

Forest Practices news

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Spotlight on tree ferns: Tasmania's celebrity plants

Fred Duncan, Senior Botanist, Forest Practices Board

What is David Attenborough's favourite plant? Score one point if you said manfern (or *Dicksonia antarctica* if you are technically minded). And which Royal Personage has a magnificent grove of them at his estate in the English countryside. Score another point if you answered HRH Prince Charles.

Yet, in Tasmania, they are just part of the scenery. They would be one of our most abundant forest species, with an estimated population of about 65 million plants in the state (see article on page 12).

David Attenborough wrote about his manfern in the English gardening magazine *Gardens Illustrated* (February/March 1997). He confessed that he had agonised about buying it (from a London shop specialising in palms), because they were "endangered in the wild". However, when he discovered that it had an export permit and had been collected from an area of the Tasmanian bush that was being cleared under licence, he could resist no longer. Obviously, his disposable income

was also not a limiting factor – in 1997 a mature plant in the UK could cost from £99 to £599 (about \$A1500).

His delight in the manfern is evident from the article in *Gardens Illustrated*...

"Now it stands beside my front door. During the winter, its fronds become tattered, but I stuff straw in the top to protect the embryonic leaf buds from the worst of the frost. Around April, I start gently groping in the russet-coloured nest of hair at the top that looks not unlike an orang-utan's armpit. I can just detect the humps of the nascent leaf buds, and count them anxiously. And then, in May, the action starts. The croziers begin to rise. Rapidly, almost hourly, they

uncurl. Their movement is not quite fast enough to see with the naked eye, but look away for an hour or two and you'd swear that you could see an increase.... To me, it is indeed a fragment of jungle, a marvellous reminder of the undomesticated unordered wildernesses of the world that have given me so much delight and wonder throughout my life."

This edition of *FPNews* puts the spotlight on Tasmania's five species of trunked ferns – manfern (or soft tree fern); rough tree fern; slender tree fern; skirted tree fern and king fern. (Note that the key to tree-ferns on page 9 does not require users to be familiar with the characteristics of orang-utans' armpits.)

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LIFE ON EARTH....



Developments

Recent fines

Graham Wilkinson, Chief Forest Practices Officer, Forest Practices Board

Forest Practices Officers will know that the emphasis of the forest practices system is to achieve high environmental standards through an emphasis on planning, training and education.

Where problems arise, we expect that they will be dealt with through early detection and corrective action. Corrective action may mean remedial treatment in the forest. Most importantly, it also means reviewing and improving systems to ensure that similar errors do not arise in the future. From time to time, serious errors arise that generally reflect inadequate systems or insufficient care. In these cases, penalties may be appropriate to reinforce the importance that we all place on striving for best practice.

Fines imposed for offences under the *Forest Practices Act* during the year 2001/2002 were as follows-

- Rodney Blake (landowner) and Danny Woods (contractor) – the Board imposed total fines of \$1,000 under s.47B of the *Forest Practices Act* for offences related to the harvesting of 70 tonnes of timber without a current Forest Practices Plan. The land was previously covered by a FPP but operations did not commence during the term of the FPP. When harvesting did commence, it was carried out within the streamside reserve of a class 3 stream, causing environmental harm. The alleged offences appear to have resulted from a lack of care and ignorance of the law, but the Board considered that a penalty was warranted to send a signal to landowners and contractors that such activity needs to strictly comply with the requirements of the Act.
- Forestry Tasmania (Bass District) – the Board imposed a fine of \$3,000 under s.47B of the Act for offences related to the harvesting of trees within a streamside reserve. The class 3 streamside reserve was incorrectly marked, resulting in the harvesting of trees to within 5 m of the stream over a 50 m section of the reserve. The offences did not result in substantial

environmental harm. However, the Board was disappointed that Forestry Tasmania had been aware of a potential problem with the marking of the streamside reserve and yet it had failed to check the marking prior to harvesting.

- Forest Enterprises Australia – the Board imposed a fine of \$1,000 for offences related to the application of herbicide to an area excluded from treatment under the provisions of a Forest Practices Plan. The error was the second incident involving the application of herbicides to areas excluded within the plan. There was no evidence of any environmental harm as a result of the spraying. The Board also acknowledged that the second spraying incident might have occurred partly because persons unknown removed the tapes marking the spray-exclusion area. Notwithstanding this, the Board was of the view that the systems used by FEA at that time were deficient.
- Maydena Contractors – the Board imposed a fine of \$1,750 for offences related to the harvesting of firewood on State forest outside the boundary of an FPP. The Board found that the contractors had not taken adequate care with respect to complying with the FPP. The Board noted that firewood operations have traditionally been regarded by some as being outside the forest practices system. In setting a penalty, the Board has placed the firewood industry very firmly on notice that it must fully comply with the requirements of the *Forest Practices Act*.
- Kelvin William Watson – was convicted under s.21 of the *Forest Practices Act* for cutting firewood on private land at Waterloo in an area reserved from harvesting under an FPP. The reserve was

originally included in the plan in order to protect a threatened species of stag beetle. The illegal cutting had been detected by an FPO who had stopped the operation before any major harm was done to the beetle's habitat. Magistrate Shan Tennent in the Huonville Court of Petty Sessions fined Mr Watson \$1,500 plus \$900 in costs. The Magistrate said that Mr Watson worked in the forest industry and should have read the plan and stayed outside the area of forest set aside to protect the beetle.

- Gunns – the Board imposed a fine of \$50,000 on Gunns for breaches relating to road works carried out on the Tasman Peninsula. The Board found that the road construction and drainage works were totally unacceptable, resulting in excessive sediment entering a major stream. The fine is the largest imposed to date by the Board and reflects the seriousness of the breaches. The Board took into account that Gunns had been very cooperative in carrying out remedial works at a cost of over \$80,000.

The Board also imposed a fine of \$2750 on Red Roo, the company employed by Gunns on the road works at Tasman Peninsula. Action is in progress against a second contractor. The Board noted that Gunns were primarily responsible for the supervision of the road works, but that this did not remove the responsibility of all associated contractors to ensure that their operators comply with the Code. The Board said that the industry could no longer tolerate operators who were not properly trained and competent in the requirements of the Forest Practices Code.

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Noticeboard

Forward Training Program – Forest Practices Board

Course (Contact)	Timing	Duration	Location	Course Content
Forest Botany (Fred Duncan/ Mark Wapstra)	November	1 day	Various locations	Train forest planners in the identification of forest flora
Fauna field days (Suzette Wood)	To be confirmed	1 day	Various	General information days on particular fauna issues
Forest Practices Officer refresher course (Chris Mitchell)	8-9 Oct 15-16 Oct 6-7 Nov 26-27 Nov	2 days each	- Hobart - Camdale - Launceston - Ross	Update existing FPOs on changes to forest practices system
Landscape Liaison Officer (Bruce Chetwynd)	Spring 2002	Two sessions of 2 days each	Various locations	Intensive training of selected Landscape Liaison Officers. Format will be workshop and field sessions with small groups
Forest practices training for supervisors (Chris Mitchell ¹)	Spring 2002	4 day	To be confirmed	General training in forest practices for FT and other supervisors
Fauna values and forest management (Suzette Wood)	28-30 Oct. 2002	3 days	NE Tas.	Train FPOs in procedures for threatened species
Forest Practices Manager training (Chris Mitchell)	Late 2002	1 day	To be confirmed	Update forest managers on requirements of the forest practices system
Forest Practices Officer course (Chris Mitchell)	Winter/ Spring 2003	11 days total	Various locations	Pre-requisite course for appointment as FPO

¹Course run jointly by Forestry Tasmania and Forest Practices Board

The (p)article board

Fred Duncan & Mark Wapstra, editors, FP News

Another edition of *FPNews* hits the press. We'd like to acknowledge David Hinley's contribution in getting the newsletter out – in fact this is the 17th production since issue 1.1, four years ago.

We hope that *FPNews* has been a good vehicle for exchanging information about forest practices in Tasmania. Some of our most interesting articles have come from FPOs working in the bush – describing techniques that they've tried, interesting things they've observed and applications of management prescriptions. But it's often the same FPOs who are making these contributions!!!

There are many times when we've heard experienced FPOs saying "I really should write that up for *FPNews*" or "that would make a great page 3 photo". But despite these good intentions, the editors have not had to delve deep into their box of rejection slips. Well, now is the time to send in that article or photo. The next *FPNews* is scheduled for December, and we are hoping for a big issue of Christmas Holiday Reading!

And, talking of celebrations, it's great to be able to report the safe arrival of Emily Wapstra.

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Soils

Catchment behaviour after logging

Peter McIntosh, Senior Soils and Water Scientist, Forest Practices Board

As a very broad generalisation, a mature forest in Tasmania will intercept, evaporate and transpire about 200 to 400 mm of water per year.

