

Forest Practices news

published by the Forest Practices Board, 30 Patrick Street, Hobart – Tasmania – 7000
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What is the important feature of the forest practices system?

Ken Felton

Chair, Forest Practices Board

The forest practices system continues to evolve in accord with the feature of continuous improvement.

The process of revising the soil and water provisions of the Code is nearing its end as a set of draft amendments to the Code will be soon put out for public comment. Proposed changes to the Forest Practices Act will, if enacted by the Parliament, result in significant changes to the governance of the system, with a reconstituted Board and Advisory Council. Many smaller changes to the Act are expected, which will have more impact where it matters most, the forest.

The emphasis in our system on performance in the forest is important, and there are other important features. But the centrally important feature is the Forest Practices Officers' success or failure in the forest results from their efforts. Being a Forest Practices Officer is demanding, but is performed admirably, to the significant benefit of the Tasmanian community. I would like to send my sincere thanks to FPOs for their continuing efforts.

Contact: (03) 62252539 (phone/fax)

STOP PRESS!

The Forest Practices Amendment Bill has been passed in both houses of Parliament and will take effect from 1 July 1999.

See the feature by Graham Wilkinson on page 6 of this edition of Forest Practices News.

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Update and revisions

The FPB is delighted to welcome our new Soil and Water Scientist Peter McIntosh who took up duty in January. Peter was previously involved in Landcare research in New Zealand. Such is his enthusiasm that within a short while of arriving he had already penned his first column for Forest Practices News – it appears in this issue. I am sure all readers will join me in welcoming Peter to the forest practices system, and in wishing him all the best for his time in Tasmania.

The “continuing improvement” of Tasmania’s forest practices system is occurring at all levels. In this edition of FPN we provide updates on a few of these changes: proposed changes to the Forest Practices Act; progress with revision of the Forest Practices Code; and the release of new notification forms, evaluation sheets and THP cover pages.

We would particularly like to thank Tony Cannon and Bob Mesibov for their contributions to this edition of FPN. As we have stressed previously, we would like our readership to regard FPN as *their* newsletter, not just as a bulletin from the FPB. Contributions from practicing FPOs are particularly welcome. Some guidelines for contributors are included elsewhere in this newsletter. We look forward to publishing YOUR contribution.

*Kevin Kiernan, Senior Geomorphologist
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Developments

Developments

Proposed changes to Timber Harvesting Plans

Paul Wilkinson, Environmental Officer, Forest Practices Board

Although many FPOs will be aware that we are planning a number of changes to THPs this article is included in the newsletter to give you all some advance notice of some of the proposed changes. As you can see from Graham's article elsewhere in this newsletter on changes to the Forest Practices Act, some changes to THPs are as a consequence of the changes to the Forest Practices Act. These include changing the title of Timber Harvesting Plans to *Forest Practices Plans* (FPP) and requiring a FPP for reforestation. The reforestation section of the THP will be expanded to allow for more detail and a separate reforestation map may also be required.

When THPs were introduced in 1985 they were to cover timber harvesting operations and directly

associated activities. Since then the forest practices system has introduced separate plans for roading and quarries and is about to require plans for reforestation of cleared land. Thus it was felt that Forest Practices Plan would be a more appropriate title for the range of activities to be covered.

Our requirement to monitor RFA commitments has led to a number of changes to the FPP facing page (see opposite page) which is the entry form for our THP database. The main change will be to the vegetation information required on the facing page. We will be requesting that the area of each RFA forest community to be harvested, cleared or reforested within the FPP is listed on the facing page along with its proposed land use.

Other changes include the listing of IBRA region, PTR No and UPI No. The special values section of the facing page will require a tick if there is a prescription included

in the FPP for any of the special values and it is proposed to include expected completion dates for roading, harvesting and reforestation establishment work. Other additions to the FPP system will include a 30 day notice of intent to be sent to neighbours and a requirement for a compliance notice to be sent to the Forest Practices Board when operations are completed.

