued integrated logging has significant implications for the maintenance of water supplies.

The loss of soil's water-holding capacity following logging, and the loss of leaf cover due to vegetation removal and burning, result in logged forests drying out to a greater degree than unlogged forests. They are therefore more at risk from fire. Wildfire and post-logging burning are recognised as the greatest precursors to changes in water chemistry in logged catchments. The greater density and homogeneity of crown height in a regrowth forest also increases fire hazard. (See Fire section)

From a water supply perspective, the intensive clearfell logging practice in the Eden and East Gippsland RFA areas fails to make economic sense. Research undertaken in the Melbourne water catchment in the 1990s demonstrated that logging activities were providing much lower economic returns than the value of water lost as a result of that logging.<sup>24</sup> The principles illustrated by the Melbourne study are particularly relevant to southeast Australia where population growth and tourism are pushing water supplies to their limits.

From studies in NSW it is reasonable to speculate that the magnitude of catchment water yield is dependent on mean annual rainfall.<sup>25</sup> It is therefore unacceptable that the NSW and Australian Governments continue to jeopardize the scarce and highly valuable water resource by continuing uneconomic logging of the region's native forests, particularly given occurrence of severe and prolonged drought, climate change, and the expected increase in the NSW South Coast population by 74 000 over the next 25 years.<sup>26</sup>

Bronte Somerset

## CONCLUSION

It is clear to see from the empirical, scientific and anecdotal evidence that the current practices of logging are not working towards conserving the biodiversity of the environment in all respects. In fact, quite the opposite is obvious. The natural diversity of fauna and flora is that which regenerates health in any native ecosystem. A quick recap of the impacts show massive downhill movement of disturbed soils, muddying of watercourses, silting of lakes and dams, death of scale fish and shellfish, not to mention increased water supply costs from filtration and chlorinating.

State forests are publicly owned, in Commons, which means that our interests are paramount and determined by our input. Preservation of our natural biodiversity sustains the health of our communities and our planet. Simply put, this indicates that we need to avoid any breaches of EPL regulations, which means ending all logging of native forests at our earliest possible time.

## Appendix A: ForestNSW. Allegations, Failings and Penalties

The Office of Environment and Heritage have advised the ABC that between July 2010 and November 2011 OE&H received 27 complaints from the public regarding the Eden region and 19 complaints regarding the Southern region.<sup>27</sup>

These complaints mainly related to:

- alleged failures to retain and protection Hollow-bearing and recruitment trees
- alleged failures to undertake adequate threatened species surveys
- alleged failure to protect threatened species habitat in the field
- alleged failures to protect filter strips and implement drainage on roads and snig machinery tracks

In response, OE&H conducted eight audits in the Eden Region and identified a total of 50 breaches of the IFOA: 47 of the breaches were in relation to the Threatened Species Licence and three were breaches of the Environment Protection Licence.

Seven audits in the Southern Region identified a total of 19 breaches of the IFOA: five breaches were of the Threatened Species Licence and 14 breaches of the Environment Protection Licence.

OE&H said that breaches across both regions included:

- Failure to protect landscape features such as rainforest, rocky outcrops and wetlands
- Failure to conduct surveys and record required information in survey reports in accordance with the conditions of Threatened Species Licence conditions
- Failure to adequately select and protect hollow-bearing and recruitment trees
- Failure to construct and maintain road drainage structures in accordance with the Environment Protection Licence specifications
- Failure to record required information in planning documentation

OE&H requested that we note: "While OEH may investigate a compliant received via an investigation, breaches found on an audit may not necessarily be those that are 'alleged breaches' in a complaint received. OEH regulators may identify other breaches in the field that have not been identified by a complainant."

As a result of public complaints investigated since 1 July 2010, as well as audits undertaken by OE&H independent of complaints from the public, action taken was:

Forests NSW in the Eden region has received four Penalty Infringement Notices, five warning letters, one advisory letter, two Clean Up Notice and one remedial order. In addition, OE&H has successfully prosecuted Forest NSW for potential harm to an endangered species (the Smoky Mouse).

Forests NSW in the Southern region has received two PINs, three warning letters, two advisory letters and one request to conduct remedial work.