The actual amount depends on the forest type, the amount of water stored in the soil, the aspect, the silvicultural history, and a host of other factors. It follows that removing the forest cover will increase effective rainfall by the same amount as that previously intercepted by the trees.

Just how big this effect is was measured in Victoria, in a paired catchment study. Streamflows in the Picaninny catchment, which had 78% of its *Eucalyptus delegatensis* forest cleared in 1972, were compared with those in the adjacent Slip Creek catchment (unlogged control). The difference in streamflow between the two catchments was expressed as rainfall equivalents, in millimetres of rainfall (Figure 1). The study showed that clearfelling resulted in effective rainfall increasing by about 250 mm per year. This increase would have been greater if the catchment had been 100% clearfelled. The effect lasted six years. By year seven, and for every recorded year after that, the effective rainfall in the clearfelled and regenerated catchment was less than that in the control catchment. This is because after year six the

rapidly regenerating tree stand has a very large leaf area (more than a mature forest) and therefore transpires more water than a mature forest.

These catchment effects are important, not only for water yield, but for forest operations. The soils in clearfelled coupes with very young regeneration are wetter for longer – much of the rainfall is stored in soil, or in groundwater in deep porous rocks. An example from a catchment with jarrah (*E. marginata*) cover in western Australia (Figure 2) shows how logging can affect groundwater. The effect illustrated is extreme, and is unlikely to occur on the same scale in Tasmania. However, the study demonstrates the principle that a consequence of logging is that groundwater levels are raised, and only after the regenerating vegetation is growing at its maximum rate (three years under Western Australian conditions) does the groundwater level begin to decline.

At the coupe scale, the implications for forest operations of changed catchment behaviour after logging are:

- (1) expect soils to be much wetter after harvest – drainage lines may behave like Class 4 streams;
- (2) expect Class 4 streams to flow with more force, leading to more downcutting and bank erosion (Figure 3);
- (3) expect any erosion features (e.g. tunnel gullies or old landslides) to become active as groundwater rises and soils are saturated for longer;
- (4) expect more flow on roads in roadside drains, and batter collapse if batters have been cut in unconsolidated materials.

On the catchment scale, it makes sense to sequence harvest operations so that only a small proportion of a catchment is harvested in any 5-year period. Where companies have inherited large even-age plantations from a previous (less environmentally-sensitive) era, planning should make sure that coupe harvests are offset, by several years if possible. Using different species in different coupes, and re-establishing native riparian zones, will ensure that

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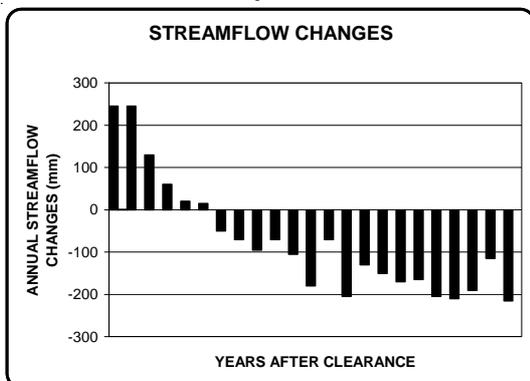


Figure 1. Annual streamflow changes in the Picaninny catchment of the Central Highlands, Victoria, relative to an undisturbed catchment. Data from Vertessy (1999).

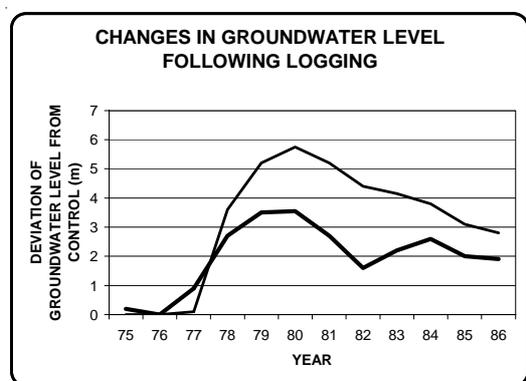


Figure 2. Changes in groundwater level relative to control boreholes following logging in two experimental coupes in Western Australia. Data from Borg et al. (1987).

Legislation

Changes to forest practices legislation were discussed in *FPNews 4(2)*. Since then, there have been several briefing sessions to FPOs, Councils, other government agencies and the media.

The Forest Practices Board has also produced a number of information sheets on the legislation changes. These are available on the FPB web page. Information sheets include land clearing, tree fern harvesting and firewood cutting. Please direct interested people to www.fpb.tas.gov.au or put them in contact with FPOs or the FPB if

further information is required. Also available on the web page is a copy of the tree fern management plan.

Tree fern tag fee increase

The prescribed fee for a tree fern tag is set at two fee units. The *Fee Units Act 1997* determines that on 1 July each year the value of a fee unit is

adjusted by the Treasurer and gazetted. The amount gazetted on 14/6/02 to be effective from 1/7/02 was \$1.08 per fee unit, making the fee for a tree fern tag \$2.16 until 30/6/03.

(See page 6 for more about legislation).

TASMANIAN TREE FERN
Manfern – Dicksonia antarctica

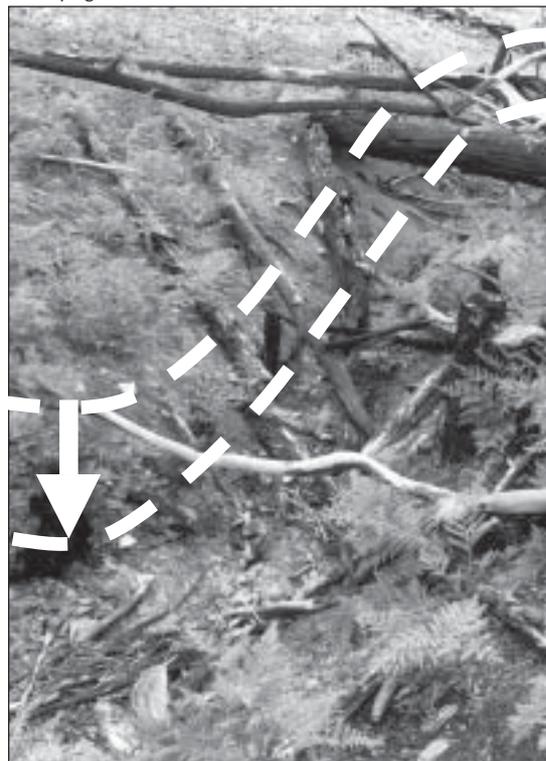
This tag certifies that this tree fern has been salvage harvested in accordance with a management plan approved by the governments of Tasmania and the Commonwealth of Australia.

Tag No. 00003



Tree fern tags are required whenever more than six are harvested from Tasmanian forest.

from page 4



different parts of the catchment have different hydrological responses to rainfall. This will reduce erosion and help to reduce risks of extreme flow events, as well as producing a more varied and more attractive visual landscape.

References

- H. Borg, P. King and I. Loh (1987). Stream and groundwater response to logging and subsequent regeneration in the southern forest of Western Australia: interim results from paired catchment studies. *Water Authority of Western Australia, Report WH 34*.
- R. Vertessy (1999). The impacts of forestry on streamflows: a review. Pages 91-98 in: Proceedings of the 2nd Forest Erosion Workshop, May 1999. *CRC for Catchment Hydrology, Report 99/6*.

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Figure 3. Downcutting by about 1 m (see arrow) by a Class 4 stream, after coupe harvest. The downcutting is attributed to increased streamflow following removal of the forest cover.

Legislation

Clarification of what is a property – for FPP purposes

Paul Wilkinson, Environmental Officer, Forest Practices Board

Following changes to Section 5(1)(a) of the *Forest Practices Regulations* at the beginning of the year, we have had ongoing inquiries from FPOs and others on how to determine what is one “property” (i.e. one area of “applicable land”), where one owner has multiple titles adjacent to each other.

The information below is provided to clarify this issue, and may also be useful to planners dealing with the Duty of Care policy.

To remind you, Regulation 5(1)(a) states that a Forest Practices plan is not required:

- “5. (1) for the purpose of section 17(6) of the Act, the following circumstances are prescribed:
- a) the harvesting of timber or the clearing of trees on land that is not vulnerable land, with the consent of the owner of that land, if –
 - i) The volume of timber harvested or trees cleared is less than 100 tonnes for each area of applicable land for each year; or
 - ii) The total area of land on which the harvesting or clearing occurs is less than one hectare for each area of applicable land for each year – whichever is the lesser:”

In FP Regulation 3, “applicable land” other than State forest and Crown land is defined as “any land recorded as one valuation on the valuation roll under section 23(1) of the *Land Valuation Act 1971*”.

There are two useful sources that access the valuation roll and thus can assist in determining what is one property. These are described below.