An information package and instruction are being prepared and they will be sent to all FPOs in May/June 99. As part of the consultation process on changes to THPs and compliance system, a representative from each district and company will be invited to a meeting in early May 99, where we hope we will get feedback from most organisations on the proposed changes and information package.

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Update on revision of Forest Practices Code

Chris Mitchell, Forest Practices Adviser, Forest Practices Board

The Forest Practices Advisory Council (FPAC) recently considered the "final report" of the Review Panel on the soil and water provisions of the Code.

FPAC endorsed in principle the findings in the report, noting that further detailed consideration and consultation will be required in relation to a number of issues. FPAC also has requested the Review Panel to clarify a few aspects of the report, and agreed that the report be released.

We very much encourage FPOs to

read the report and to provide further feedback to the Forest Practices Board. To facilitate this feedback and to provide information to FPOs on the main findings of the report the CFPO and I have been meeting with groups of FPOs. We are keen to continue this process – so contact us if you have some comments, queries or ideas. (You may recall Graham Wilkinson's article in the last Newsletter requesting feedback – so far feedback is essentially "keep it practical and simple").

The next phase is to review Code format and draft in any changes necessary with regards to special values, fire, name changes to government departments,

changes emanating from passage of the amended Forest Practices Act (assuming it is amended!), etc. Many of these changes will reflect changes to process which have been occurring since the existing 1993 Code was released. These changes will, of course, be discussed with stakeholders as they are drafted.

Our target is to release a draft Code for public comment (as required under the Act) later in the year, with release of the final revised "Forest Practices Code 2000" in the new year.

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New resources

Release of new notification forms and evaluation sheets

Chris Mitchell, Forest Practices Adviser, Forest Practices Board

We have received positive feedback (mostly) regarding the proposed new Notification Forms and THP Evaluation Sheets which were circulated for comment a while back to most organisations employing FPOs for comment. (FPOs can contact Chris Mitchell if they have not seen these forms and would like a copy). We are now in the process of drafting a few fairly minor changes to wording in the forms.

It has been decided to delay issue of the new forms until probably July, so that issue of the forms will coincide with the intended release date for the new forms for Forest Practices Plans. In the meantime people preparing THPs can use the original forms or the new forms at their own convenience.

Contact:
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No frills edition of FPC now available

*Sheryl Wolfe, Clerk/Registrar
Forest Practices Board*

To meet continuing demand and because the Forest Practices Code is in the process of being reviewed and will be reprinted within a year we have had an economy version printed. It is a basic photocopy with plastic covers which sells for \$5/copy. We still have a limited number of the printed Codes which sell for \$13.50/copy.

Contact:
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Senior Zoologist migrates south

Sarah Munkshas moved to Hobart and as from April she will be based at the Hobart FPB office and no longer at Prospect. Her email contact will remain sarahm@fpb.tas.gov.au, but her new fax number will be 03-6233 7954. Sarah's new phone number will be 03-6233 8710.

Dear FPN

Have you questions regarding aspects of the forest practices system in Tasmania? Perhaps the directions in which it is heading, or the rationale behind particular guidelines? FPN is waiting with baited pen to hear from you. Just send your question to *Dear FPN*, Forest Practices Board, 30 Patrick Street, Hobart, Tasmania 7000, fax to 03-6233 7954 or email info@fpb.tas.gov.au.

Contributors to this issue:

- Tony Cannon
- Bob Mesibov
- Anne McConnell
- Paul Wilkinson
- Peter McIntosh
- Bruce Chetwynd
- Sheryl Wolfe
- Denise Gaughwin
- Ken Felton
- Chris Mitchell
- Graham Wilkinson
- Kevin Kiernan

Guidelines for contributors

Forest Practices News is published quarterly by the Forest Practices Board, Tasmania. FPN provides a means for communicating new ideas and developments among those interested in the sustainable management of Tasmania's forests – it is not just a bulletin from the FPB. We particularly welcome contributions from practicing FPOs. Let us all know about your latest innovative ideas. We welcome both feature articles and shorter contributions of even just a paragraph or two. Articles should be no longer than two pages, preferably one (for guidance, one page equates to about 780-800 words).