Forests NSW are also required to follow their own auditing process and to self-report breaches to the Office of Environment and Heritage.

In response to the question of how many self-reported breaches by Forests NSW were received across both regions OE&H advised that Forests NSW in Eden region reported two water pollution incidents to OEH in the 2010/2011 financial year.

South East Forest Rescue

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- <sup>2</sup> Loss of Hollow-bearing Trees - key threatening process determination. (2011) NSW Scientific Committee - final determination. Office of Environment and Heritage. <http://www.environment.nsw.gov.au/determinations/lossofhollowtreesktp.htm>
- <sup>3</sup> Australian Wildlife Conservancy. <http://www.australianwildlife.org/wildlife.aspx>
- <sup>4</sup> Smith, B. *Australia's global footprint one of the worst*. United Nations' International Year of Biodiversity. May 6, 2010.
- <sup>5</sup> World Wildlife Fund's (WWF) *International Living Forests Report: Saving Forests at Risk* (2015) [http://awsassets.wwf.org.au/downloads/fl022\\_living\\_forests\\_report\\_chapter5\\_28apr15.pdf](http://awsassets.wwf.org.au/downloads/fl022_living_forests_report_chapter5_28apr15.pdf)
- <sup>6</sup> World Wildlife Fund's (WWF) *International Living Forests Report: Saving Forests at Risk* (2015) [http://awsassets.wwf.org.au/downloads/fl022\\_living\\_forests\\_report\\_chapter5\\_28apr15.pdf](http://awsassets.wwf.org.au/downloads/fl022_living_forests_report_chapter5_28apr15.pdf)
- <sup>7</sup> Singh, A., Shi, H., Foresman, T. (2001) Status of the world's remaining closed forests: an assessment using satellite data and policy options. *Ambio* 30:67–9.
- <sup>8</sup> Braithwaite LW (1996) Conservation of arboreal herbivores: the Australian scene. *Aust J Ecol.* 21:21–30.
- <sup>9</sup> Bradshaw, C.J.A. (2012). Little left to lose: deforestation and forest degradation in Australia since European colonization. *Journal of Plant Ecology*. 5:1
- <sup>10</sup> NSW Farming: Investing Locally, Connecting Globally – Memorandum of Understanding. 25 March 2015.
- <sup>11</sup> World Wildlife Fund's (WWF) *International Living Forests Report: Saving Forests at Risk* (2015) [http://awsassets.wwf.org.au/downloads/fl022\\_living\\_forests\\_report\\_chapter5\\_28apr15.pdf](http://awsassets.wwf.org.au/downloads/fl022_living_forests_report_chapter5_28apr15.pdf)
- <sup>12</sup> Smith, B. *Australia's global footprint one of the worst*. United Nations' International Year of Biodiversity. May 6, 2010.
- <sup>13</sup> Lunney D and Leary T 1988, 'The impact on native mammals of land-use changes and exotic species in the Bega district, New South Wales, since settlement', *Australian Journal of Ecology* 13, pp 67–92.
- <sup>14</sup> Witness to forest change over 30 years: an eyewitness account. Suzanne Foulkes
- <sup>15</sup> Plan of Management, Yuin Mountain Parks. (2014) Office of Environment and Heritage NSW. p.95
- <sup>16</sup> Department of Environment and Heritage, NSW State Government. <http://www.environment.nsw.gov.au/determinations/ClearingNativeVegKTPListing.htm>
- <sup>17</sup> Logging the South East Forests, Part 7. Bill Brown. ABC. 2012 <http://www.abc.net.au/local/stories/2011/12/05/3384125.htm>
- <sup>18</sup> Cornish, P.M. & Vertessy, R.A. 15<sup>th</sup> February 2001. Forest age-induced changes in evapotranspiration and water yield in eucalypt forest. (2001) *Journal of Hydrology*. 242 (1-2) 43-63 and Roberts, S., Vertessy, R.A. & Grayson, R. Transpiration from *Eucalyptus sieberi* forests of different age. (2001) *Forest Ecology and Management*. 143 (1-3) 153-161.
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