The List

(www.thelist.tas.gov.au)

This is a comprehensive, reliable and quick source of property information. Each valuation on the valuation roll has a single ‘Property Id’ number. Thus one Property Id = one valuation on the roll = one area of “applicable land” (i.e. one property). The Property Id is shown at the top of the Property Information Sheet obtainable on The List. Each Property Id can have multiple title references. These are the titles that have been combined to form this one property (Property

Id). The List information will also show the title owners, rate payers, postal address, land use, land area, UPI references, valuations and title maps. Information from The List costs approximately \$25 per property inquiry. The List can also be accessed at any Service Tasmania Shop.

Rate Notice and Valuation Notice

Each valuation roll listing has a separate rate notice (annually) and valuation notice (every 5 years), which are sent to the owner i.e. 2 rate notices = 2 properties = 2 “applicable land” areas. The disadvantage of these sources is that they don’t have a property map or title map i.e. the FPO cannot be certain that all the land being considered is covered by a rate notice or valuation notice.

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Guidelines for contributors

Forest Practices News is published quarterly by the Forest Practices Board, Tasmania. *FPNews* provides a means for communicating new ideas and developments among those interested in the sustainable management of Tasmania’s forests. We particularly welcome contributions from practising Forest Practices Officers. We welcome both feature articles and shorter contributions of even just a paragraph or two. Please include illustrations with your contributions if at all possible. Contributions can be supplied either as hard copy or electronically. If forwarding material electronically, the address is info@fpb.tas.gov.au. Please ensure that figures/pictures are sent as separate files and not embedded in Word documents. We look forward to seeing you in print in *FPNews*!

Regeneration

Excavator-based scarification

Craig Hawkins, Forest Practices Officer, Gunns Ltd. (Tamar)

The effects of wildlife browsing on eucalypt regeneration are well known. It can be particularly severe in forest adjoining cropping and grazing land and where dense grass recovery compounds regeneration problems.

To try and satisfy both the need for a bare soil seedbed and protection of regeneration from browsing, excavator scarifying has been trialed in two Inland *Eucalyptus amygdalina* (black peppermint) forests at Blackwood Creek and Bracknell. Both areas were selectively logged to a basal area of approximately 8m²/ha.

The machine used was a Caterpillar 325 excavator with a 6 tyne rootrake and grab attachment. The concept was to grab felled heads and debris and move them onto snig tracks to provide 'caging' over disturbed ground. Where there was not sufficient disturbed ground, the root rake was used first to disturb an area of about 5 metres diameter. Alternatively, where a large mass of heads occurred but seedbed was poor, the excavator simply reached into the middle of the slash and raked an opening that was given adequate caging by the surrounding slash.

The aim was to have 'cages' every 10-20 metres targeted in canopy gaps. In areas with a poor seed crop, manual sowing can then be targeted to the disturbed seedbeds below the 'cages'.



Head caging over disturbed soil

The method has both advantages and disadvantages compared to pre-harvest dozer scarification.

Scarification using excavators creates less seedbed in a given time but allows better targeting of areas. This has advantages in more sensitive forest types such as Inland *E. amygdalina* forest where understory vegetation may be adversely impacted by excessive and widespread ground disturbance. The chance of a head falling on scarified ground, and not being subsequently disturbed by skidders, is much more random with pre-harvest dozer scarification. Therefore greater ground coverage is needed to ensure that heads fall on scarified ground in canopy gaps. Under closer examination, the cost-effectiveness of such widespread pre-harvest dozer scarification may not be much better than targeted excavator scarification and head placement after harvest.

The level of soil disturbance at each site is also more controlled with



Excavator used in trial

excavation scarification. Where a dozer blade may easily be dug in too deep, an excavator operator has better control and vision.

Excavator scarification as conducted in this trial appears to be slightly more expensive than normal dozer scarification. While one would expect a small scarifying dozer to cover over a hectare per hour, this trial suggested that about 0.8-0.9 ha/hr could be covered once an operator gets used to what is required. It is yet to be seen whether the ultimate regeneration success justifies the additional cost. I would be interested to hear of other experiences with similar methods.

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Root rake on excavator

Feature

Tasmanian tree ferns: a key and descriptions

Fred Duncan, Senior Botanist, Forest Practices Board

Mark Neyland, Research Officer, Forestry Tasmania

The attractiveness of tree ferns is undeniable. Whether they occur in groves or as isolated individuals occupying a moist niche in a dry environment, their luxuriance and primeval appearance invite inspection.

Changes to the *Forest Practices Act*, and requirements for threatened species, mean that FPOs should be able to accurately identify tree ferns as well as merely admire them from afar. The key presented here uses vegetative characters to distinguish the five Tasmanian species that regularly form trunks over one metre in height. These species are *Todea barbara* (king fern), *Dicksonia antarctica* (manfern or soft tree fern), *Cyathea australis* (rough tree fern), *Cyathea cunninghamii* (slender tree fern) and *Cyathea marcescens* (skirted tree fern). *Cyathea marcescens* is a natural hybrid between *C. cunninghamii* and *C. australis*, and is more correctly written as *Cyathea Xmarcescens*. Table 1 (page 10) gives more detailed comparisons of the characteristics and habitat of these species.

Mature plants of three other species - *Polystichum proliferum* (cathead fern), *Blechnum nudum* (fishbone fern), and *Diplazium australe* (lady

fern) - may also form trunks, but these rarely exceed 30 cm in height.

Garrett (1996) has good photographs and distribution maps of all of the above species.

Two species of tree ferns (*Cyathea cunninghamii* and *C. marcescens*) are of conservation significance. *Cyathea cunninghamii* (slender tree fern) is restricted to a few localized populations in sheltered gullies (mostly in coastal areas) around Tasmania (see map). The biggest population, over 200 individuals, was discovered by an FPO at Dalco Creek, in the Esperance area.

Cyathea cunninghamii has been nominated for listing on the *Threatened Species Protection Act*. *Cyathea marcescens* is known from three sites in Tasmania, all with *C. australis* and *C. cunninghamii* present (as befits its hybrid origins). The largest population of *C. marcescens* is in Little Beach Creek Forest Reserve, near Scamander. Suspected occurrences of these two

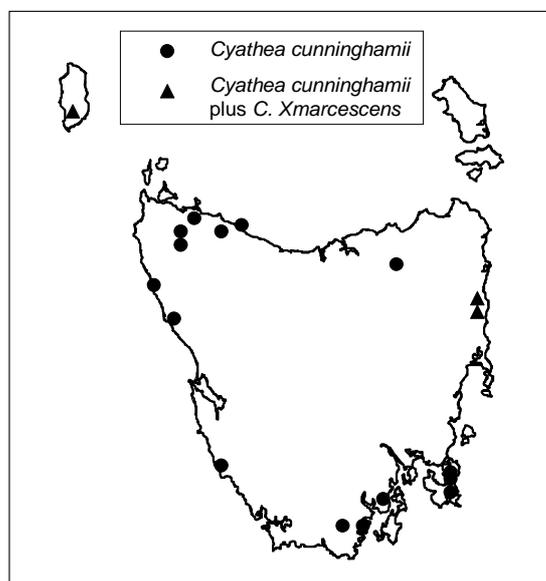
species should be reported to the FPB Botanist.

All species of tree ferns are important substrates for epiphytic ferns, mosses and liverworts, as the article by Nina Roberts demonstrates (see page 11). It may be feasible to modify operations to minimise disturbance to dense stands of tree ferns in moist parts of the State, or to small populations or sporadic individuals in regions where they are uncommon (e.g. the Midlands). Often tree ferns are associated with steeper slopes, gullies or creeklines that would normally be protected by Forest Practices Code constraints. Some guidelines to maintain tree ferns in wood production forests are given on page 13 of this issue of *FPNews*.

Reference

Garrett, M. (1996). *The ferns of Tasmania: their ecology and distribution*. Tasmanian Forest Research Council, Hobart.

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Feature

Key to Tasmanian tree ferns

Identification of species in this key is based on characters of the frond. Note that it is important to examine the base of the stipe. Species can be classified using dead fronds if they are in good condition. Identification of specimens can be checked by referring to other characters listed in the table (next page).

If you want to confirm the identity of a plant, send a specimen of frond (including the base of the stipe) and fertile material (if possible) to the FPB Botanist. Alternatively, a photo or scan can be sent. Other information (trunk height and diameter, habitat, location) should also be supplied.