Shorter contributions can be as brief as a few sentences! 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. We look forward to seeing you in print in FPN!

Features

Use of a mini excavator for spot cultivation of planting sites

Tony Cannon, Forestry Director, Forest Enterprises (Tasmania) Pty Ltd

In Spring 1998 Forest Enterprises (Tasmania) Pty Ltd (FET) carried out site preparation for planting of the pasture areas on Grays Hill, behind Branxholm.

This is a highly visual and dominant hill in this district. There was careful consultation and consideration of visual and environmental aspects before commencing. This was further complicated by the presence of the Briseis Race which is used over summer to supplement Branxholm's water supply. The Water Race is on the lower slopes of the hill but within the catchment of the western side of the hill. The end of the race and a dam are within regrowth forest on private property purchased by FET.

Stream-side Reserves and drainage lines were clearly pegged before any cultivation. Cultivation techniques were also restricted by the presence of a basalt cap on the top of the hill. The steep slopes of this cap exhibited classic basalt slumping formations so ripping was restricted to lower slopes.

The drainage lines and some of the Class 4 streamside reserves were

steep and occupied a considerable area of the side of the hill. These pasture SSRs were too steep for cultivation under current provisions of the FPC.

The areas, which couldn't be mounded using our standard Savannah plough cultivator on the contours, were spot sprayed using knapsacks. The slopes and SSRs were walked and on the water catchment side of the property "Roundup Biactive" alone was applied.

Our normal followup would have been to use a second knockdown herbicide application prior to hand cultivation or use of a powered one man auger. Both these techniques result in very limited spot cultivation and give a very limited area of cultivated soil for early quick seedling establishment.

Randal Jacobson, our Plantation Supervisor, saw the opportunity to try to mechanise this operation using a local 3.5 tonne mini

excavator. This machine allows a greater amount of spot cultivation to be achieved at each point to create a small water catchment and loose soil to assist rapid establishment of the seedlings.

Approval from the Chief Forest Practices Officer, Graham Wilkinson, was granted for a trial on slopes within SSRs greater than 9 degrees. This was on the basis that it be used to evaluate the technique and impact of the machine on such slopes. Work was to cease if unacceptable soil disturbance occurred.

The mini excavator is mounted on rubber tracks and has a very low ground pressure and a very low centre of gravity. Disturbance to the ground or tearing of existing grasses or turf by the tracks was practically non-existent. The machine is extremely stable and worked on slopes up to 60% without any concerns.

The cultivation was made by two parallel swipes with a short ripper fitted with a boot at the bottom of the ripped tyre. This shallow ripping was very effective on spot sprayed sites where adequate grass kill had occurred.

The spot cultivation was followed with a second knockdown "Roundup Biactive" application. This helps to control regrowth and new germination at each spot. This greatly extends the weed control period.

Early establishment of the Laanen Container Stock on these spots has been good and nearly comparable to mounded sites at this early stage. Vegetation retention along the drainage lines compared with the broadcast controlled areas away from watercourses means that game tend to concentrate on this



Figure 1. Ripper type and boot at end of tyne. The big clods in this photo are due to trying cultivation on an area not spot sprayed previously – the ground was considerably less lumpy on spot sprayed areas with finer tilth and better planting bed).

remaining feed. This makes seedlings on spot sprayed areas more prone to browsing. Some type of tree guarding may need to be considered in some other areas, where this technique may be applied.

Followup spot weed control with the new "Eucmix" granulated formulation does mean weed competition can continue to be limited on these ex-pasture sites. The use of granules will make this type of spot planting technique far more practical.

The December 1998 issue of Forest Practices News reported extension of the range of the Burnie Burrowing Crayfish. This was studied on a block also being planted by FET.