- ❶ Stipe smooth near base
 - ❷ Stipe base hairless *Todea barbara*
 - ❷ Stipe base covered with soft reddish hairs *Dicksonia antarctica*
- ❶ Stipe rough and rasp-like near base
 - ❷ Trunk of mature plant more than 20 cm diameter; scales at base of stipe varnished
 - ❸ Stipe base brown; scales brown *Cyathea australis*
 - ❸ Stipe base black; scales dark brown *Cyathea Xmarcescens**
 - ❷ Trunk of mature plant less than 20 cm diameter; scales at base of stipe often streaked (stipe base black; scales fawn to brown) *Cyathea cunninghamii*
 - ❷ Trunk of mature plant absent or not determined
 - ❸ Most pinnules joined to rachis; scales at base of stipe varnished
 - ❹ Stipe base brown; scales brown *Cyathea australis*
 - ❹ Stipe base black; scales dark brown *Cyathea Xmarcescens**
 - ❸ Most pinnules petiolate; scales at base of stipe often streaked (stipe base black; scales fawn to brown) *Cyathea cunninghamii*

* *Cyathea Xmarcescens* will only be found where both *C. australis* and *C. cunninghamii* co-occur.

Terms used in the key and table

Frond	full leaf of fern
Stipe	stalk of frond, from trunk to first divisions bearing leaflets
Rhachis	axes or framework of the frond above the stipe
Tubercles	knobby projections
Bipinnate/Tripinnate	frond is twice/thrice divided
Pinnule	smallest segment of the divided frond
Petiolate	attached to the rhachis by the mid-vein only
Sori	clusters containing spores on the underside of fertile pinnules
Indusia	membranes which cover or partly cover immature sori in many ferns

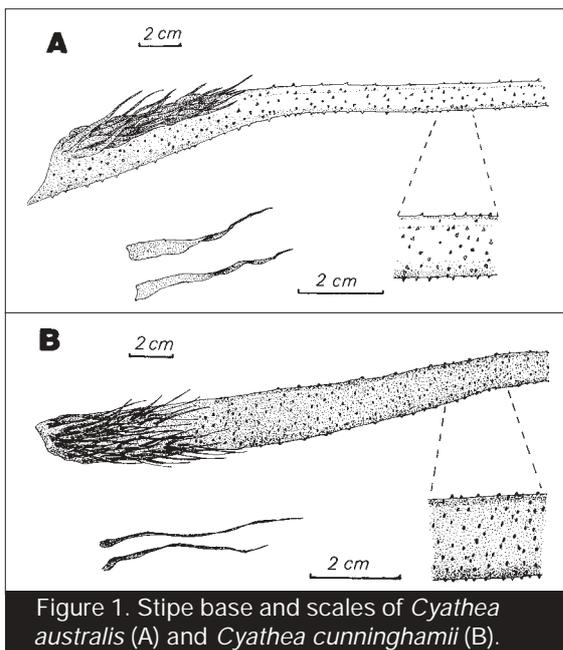


Figure 1. Stipe base and scales of *Cyathea australis* (A) and *Cyathea cunninghamii* (B).

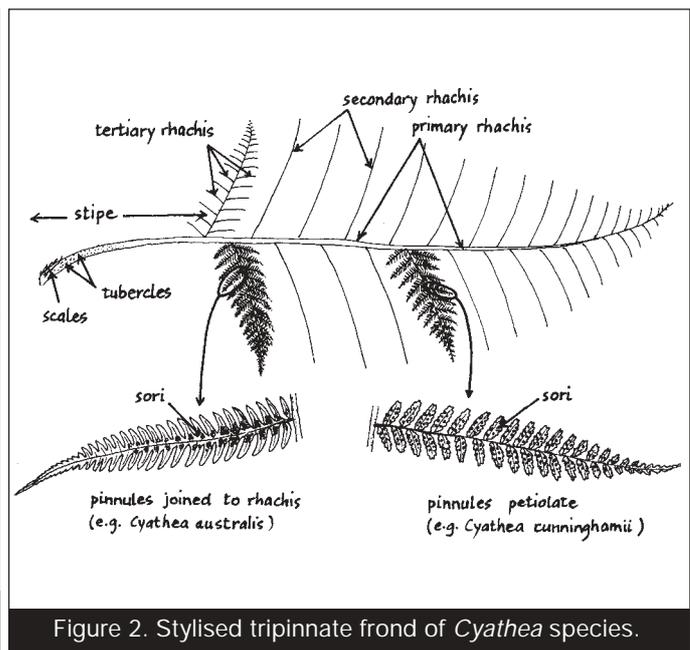


Figure 2. Stylised tripinnate frond of *Cyathea* species.

Feature

Characteristics of Tasmanian tree ferns

Species	Maximum trunk dimensions	Features of trunk	Features of mature frond	Features of stipe	Reproduction	Habitat and distribution in Tasmania and elsewhere
<i>Todea barbara</i> King fern	2 m tall 200 cm diameter	Trunk barrel shaped, black and fibrous on outside, bearing many crowns of fronds Doesn't always form trunk	Length 200 cm Leathery, bright shiny green Bipinnately divided	Stipe base smooth Base hairless	Sori densely covering pinnules towards base of frond Indusia absent	Locally common in gullies, rock crevices and creek banks, particularly in coastal areas in the north of state Tas, Vic, NSW, Qld, SA (rare), NZ, South Africa
<i>Dicksonia antarctica</i> Soft tree fern	15m tall 100 cm diameter	Trunk fibrous and often buttressed, sometimes divided Old fronds persistent on upper trunk, less so in older plants	Length 450 cm Stiff, dark glossy green above, light below Tripinnately divided	Stipe base smooth Bases with soft reddish-brown hairs	Sori on margins of pinnules, protected by cup-shaped indusia and recurved leaf margin	Widespread and common in wetter forest types; more localised in gullies and protected environments in drier regions Tas, Vic, NSW, Qld, SA (extinct)
<i>Cyathea australis</i> Rough tree fern	12 m tall 30+ cm diameter	Trunk fibrous with buttress often developing in older plants Stipe bases persistent on upper trunk	Length 450 cm Soft, light green, above, green or bluish below Tripinnately divided	Stipe base brown and rough with sharp tubercles that extend up stipe Bases with dark shiny scales	Sori in rows, adjacent to main vein on pinnules Indusia absent	Locally common in wetter forest types, gullies and creek banks, particularly in the north of state Tas, Vic, NSW, Qld
<i>Cyathea cunninghamii</i> Slender tree fern	20 m tall 15 cm diameter	Trunk slender and fibrous towards base Stipe bases persistent on upper trunk, often moss covered	Length 300 cm Soft, dark green above, lighter below. Tripinnately divided	Stipe base black and rough with short tubercles Bases with thin brown scales, often streaked.	Sori in rows, adjacent to main vein on pinnules Indusia cup-shaped	Localised in very protected fern gullies, often associated with streams in coastal areas Tas, Vic, NSW (?), Qld, NZ
<i>Cyathea Xmarcescens</i> Skirted tree fern	10 m tall 40 cm diameter	Trunk fibrous with buttress often developing in older plants Trunk often has skirt of persistent fronds	Length 500 cm Soft, dark green above Tripinnately divided	Stipe base black and rough with short tubercles Bases with dark shiny scales	Sori in rows, adjacent to main vein on pinnules Indusia very small, saucer-shaped	Hybrid found only where <i>Cyathea australis</i> and <i>Cyathea cunninghamii</i> occur together. Tas, Vic

Feature

Tree ferns as a forest habitat

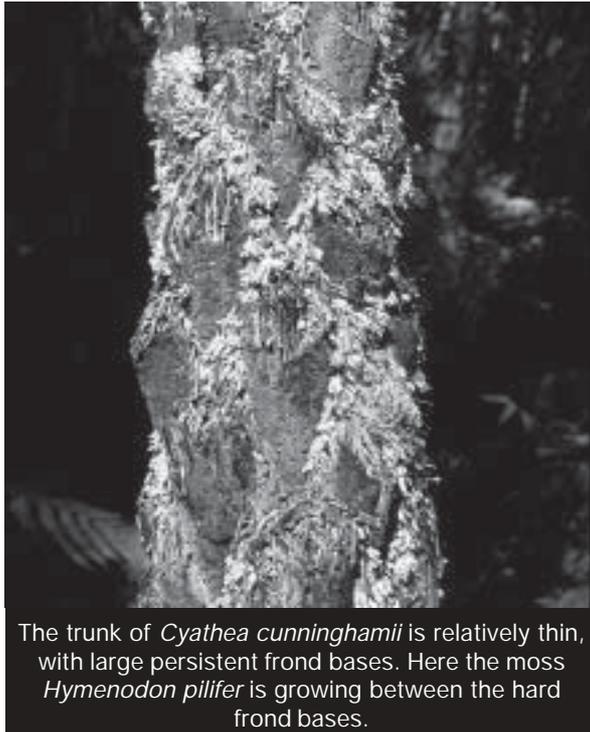
Nina Roberts, Technical Officer, Forest Practices Board

If you stop to look at the trunks of mature tree ferns, you will probably see filmy ferns, mosses and liverworts growing there, often in great luxuriance. My recent study, carried out through the University of Tasmania, examined the diversity of species that utilise the trunks of *Dicksonia antarctica* as habitat. I also looked at the epiphytic flora associated with *Cyathea cunninghamii* (slender tree-fern), which has a very restricted distribution in Tasmania.