FET Supervisor, David Gilmore, worked closely with FPB and Parks and Wildlife zoologists on this property. Drainage lines and catchments leading into suitable habitat for the Burnie Burrowing Crayfish were carefully pegged out. Techniques developed on Gray's

Hill were then implemented on these sites and are resulting in good early establishment. As a result we believe impact on the Burrowing Crayfish will be shown to be limited particularly compared with previous cropping and grazing practices on this property. The mini excavator shows great promise to achieve better

establishment on difficult sites and SSRs where full cultivation techniques are not possible.

*Editor's note:
Tony Cannon won the 1999
Tasmanian World Forestry Day
Award for his contribution to private
forest development –
well done Tony!*



Figure 2 Machine operating on steeper slopes on Gray's Hill during October 1998

Legislation: proposed changes to the *Forest Practices Act*

Graham Wilkinson, Chief Forest Practices Officer

In the first edition of *Forest Practices News*, I reported on proposals to change the membership of the Forest Practices Board and to create the Board as an independent statutory body. The Board has now endorsed further changes to the *Forest Practices Act*.

The full package of changes to the Act is expected to be introduced to Parliament in the near future. A summary of the additional proposed changes to the Act is provided below. Some of these changes give effect to commitments in the RFA. Others have arisen in response to the continuing need to fine tune and improve the operation of our forest practices system. Full briefings on the implementation of the changes will be provided to Forest Practices Officers and interested stakeholders.

1. *Changes to the composition of the Forest Practices Advisory Council.*

The membership of the Council will be changed to provide for better representation of the key stakeholder groups. Representation, particularly with respect to industry bodies, private landowners, scientists and conservation interests will be further extended through formally constituted consultative

committees established under the existing provisions of the Act.

2. *Define the operation of a forest quarry as a forest practice that requires a certified plan.*

Forest quarries are an integral part of forest road construction and maintenance. Administrative arrangements between the Forest Practices Board and the former Department of Environment and Land Management require the preparation of plans. This

amendment formalises the administrative arrangements and ensures that forest quarries will comply with the requirements for environmental protection under the Forest Practices Code.

3. *Change the requirement for plans to be “approved” with “certified”.*

This change is somewhat semantic, but has been introduced to reinforce that plans are “certified” that they comply with the provisions of the *Forest Practices Act*, *Forest Practices Code* and other relevant legislation and policies. In practice, there will be no change to the procedures that currently exist for the “approval” of plans.

4. *Replace ‘Timber Harvesting Plans’ with ‘Forest Practices Plans’ to ensure that all forest practices involving roading, quarries, harvesting and reforestation are covered by certified plans and that such plans require certification of compliance.*

Timber harvesting plans were introduced in the 1985 legislation and covered activities associated with the harvesting of timber. Since then, the forest practices system has introduced separate plans for roading and quarries. In addition, there has been acceleration in plantation establishment on cleared land, for which a timber harvesting plan is not legally required. Most of these operations are covered by “in-house” plans as part of normal planning and commercial arrangements.

There is general support that all of these activities should be covered by formal plans that are certified under the forest practices system. In addition, the plans should be signed off as evidence of compliance with the plan. These measures make improvements that are likely to be necessary for international certification of our forest management systems and forest products. The new plans will also ensure that plantation development is consistent with the *Forest Practices Code*. In return, the landowner will have the security that the plantation can be harvested in accordance with the conditions under which the plan was certified. Exemptions for small scale operations will be provided by Regulation.

5. *Include Forestry Tasmania, contractors and timber processors as persons responsible for ensuring that forest operations are covered by an certified plan (s.17(1)).*

Exclusion of Forestry Tasmania under the existing legislation is no longer appropriate given the role of Forestry Tasmania as a commercial enterprise. Similarly, changing roles within the industry mean that contractors and processors are now often the persons responsible for initiating forest practices.

6. *Provide that no activities can be undertaken which are contrary to the provisions of an certified plan during the term of the plan (s.21(1)(a)).*

This is necessary to close a legal loophole whereby a person could for example clear trees from a streamside reserve for the purposes of “agriculture”, rather than for the purposes “associated with the harvesting of timber” as defined within the Act.

7. *Amend the provisions for three year plans so that they include details on reforestation (s.27-29).*

These measures address commitments given by the State in the *Regional Forest Agreement* for a higher level of monitoring of reforestation on private land.

8. *Extend the power of Forest Practices Officers to enter upon lands where forest practices may have been carried out (s.40).*

Currently, the power of Forest Practices Officers to enter upon lands is restricted to where operations “are being carried out”, thus precluding corrective action being taken if the operations have ceased.

9. *Extend the period for the issue of notices for failure to comply with a certified plan or provisions of the Act to up to 12 months beyond the expiry date of a plan (s.41).*

This allows notices to be issued to require corrective action to be taken if environmental problems are detected for a reasonable period beyond the expiry date of a plan.

10. *Transfer arrangements for the State of the Forest Report from the Forestry Act to the Forest Practices Act.*

(to page 12)

Flora

Fred Duncan, Senior Botanist, Forest Practices Board

RFA Communities with a High Priority for Conservation

The RFA identified 19 communities which require further protection on public and private land. On private land this will be through the Private Land Reserve Strategy.

This involves the communities being identified (e.g. by FPOs); their condition and overall conservation value being assessed by the FPB Botanist and/or assessors from the Private Land Reserve Program; and discussions with the landowner.

The communities with the highest priority for conservation:

- have a very restricted distribution;
- have a small area in reserves or public land, compared to their extent on private land;
- have a small area still remaining, compared to their estimated 1750 extent;
- are very susceptible to continued clearing.

Characteristics of three communities with a very high priority for conservation are described in this article. FPOs should be aware that most RFA communities vary considerably in structure and composition, depending on site conditions, fire history and land use. It is vital that FPOs can identify the main tree and understorey species. The best field guides are:

- Forest Trees of Tasmania (published by Boral);
- Tasmanian Native Trees and Shrubs (by J.B. Kirkpatrick and S. Backhouse).

Shrubby *E. ovata* forest

Site characteristics: Mainly found on poorly drained flats in lowland areas (<600m). Substrate variable, often alluvium. Most patches are small (<10ha); there are few large

patches (>50ha) remaining (mainly on private land).

Dominant tree species: *E. ovata*.

Other tree species sometimes present: *E. amygdalina*, *E. viminalis*, *E. pauciflora*, *E. rodwayi*, blackwood.

Tree structure: Trees can reach over 20m on fertile sites, such as some river flats. The trees are low (<10m) and generally sparse on infertile sites with very poor drainage. Old-growth stands are extremely rare.

Understorey composition and structure: On relatively undisturbed sites, a dense shrub layer of tea-tree or paper-bark is often present. Wet sclerophyll shrubs such as native pear (*Pomaderris apetala*) may occur on more humid sites. A diverse understorey of tea-tree, legumes and heaths can be present on drier or less fertile sites. However, on more open sites (sometimes resulting from land use or recent fire), ground layer species are more prominent. They include cutting grass, sedges, rushes and grasses.

Conservation status: *E. ovata* forests and woodlands occur in many reserves, but mainly in small, localised patches. The community has been extensively converted to agriculture. The flats are easily cleared and cultivated and are "sinks" for nutrients and runoff from

surrounding slopes. Consequently, they also provide important resources for native animal species, some of which are restricted to these environments. Clearing for agriculture is the proposed land use for *E. ovata* forests and woodlands in most THPs in which they score an honourable mention.

E. viminalis wet forest

Site characteristics: Mainly found on fertile, well-drained flats and lower slopes of the major valleys of the Central North (e.g. Leven R, Forth R). Often on basalt or alluvium. Less extensive in the Northeast, East and Southeast.

Dominant tree species: *E. viminalis*. Note that it can be difficult distinguishing between *E. viminalis* and *E. dalrympleana* in the transition zone between these species (generally 300-600m). All occurrences of white gum wet forest below 600m should be referred to the FPB Botanist. Samples of juvenile leaves are useful for assessing transition zone sites.

Other tree species sometimes present: *E. obliqua*, *E. delegatensis*, blackwood, silver wattle.