There are five tree fern species that occur in Tasmania: *Dicksonia antarctica* (soft tree fern or manfern), *Cyathea australis* (rough tree fern), *Cyathea cunninghamii* (slender tree fern), *Cyathea X marcescens* (skirted tree fern) and *Todea barbara* (king fern). They are distinguished by several characters, as outlined elsewhere in this issue of *FPNews*.

Bryophytes (i.e. liverworts and mosses) are an extremely diverse plant group in wet forest, often outnumbering vascular species by a factor of 4 or 5. Previous ecological studies have shown that microclimate and substrate characteristics are important in defining microhabitats for bryophyte species. These small and relatively simple plants prefer particular substrates within a forest – such as rocks, logs, soil, or even the bark of a single tree species. Ferns often utilise a similar range of substrates in wet forest, and likewise have substrate preferences.

Tree fern trunks, which are made up of persistent frond-bases and dense layers of fine aerial roots, offer a substrate that is unique in the forest environment. It is recognised that several species of filmy fern prefer this distinctive



The trunk of *Cyathea cunninghamii* is relatively thin, with large persistent frond bases. Here the moss *Hymenodon pillifer* is growing between the hard frond bases.

substrate, but the diversity (in particular the bryophyte diversity) of tree fern epiphytes in Tasmanian forests had not been investigated prior to this study. The importance of understanding the role of tree ferns as habitat is heightened by their commercial value, and current exploitation for the domestic and international nursery trade.

Dicksonia antarctica is the most widespread tree fern species in Tasmania, and has an exceptionally fibrous trunk relative to the other Tasmanian species, due to hairy aerial roots that form a thick matt. These trunks are good at holding moisture, and provide easy anchorage for establishing epiphytes - so it is not surprising that they often support a great abundance of them! I examined a random sample of *Dicksonia* trunks at 10 study sites, mainly in the south-east of Tasmania. These sites

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A *Dicksonia* trunk with fern and bryophyte epiphytes.

Feature

Tree ferns – frequently asked questions

Fred Duncan, Senior Botanist, Forest Practices Board

Amongst the most frequently asked questions about Tasmanian tree ferns are how fast and how big do they grow. And how many are out there.....

Michael Garrett, who runs Bicheno Nursery Tubestock (Tasmania's biggest commercial fern propagator), has provided some answers.

Trunks of *Dicksonia antarctica* (manfern or soft tree fern) grow at a rate of 3 to 5+ cm/year in cultivation, and 1 to 5 cm/yr in the wild. Growth rates will depend on site conditions. So on an average site in the bush (3 cm/yr growth), a plant with a 2 m trunk will be about 75 years old (allowing about 6 yrs between germination of the spore and the trunk starting to

form). The tallest manfern I've seen is 10 m in the North West (Montagu River catchment).

The slender tree fern is the fastest growing member of the fraternity. Michael has measured growth rates of 30 cm/yr for *Cyathea cunninghamii* in his garden at Bicheno. Growth rates are probably lower in the bush, where light is more limiting. As plants get older, and their crowns get more exposed, growth would further decrease. In recent times, the tallest recorded *C. cunninghamii* (also from the North West) was about 20 m. *Cyathea*

australis (rough tree fern) is slower growing than *C. cunninghamii* - its growth rate is probably similar to *Dicksonia*.

Todea barbara (king fern) puts on less height per year than other species of trunked ferns. *Todea* has a barrel-shaped trunk and shows human-like characteristics by growing more in diameter than height as it ages.

How many are there? *Dicksonia* is by far the most abundant tree fern in Tasmania, with an estimated population in this state of about 65

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were relatively diverse in their topography and dominant vegetation. My investigation was restricted to fern and bryophyte species, which are by far the most abundant epiphytic groups on these hosts, although lichens and seed plants also occur.

On average, individual *Dicksonia* trunks supported about 13 epiphytic fern or bryophyte species. The composition of epiphytes from trunk to trunk was very variable within each site, and even more so between sites. Epiphytic diversity per site ranged from 30 to 58 species. In total, across all sites, I recorded 101 species on *Dicksonia* trunks – a remarkably high diversity to be associated with a single host species.

Bryophytes made up the largest portion of total diversity (85 species), whilst ferns were considerably less diverse (16 species) but often abundant. Very frequently occurring bryophytes included the mosses *Cyathophorum bulbosum*, *Rhizogonium novae-hollandiae* and *Leptotheca gaudichaudii*, and the liverworts *Tylimanthus diversifolius* and *Bazzania involuta*. The most frequent

ferns were *Grammitis billardierei* (finger fern) and four species of filmy fern: *Crepidomanes venosum*, *Hymenophyllum flabellatum*, *Hymenophyllum australe* and *Hymenophyllum rarum*.

Whilst *Dicksonia* is clearly an important host species, the site-to-site variation I found in diversity and composition of epiphytes suggests its ecological importance is variable. The implication is that the conservation value of *Dicksonia* may be greater at some sites than others – depending on how many species are utilising it as habitat, or if it is supporting rare species. There is likely to be a complex range of factors underlying the variation in epiphytic diversity on *Dicksonia* trunks. I found that steep gully sites, often near creeks, tended to have greater species richness. I attributed this to a larger variation in microclimatic conditions associated with the *Dicksonia* trunks at such sites. The sensitivity of epiphytes to subtle microclimatic factors was also indicated by the preference of different species for a certain height on the trunk. Changes to microclimatic conditions, such as increased light

or wind, are likely to have a great impact on the suitability of tree fern trunks as habitat.

Cyathea cunninghamii, which occurred at only three of the ten study sites, supported fewer species per trunk on average. However, *Cyathea* was clearly favoured as a host (over *Dicksonia*) by some of the bryophyte species – most notably the moss *Hymenodon pilifer*. Epiphytic fern species were much more likely to occur on *Dicksonia* trunks. The differences in epiphytic diversity and composition between *Cyathea cunninghamii*, which has a very restricted distribution in Tasmania, and *Dicksonia* are likely to be due to trunk characteristics. *Cyathea cunninghamii* has a much thinner and less fibrous trunk than *Dicksonia*. It is important to note that, despite supporting fewer species on average, *C. cunninghamii* appears to provide especially suitable habitat for a least some bryophyte species, and therefore has an ecological role that is distinct from that of *Dicksonia*.

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Feature

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million plants (about 25% in formal reserves). It also occurs in Victoria, NSW and Queensland. Each frond is capable of releasing about 750 million spores per year. So theoretically, within a few years of spore release (it takes about 6 years from germination to initiation of trunk formation), the progeny from a single manfern frond could cover about 530 000 ha of suitable habitat (assuming an average crown diameter of 3 m).

Cyathea cunninghamii and *Cyathea marcescens* (skirted tree fern) are the rarest of our tree ferns. About 20 populations of *C. cunninghamii* are known in Tasmania, varying from less than 5 to over 200 plants. *Cyathea marcescens* is only known from three sites – two in the Northeast and one on King Island.

Other tree fern FAQ's deal with maintaining populations of tree ferns, and their epiphytic cargoes, in forests managed primarily for wood production. Clearly, the focus on wet eucalypt forests for plantation establishment and native forest silviculture means that

there can be substantial effects within wet forest coupes (though tree ferns and many epiphytes will recolonise regrowth native forests). Maintenance of tree ferns and associated species is achieved at a regional level through a representative system of formal reserves that contain areas of mature forest. These are supported at a subregional and landscape level by a network of informal reserves (e.g. streamside reserves, wildlife habitat strips) and sites topographically protected from logging (e.g. steep slopes) that often contain humid environments favoured by tree ferns. These habitats provide a source of seeds and spores that facilitate recolonisation of regenerated coupes by late-successional stage species. In drier areas of Tasmania, sites that are richest in tree ferns (and other fern species) are typically protected by reservation or management prescription (e.g. relict rainforest).

Dicksonia and *Cyathea australis* are the tree ferns most directly affected by forestry operations. The other species are strongly associated with riparian environments and, in the case of *C. cunninghamii* and *C. marcescens*, any occurrences would be protected by Forest Practices Code restraints, reservation or management prescription.