Tree structure: Trees can exceed 60m on fertile sites. *E. viminalis* wet forest at Evercreech contains Tasmania's tallest trees. Old-growth stands are uncommon - most stands are regrowth to 40m.

Flora

Understorey composition and structure:

Most sites have a typical wet sclerophyll understorey containing shrubs such as native pear, musk and native currant. Ferns, including manfern on wet sites and tall bracken on drier sites, are common. On drier or less fertile sites the understorey is more diverse, with dry sclerophyll shrubs (e.g. prickly beauty and guitar plant) being found. Blackberries and other weeds are common on disturbed sites.

Conservation status: *E. viminalis* wet forests occur in very few reserves. Most sites are on private land. The community has been extensively converted to agriculture. Small patches on flats are mainly in poor condition, but sites on steeper slopes tend to be more extensive and more suitable for conservation management. Plantation establishment is the main proposed land use for *E. viminalis* wet forests in most THPs, though agricultural clearing is also proposed for many small patches on more arable sites.

Inland *E. amygdalina* forest

This can be a difficult community to identify. It is defined more by site characteristics than by its dominant species.

Site characteristics: Mainly found on the broad flats of the Northern Midlands and the Fingal Valley, with some outlying sites in the East and Southeast. The typical substrates are Tertiary gravels (mainly dominated by *E. amygdalina*); Recent sands (*E. viminalis* and *E. pauciflora*) and alluviums (*E. ovata*). Small areas of dolerite (dominated by

E. amygdalina or *E. viminalis*) associated with these substrates are also incorporated into the inland *E. amygdalina* forest type. Although the community has been extensively cleared, there are still some substantial patches (>300ha) in fair to good condition.

Dominant tree species: *E. amygdalina*, *E. viminalis*, *E. pauciflora*, *E. ovata* (depending on site conditions - see above).

Other tree species sometimes present:

When one of the above species dominates, another is usually present as a subdominant or minor species. Other tree species include *E. rubida*.

Tree structure: Trees rarely exceed 25m, and may be less than 15m on infertile or poorly-drained sites. This forest type is largely restricted to Tasmania's agricultural heartland, so old-growth stands are virtually non-existent. However, because of site quality, trees often have hollows and butt damage. The community often has a woodland structure.

Understorey composition and structure:

The understorey varies greatly, depending on substrate and drainage. More common tall shrubs include silver wattle, banksia and bull-oak. Black wattle is common on dolerite. Heaths and legumes are conspicuous on gravels, sand and alluvium - colourful in spring. Bracken is prevalent on some sites (especially sands), but on other substrates grasses, lilies and other herbs are prolific. Sedges and rushes are found on poorly-drained sites dominated by *E. ovata*. These grade into wetlands and lagoons on sites with surface water.

Conservation status: Inland *E. amygdalina* forest occurs in two reserves in the Epping Forest-Conara area, but there are few other sites on public land. The community has been extensively cleared for agriculture, and many remaining sites have been heavily cut-over and contain gravel or sand quarries. Inland *E. amygdalina* forest contains many threatened plant and animal species, some restricted to this vegetation type. Remnant stands in substantially cleared areas are very important for maintaining local biodiversity, particularly where stands contain a mosaic of substrate and drainage characteristics. Most THPs containing this forest type are for pulpwood or firewood logging. Partial logging is proposed for some stands and agricultural clearing for others.

FPOs should contact the FPB Botanist if areas of over 3 ha of these communities (and other RFA communities requiring further protection) are contained in a proposed operational area. The subsequent conservation assessment will take account of the area of the community, its condition (e.g. weediness), presence of threatened species, and current and proposed land use.

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Fauna

Litter – the good sort

Bob.Mesibov, Special Species Timber Officer, Forestry Tasmania

Forests generate large volumes of litter as they grow. Much of the waste material is concentrated in fallen stems, but there's always a wide scattering of bark fragments, twigs and dead leaves on the forest floor.

In the absence of fire, all of this litter is slowly converted to soil organic matter and waste gases. The job is done by a complex community of bacteria, fungi and tiny invertebrate animals. I like to call the litter fauna the 'Dead Plants Society'. The DPS is very different from the community of animals that feeds directly on living leaves and other plant bits, the 'Green Feeders Guild'. Green Feeder invertebrates are often plant-specific and they usually have wings, so they can find their favourite foods efficiently. DPS animals rarely have wings and the litter-eaters among them aren't very particular about their food. If it's rotting nicely, they'll eat it.

Johnny-come-latelys. Long, long before the first winged insect took off, there were snails and millipedes quietly munching through the litter, and spiders and centipedes hunting them.

Tasmanian forests have a rich and busy community of litter invertebrates, and they're very good at what they do. Walk into an old-growth rainforest on a fertile site and have a close look at the ground. Beneath a thin layer of rotting twigs and leaves you'll see mineral soil. Several hundred years of litter production has vanished without a fire, courtesy the DPS. Litter invertebrates are particularly abundant in older

wings can quickly recolonise a burned forest from source areas several kilometres away, but it's a different story for slow-dispersing DPS animals. If litter invertebrates haven't survived a burn in shelters (such as rotting logs and *Gahnia* bases) and if recolonisation routes (such as streamside reserves, wildlife habitat clumps and strips) are few or burned too hard, the lost DPS populations will remain lost for the foreseeable future.

Some good news is that litter fauna seems to be happy in some plantations. I recently surveyed first- and second-rotation *P. radiata* in the Northwest and saw a remarkable range of native snails, millipedes, velvet worms and

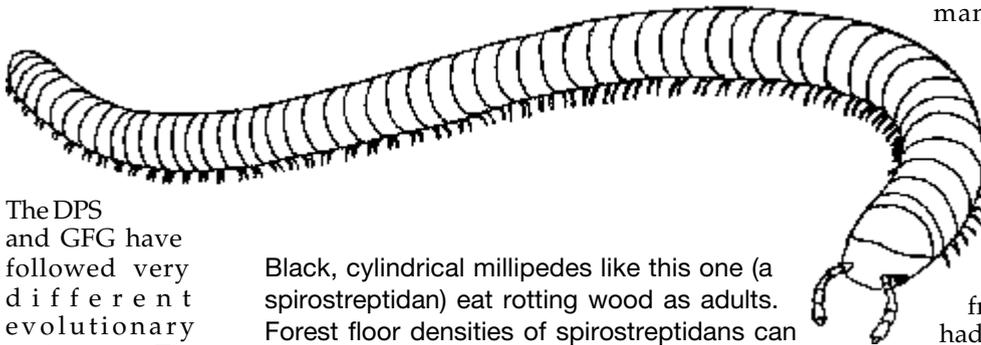
many other creatures in rotting pine stems, stumps and needles. Particularly rich communities were living in 15-25 year-old *Eucalyptus* plantations. In each of these cases there was native bush nearby from which the DPS mob had invaded the new forest.

Near the Dial Range I found good evidence that planting eucalypt and pine on farmland with bush remnants had positively benefited the local litter community: litter populations had expanded from the remnants to occupy large areas of former grassland.

Nevertheless, more research work needs to be done on conserving litter fauna in plantation areas, especially where site preparation involves heaping and burning residues. It's a practice that hits litter invertebrates right where they live.

Contact:

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The DPS and GFG have followed very different evolutionary pathways. The earliest DPS fossils

are of springtails, mites and millipedes and they're more than 400 million years old. The only land plants around then were mosses and other ground-huggers; forests hadn't evolved yet. The first evidence for feeding on live green plants (early insects with spores in their guts) appears in the fossil record a long time later, in the coal swamp deposits. It wasn't until the flowering plants began diversifying, about 100 million years ago, that the GFG really expanded and developed the many lineages of beetles, bugs, flies, ants and wasps, butterflies and moths that we know today, and that make up the bulk of forest animal biodiversity. These creatures are all

Black, cylindrical millipedes like this one (a spirostreptidan) eat rotting wood as adults. Forest floor densities of spirostreptidans can average 100 per square metre.

eucalypt regrowth, which produces many more tonnes of litter per hectare per year than rainforest. More litter, more litter bugs.