The primary aim of native forest silviculture is to achieve good establishment and growth of eucalypt regeneration, which at first appearance may conflict with maintaining tree ferns on intensively logged sites. However, in some circumstances, logging techniques can be modified to reduce disturbance to tree fern rich environments within or adjacent to coupes. The main aims are to reduce mortality to tree ferns (mainly from intense regeneration burns), and to

maintain upright and relatively undamaged trunks, which will facilitate recolonisation by epiphytes. Methods include:

- Retaining understorey islands within coupes (trials are being conducted at the Warra Long Term Ecological Research Site in the Southern Forests);
- Minimising cable-yarding or ground-based skidding through dense patches of tree ferns;
- Felling trees so that the heads land outside dense patches of tree ferns;
- Locating wildlife habitat clumps and extending streamside reserves so that they contain sites which have abundant tree ferns and a diverse epiphytic flora (particularly important in drier areas);
- Minimising the risk of hot regeneration burns extending into retained fern-rich environments (in some coupes, ground disturbance from intensive logging may provide enough seedbed for eucalypt regeneration without the need for a high intensity burn).

Some of these techniques will be covered in a future edition of *FPNews*.

The extension of the *Forest Practices Act* to cover commercial harvesting of manferns directs harvesting to sites to be converted from a native forest to other land use (mainly plantation). This will provide better protection to populations in sites (e.g. streamside reserves) that may have been exploited in the past, and will also increase the proportion of manferns that remain in coupes that are regenerated to native forest following logging. Funds generated by the sale of tree fern tags will be used for monitoring and research, to ensure that the industry is managed sustainably.

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Dicksonia antarctica in *E. brookeriana* wet forest, Seventeen Mile Plain Reserve, Woolnorth area. CFPO is just visible at the base of a 10 m tree fern!

Cultural Heritage

A land reborn – ‘Lorinna over the bridge’

Robert Onfray, Area Forester, Gunns Forest Products (Burnie)

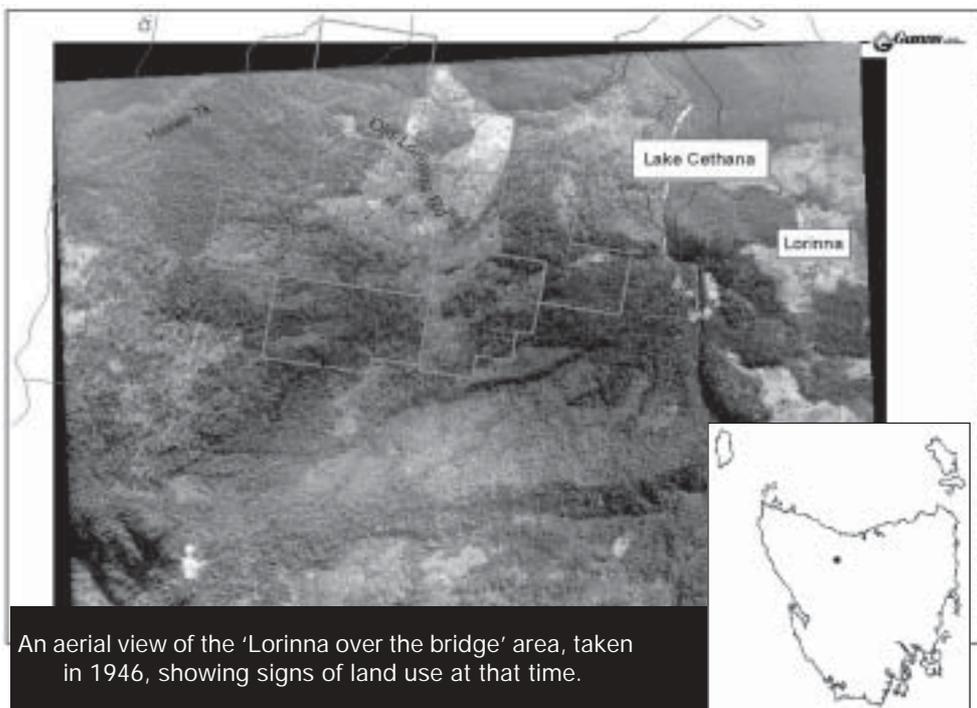
“There was a sawmill which operated before the Second World War which was powered by a Burrison-Stewart steam engine. The wheels of the steam engine were recently moved to Victoria. And you know what, I have just found out that only three of these engines were ever built in 1860 in England.”

This was part of a conversation I had with Noel Cox, one of six landholders involved in a 300 ha hardwood plantation development with Gunns involving conversion of native forest and reforestation of previously cleared land. I thought that it would be worthwhile researching this sawmill and recording the information before it was forgotten forever. Instead, I discovered an untold history of the area that should be shared, and decided to present a paper at the Australian Forest History Society Conference.

The area is immediately south of Lemonthyme Lodge on the western side of Lake Cethana opposite Lorinna. There is no official name for the area. Barry Graham, who was responsible for developing the properties, decided to name them ‘Cethana 6’ because they were located on the Cethana mapsheet. Even the new access road was called Cethana Road. But it is nowhere near the Cethana settlement.

Surely the area must have had a name? I discussed this with Noel and he said that the area was simply called ‘Lorinna over the bridge.’ No map or historical record refers to that name nor could I find any official record. No one lived there permanently and so I suppose it really didn’t need a name. The bridge referred to was the large wooden structure, built in 1892, which spanned the Forth River from Lorinna.

The first Europeans to explore the upper Forth Valley passed through the area in the 1820s. The Great Western Road was built through this area to link Launceston with the Van Dieman’s Land Company settlement at Emu Bay. Mining activity had a busy but short existence on the adjacent ‘Five Mile Rise’ in the 1880s.



An aerial view of the ‘Lorinna over the bridge’ area, taken in 1946, showing signs of land use at that time.

Some of the properties were cleared and grazed or cropped. Others remained timbered. On the original survey plans the timber was considered “fair quality but owing to the inaccessible nature of the country and the distance from the market it was of little or no value”. This is significant since the Crown, under the *Crown Lands Act*, could decline an application for the purchase of land, if it felt the timber could be utilised, and instead declare a Timber Reserve.

An aerial photo taken in 1946 was used to determine the level of improvement to the lands. It clearly shows evidence of clearing. The original survey report for one block noted “small improvements have been made by sowing grass seed after bushfires” and that it was “covered with thick scrub.” The aerial photo shows cleared land that appeared to already carry pasture. An old hut was also present and still exists today. Another block was half

ringbarked and cleared by the mid-1940s, and the subsequent scrub regrowth was cleared again in the mid-1970s. A hut built of split timber around 1910 was also renovated and rooms added in the 1970s (see photo on page 16). Cattle grazing continued until 1982, when it was abandoned due to competition with the wallabies and pademelons.

Logging also occurred in small patches prior to 1946. A road was constructed down the steep ridge just south of Bull Creek. It became known as ‘Haines Track’, named after the sawmiller whose machinery built the track to access the timber. The grade was too steep for the trucks to use fully loaded. They used a ford crossing adjacent to the Lorinna Bridge and the Lorinna Road to transport the logs to the sawmill at Devonport. There was also an old horse and sulky trail from Dolcoath Hill to the north, which was used during mining activities, but it was not suitable for vehicles.

Cultural Heritage

Small sawmills were set up on-site in a couple of locations including the one with the Burrison-Stewart steam engine. One sawmill cut celery-top pine along the creeks and flats as well as hardwood for landowners in Lorinna for their houses in the early 1940s. Remnants of an old post and rail fence indicate where an old bullock paddock was.

An event of great significance for the area occurred in the early 1970s: the Mersey-Forth hydro-electric scheme drowned the bridge over the Forth River and denied the landowners their traditional access to the area. The scheme was first conceived in the early 1960s. It involved the creation of three artificial lakes and seven dams and power stations stretching from the Great Western Tiers to Palooa, near the mouth of the Forth River. Cethana dam was built on the upper Forth River just below Lorinna township. The dam wall is 112 metres high, one of the largest in the southern hemisphere, and created Lake Cethana.

Although the Mersey-Forth Power Scheme was officially opened in March 1973, the upper Forth River was flooded in early 1971 when the Cethana Dam was completed. New lakes, improved road access and scenic routes were established as part of this scheme, and it was common knowledge that the Forth Falls Scenic Reserve was lost. What a lot of Tasmanians did not know was how a small group of landowners lost access to their properties. The sad irony is that, despite the massive amounts of electricity that could now be generated for businesses and consumers on the north coast, residents and landowners in the area did not benefit from this development. Despite two power stations located within 5 kilometres and a major powerline nearby, there is no electrical power for the area. It is unlikely that it will be made

available now, as most of the residents are 'alternate lifestyle' who are keen on keeping the settlement isolated.

The only way to access 'Lorinna over the bridge' after the creation of Lake Cethana was via Haines Track. By 1971, it was a very rough four-wheel drive track. With a petition in 1974, the landowners began to lobby the governments of the time to re-establish access to their properties on a better standard road. After years of negotiation, the HEC agreed to pay compensation monies of around \$60,000 to the Kentish Council to manage the construction of an access road in a better location. Jim Charleston, who had recently purchased one of the properties at 'Lorinna over the bridge', had his own fleet of heavy machinery and volunteered to build a road following the old Dolcoath track using the compensation money. Unfortunately, the money only allowed him to do the work as far as the present Lemonthyme Lodge site, some 500m north of 'Lorinna over the bridge'. The new road followed the old track except for a couple of sections. The landowner immediately to the north of the Lodge erected a gate on his property when he realised the new road was not on the road reserve. The local council became involved because they maintained the road and claimed it as part of their road system for the purpose of Federal Government grants. They negotiated with the landowner to construct a road to a house site on his property in return for the road sections becoming part of the public road system. This action avoided a potential protracted legal battle for the affected landowners and ensured a major tourist development

would be accessible to the tourists.

Despite the successes of the petition to re-establish adequate access for 'Lorinna over the bridge', the road condition deteriorated beyond Lemonthyme Lodge due to the lack of maintenance.

In 1996 the current landowners decided to approach North Forest Products to construct a road and harvest the timber on their properties. The obvious route along Dolcoath Road past the Lodge was discounted early on due to the potential conflict with the major tourist destination. A new road was constructed through adjoining State forest to the south in early 1998. Harvesting commenced in April 1999 and was completed two years later. Hardwood plantations are currently being established under Share Farm Agreements with the landowners.

'Lorinna over the bridge' was always seen as part of Lorinna, with the wooden bridge acting as the link. That was until some 30 years ago when a large scale hydro-electric scheme intervened and the wooden bridge was flooded, thus delivering a death blow to the area. The broader population and industry of Tasmania were considered the winners of the power scheme but there were also losers. Some of the 'Lorinna over the bridge' landowners showed remarkable resilience and hope by fighting for the right to access their properties. Others gave up and sold their properties. Today access has been restored, not through government assistance, but by a private agreement between all of the current landowners and a timber company. It is the timber, considered worthless by the Crown all those years ago, that has in fact provided the rebirth of 'Lorinna over the bridge'.

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Cultural Heritage

Fifth Australian Forest History Conference, Hobart

Andrew Wilson, Librarian, Forestry Tasmania

The Australian Forest History Society was founded in 1988 by what their website calls “a friendly network of people interested in the history of Australia’s forests and woodlands”. The AFHS has about 100 members in Australia, New Zealand, the USA and Europe.

In February this year, Hobart hosted the Fifth Australian Forest History Conference, “Australia’s Ever-changing Forests”. The three day conference (18-20 February) was followed by a forest study tour (20-22 February).

Conference delegates included academics, students, ecologists, historians, librarians and foresters (retired and currently working in the industry). The papers presented were divided into broad themes, namely: ecological change, scientific discovery, forest history, Tasmanian forests, forest management, changing attitudes and heritage.

On the first day, papers covered the use of historical records to reconstruct understanding of ecological changes, recent botanical discoveries (Wollemi pine), historical research in the IUFRO community and forest policy pre-WWI in New Zealand and Australia.

Day two saw papers focussed on Tasmanian forest history, including: convict timber-getting, the wattle bark industry 1820-1830, the short-lived pyrolignite industry 1863-1868, the State’s early national parks

movement, settlement of “Lorinna over the Bridge”, Henry Hellyer, the Australian Forestry League in Tasmania 1936-38 and Nature Days in schools.

Papers presented on day three were diverse, covering such topics as early forestry in Queensland, S.L. Kessel (WA Conservator of Forests 1922-41), timber production in PNG during WW II, European perceptions of forests, Wombat Forest Society, fire management in North America, World Heritage assessments and cultural heritage value assessments. Sessions were punctuated by Mark Elvin’s readings of translated Chinese poems, covering thousands of years, and detailing the changing attitudes of Chinese civilization to their forests.

Late on day three, with the formal conference completed, the participants in the forest study tour departed for Port Huon. Over the next two days the tour visited sites of historical significance such as those at Whale Point associated with early research into eucalypt pulping, and at Geeveston relevant to the workers strike of 1921-22. The tour also visited

Bennets Road log hauler, timber industry sites at Dover and Raminea, an aboriginal stone tool scatter site at Hastings Plain, Duckholes tramway and spur trestle bridge, the Wooden Boatbuilding School at Franklin and Tahune Airwalk.

The highlight of the study tour was attendance at the play “Hard Work to Starve,” written by John Dargavel about the industrial dispute between the Huon Timber Company and its workers in 1921-22. It was staged at the Geeveston Forest and Heritage Centre, with local non-actors taking the roles. A good time was had by both the audience and the players. A video is available of the performance.

The range of issues covered by “forest history” is enormous and gives lots of scope to any interested person to participate in the activities of the Australian Forest History Society, which can be contacted at <http://cres.anu.edu.au/envirohist/afhsociety.html>. The publication of the papers presented at the conference is imminent and will add to the significant body of work already accumulated in previous proceedings.

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Forest History in Tasmania: Thomson Hut (still standing) at “Lorinna over the bridge”. This is the hut referred to as the “old hut” in a 1946 photo of the area (see page 14).

Fauna

Swift parrot provides pollination service for blue gum

Raymond Brereton, Senior Zoologist, Forest Practices Board

Andrew Hingston has just completed his PhD in the School of Geography and Environmental Studies at the University of Tasmania. His research aimed to determine which animals were effective pollinators of the Tasmanian blue gum (*Eucalyptus globulus* subsp. *globulus*) and the closely related shining gum (*E. nitens*).

The latter species is native to upland areas in the south-eastern Australian mainland. *Eucalyptus globulus* and *E. nitens* are the major trees grown in eucalypt plantations in temperate regions of the world, including Tasmania. Plantation stock are mostly grown from seeds, that are increasingly being collected from seed orchards of trees selected for characters

desired by the forest industry. Seed production and fitness of the resultant trees depend largely upon pollen transfer between flowers on different trees, because of partial self-incompatibility in these two species. Animals are required to transport pollen as they forage at flowers, as the pollen is not readily transported by wind.

Eucalyptus globulus and *E. nitens* have contrasting floral forms, with enormous differences in nectar production that resulted in their flowers being used by different animals as food sources. The small flowers of *E. nitens* produced only 0.3-0.6 mg of nectar sugar per day and were visited exclusively by small insects, mostly native. Introduced honey bees (*Apis mellifera*) and bumble bees (*Bombus terrestris*), being larger insects with greater energy requirements, were rarely seen visiting flowers of *E. nitens* and birds were never seen

attempting to feed from their flowers. In contrast, the large flowers of *E. globulus* produced 37 – 56 mg of nectar sugar per day, making them attractive to birds and exotic bees with large energy requirements, as well as smaller insects.

Andrew found that single visits to flowers of *E. globulus* by swift parrots (*Lathamus discolor*) resulted in significant increases in seed production compared to unvisited flowers. Although other bird species were not sufficiently assessed by this method to determine whether they are also effective pollinators, analyses of their foraging behaviour and pollen loads suggest they are. In contrast, his experiments indicated that insects were poor pollinators of *E. globulus*. Single visits to flowers by insects, including honey bees and bumble bees, did not result in significant increases in seed production. Even prolonged exposure to insects throughout the life of a flower failed to result in the production of as many seeds as that following a single swift parrot visit, despite insects often consuming all of the daily nectar production.

Andrew's research shows that seed production and the fitness of plantation trees will be enhanced by management practices that benefit populations of birds in seed orchards of *E. globulus*, and benefit populations of native flower-visiting insects in orchards of *E. nitens*.

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Fauna

Interesting fauna sightings

Suzette Wood, Scientific Officer, Forest Practices Board

Over the last couple of years, we've received some interesting fauna sightings from foresters and have decided to publish a couple with the hope of stimulating more such records from out there. Please keep sending us your incidental fauna sightings.

They'll be added to the database of fauna records maintained by DPIWE and we'll publish some of the more unusual. Don't forget that fauna sightings can be forwarded to the FPB Zoology staff using *Fauna Technical Note 9* available via the zoology section of the FPB web page.

One record from the keen eye of David Kyte:

"On Saturday just past, I watched a female grey goshawk being harassed by two ravens in the neighbour's yard in wild Moonah. After quietly enduring the dive-bombing and repeated heckling, she flew over our house and dove quickly out of sight. After five minutes, I spotted her only 10 m away tucking into a freshly-killed mourning dove while fixing me with a beady eye. She hopped up on a fence and continued eating for a further couple of minutes before flying off to a prominent gum tree and perching for a while. The ravens continued their mobbing (instinctive or hoping for a meal?) well into the evening. Along with splitting wood, this was a Saturday's highlight."

Records of grey goshawks in suburban areas are not that uncommon but seeing behaviour not often encountered in the wild is quite rare and exciting. The photo included is from Nathan Duhig's backyard where it seems prudent to keep the guinea pigs penned in!

And one from Rob Young:

"Just to let you know, I was fishing down the Black River yesterday (where the Bass Highway crosses



A grey goshawk eyes off the guinea pigs in Nathan Duhig's backyard

the Black River). My son found a giant freshwater crayfish. This I thought was unusual as the water at this point is affected by the tide. At the time of locating the GFC, the tide was in and the bottom was quite visible meaning that there was not a large proportion of freshwater mixed in with the salt. The particulars of the GFC are as follows: 1) 25 cm length, 2) ripe with roe, 3) located amongst rocks that are uncovered at low tide. And yes we let her go. We have not had a lot of rain in this area for the past week or so. So I don't believe it was washed down recently [but] possibly during the high rainfall period at the beginning of August. Is this a vagrant or do GFC migrate toward the estuaries to release their eggs?"

Which prompted this response from Alastair Richardson (School of Zoology and member of the Forest Practices Advisory Council):

"I think it must be an exceptional case, since the animal would have experienced some osmotic stress in salt water, and eggs and young

would have suffered even more...I don't think they would cope with exposure to full salt water for long. So they don't migrate to the sea to release eggs."

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Forest Practices Officers and grey goshawks

Are you moving?
To help us maintain an accurate database and to ensure that circulars reach you, please advise us if you are transferring, resigning, nesting or retiring.

Thanks

Kylie and Sheryl – phone
(03) 6233 7966; email
info@fpb.tas.gov.au

Web sightings

A regular column on sites containing information on forest practices and management. We invite your suggestions (site address and short summary). The FPB does not necessarily endorse the content of the sites. We will try to maintain a balance of local, national and international sites.

www.google.com

This is a popular search engine, and an excellent resource for tracking down information on, or images of, flora and fauna species. Just type the name of the species (scientific names are best) and the search will come up with results in the categories of 'web', 'images', 'groups' and 'directory'. The 'web' category (automatically displayed) is the broadest, usually hitting on many entries, all of which will contain your search words.

Example: For information on the threatened plant species *Tetratheca gunnii*, type the species name and click on search (or just hit 'enter'). The search only takes a few seconds, and the results are listed 10 at a time. The very first entry to come up is the 'Recovery Plan', accessible as a PDF file from the DPIWE web site. If you're just after a picture, click on the 'images' tab and thumbnails of all the found images appear (in this case one photo of *T. gunnii*).

One great feature of this search engine is its ability to guess if you've made a spelling mistake. For example, a search for *Tetratheca guni* will return the message "no results for your search, however the alternative spelling, *Tetratheca gunnii*, returned the following". So you still get the same search results.

Another big plus is the relative lack of advertising material on this site.

In summary, *Google* provides a very quick and effective way of finding flora and fauna information or pictures.

Book review

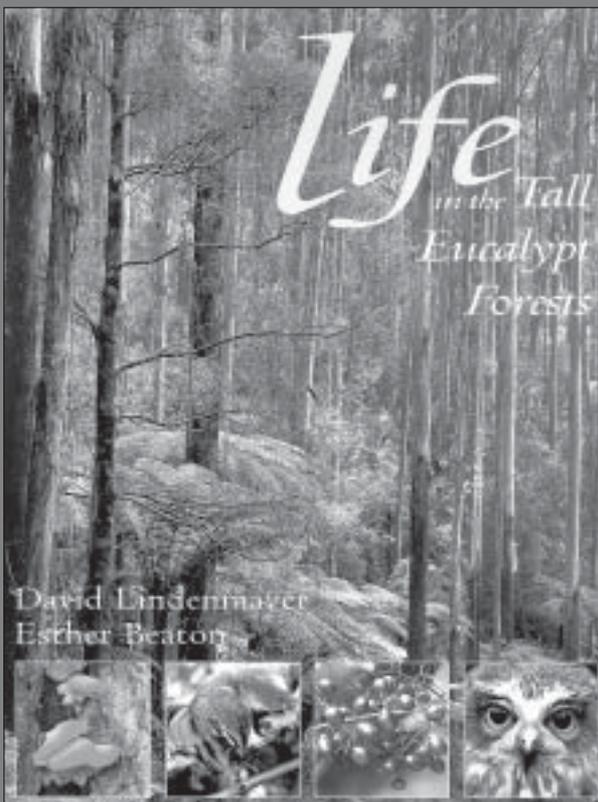
We will try to feature a book review in each issue of FPNews. We welcome reviews from our readers on books and articles on forestry-related subjects, particularly those relevant to forest practices planning.

Life in the Tall Eucalypt Forests

David Lindenmayer and Esther Beaton

published by Reed New Holland

Reviewed by Brian French and Nina Roberts



Life in the Tall Eucalypt Forests is a glossy full-colour book that uses words and pictures to conjure up the awe-inspiring tall eucalypt forests (mainly *E. regnans* forest) of the Victorian Central Highlands. Clearly inspired by the authors' love of these forests, the result is quite stunning. David Lindenmayer, responsible for the text, is an ecologist (Associate Professor at ANU's Department of Geography) but this book is pitched at a non-scientific audience. Common names are used throughout, and the text, which covers a range of information about flora, fauna and ecological processes, is colourful and engaging. Take for example the caption under a photo of a yellow-bellied glider: "Perhaps best described as a pig squealing while milk is frothed by a cappuccino machine, the strange gurgling calls made by the Yellow-bellied Glider are eerie night-time sounds in old-growth Mountain Ash forest". In the main text, Lindenmayer breaks down the ecology of the forest into some of its key components, addressing their significance to the functioning of the forest ecosystem. Examples of such components include bark, tree ferns and logs. This is not intended as a reference book, but it provides an informative overview.

Esther Beaton's spectacular photographs capture the texture and colour of these forests perfectly. A lovely book to look at and enjoyable to read - it would make a good addition to the coffee table as well as the bookshelf.

This book has a RRP of \$29.95 but for those with an eye for a bargain, it is currently available at Angus and Robertson's for \$14.95.

Training

Chris Mitchell, Forest Practices Adviser, Forest Practices Board

The last issue of *FPNews* featured an article on the importance of training and education to the success of the forest practices system. We currently have over 200 forestry planners and operational supervisors going through various training courses. In this article, for the interest of the non-FPO audience, we provide a summary of training available through the Forest Practices Board for FPOs. See also the Forward Training Program, which is a regular feature in *FPNews*.

Forest Practices Officer course

Twenty three people are currently undertaking the full FPO course, with training being completed in October. This is a 12 day training course that is one of the pre-requisites for appointment as an FPO. Entry to the course depends on the entrant having sufficient background skills/knowledge to undertake the course, and being actively involved with forest practices through their employment. Most course entrants have already gained practical experience through in-house training from other FPOs at their workplace. The course provides the

management; and visual landscape. Students must complete all course assignments and assessments, including the preparation of an FPP.

Training in specific subject areas

Additional training is provided in specialist areas to many FPOs. For example, this year the FPB specialists are conducting training courses and field days in landscape, zoology and botany. This training enables FPOs to undertake particular surveys or assessments, and to provide advice on that specialist area to other FPOs within their organization.

Refresher courses

Refresher courses are run periodically on a needs basis. These 2-day courses allow the FPB to update FPOs on changes across all areas of the forest practices system, to review operational performance as assessed in audits, and to obtain feedback from FPOs on how the forest practices system can be improved. Refresher courses are currently being conducted by the Board. Three courses have been conducted to date, with three more planned up to November. Attendance at refresher courses is compulsory for all FPOs.

Advice and instruction

Advice is continually being provided to FPOs in both an unstructured way (e.g. through responses to telephone inquiries) and a structured way (e.g. technical notes, issue of instructions to FPOs; and replies to FPO notifications on the presence of threatened species). Information on the forest practices system is also placed on the FPB web site, and will soon include the FPO Planning Manual.

Forest Practices News

FPNews provides a medium for exchange of information involving FPOs, FPB staff and others with an interest in forest management. As always, articles on application of forest practices in the field are most welcome.

Training is occasionally provided to non-FPOs. Positions on courses for non-FPOs are usually very limited as the Board's first priority is clearly to ensure that FPOs have the requisite skills to fulfil their responsibilities under the *Forest Practices Act*.

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Mixed reactions at a field day in the Northeast. Fortunately for all pictured, the wind didn't change.

FPOs with skills that enable them to prepare and certify Forest Practices Plans, and enforce the *Forest Practices Act*.

Classroom and field sessions are conducted on a broad range of subjects, including: legislation; the Forest Practices Code; Forest Practices Plans; cultural heritage; botany; zoology; soils and water; geomorphology; silviculture; fire

Briefings

Briefings are provided to all FPOs to update them on key changes to the forest practices system for example, briefings on changes to the *Forest Practices Act* and Regulations were given to 200 FPOs and other staff earlier this year.