The rule for conserving litter invertebrates is 'keep it shady and moist'. DPS fauna is always more abundant on the south side of hills, where litter doesn't get dried out by the sun and where fires are less likely to be hot. On all aspects, rotting logs are important as shelters and nurseries. The worst possible forest management for litter invertebrates is frequent fuel-reduction burning. Without litter, the base of the DPS food pyramid is destroyed, and litter invertebrates become locally extinct. Green-feeding insects with

Landscape

Plantations in their place

Bruce Chetwynd, Landscape Planner, Forest Practices Board

Deloraine is well recognised as a highly scenic part of Tasmania. This is due not least to the riverside location and its tidy town appearance, but also on a grander scale to its rural setting, the surrounding rolling forested hills and the majestic backdrop of the Western Tiers.

A line of native-forest hills stretches unbroken across the middle ground from Cluan Tiers and Gum Top, Native Hop Hill, on to Long, Needles, and Gardners ridges. This “range of hills” rises to moderate heights from surrounding, lush agricultural plain and provides viewing depth and a stable, natural character to the scene.

The scenery surrounding Deloraine is by no means wholly natural; it can be best described as a “cultural landscape” – but is one that has an agreeable balance between agricultural and natural elements. This provides variety that gives high scenic quality to the area, as well as a sense of stability and possibly sustainability. The forested hills have mostly regrowth forest that while being the product of past cutting and wildfire has today reached a stage of scenic maturity.

Plantation development has the potential to create visual changes to this scenic character because the even texture and height of plantations and their often regular boundary shapes may contrast strongly against surrounding native forests. Although such contrast might reduce somewhat as the plantations mature it will recur in a few short years when harvesting takes place, hence it is important to ensure that the design of the original plantation is visually successful. As plantation forestry expands rapidly, it is important to identify what design aspect will be

visually appropriate within such a picture-book scene.

Let’s look at visual changes that have resulted from just one recently established plantation and consider how successful these changes are within the landscape character of the area.

The new plantation is viewed straight ahead from the northern

road into Deloraine and lies 13 km distant on the slopes of Cluan Tiers at a distance of 13km (Figures 1 & 2).

Although contrasting in appearance at the moment in the photo (Figure 1), it is nevertheless successful on a visual account due to a number of factors. One is its



Figure 1. This coupe imitates aesthetically successful paddocks seen in the wider scene. (Planning and design by Barry Crawford Forest Practices Officer, NFP, Tamar).

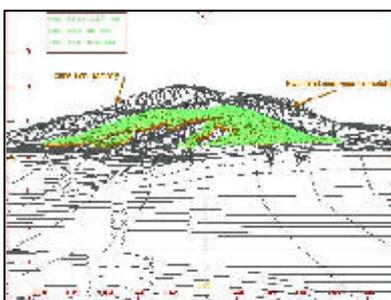


Figure 2. Graphic based on as-harvested boundaries shows a high degree of similarity to the coupe in the photograph. 3D graphics can be a useful tool for predicting coupe shapes.

placement on the shallow least prominent parts of the slopes - occupying the lower third of the hillside with native forest remaining on steeper areas behind. Rounded and varied upper edges to the native forests and retained forested gullies descending through the coupe give a “naturally appearing” broken configuration. So although the area is clearly visible it does not dominate nor alter the scenic character of the Tiers as a whole. Together these factors

ensure that the coupe succeeds in loosely imitating the appearance of well designed paddocks seen in the wider scene.

Thinking again of the grander panorama from Deloraine, other visual principles can be defined that will be essential for the retention of landscape character. The most obvious in this situation is the maintenance of native forest on the tops and sides of the continuous line of middleground hills stretching wide across the scene. Although from Deloraine only parts are in skyline, most hilltops become skyline at some point when viewed from the numerous roads used by tourist throughout the surrounding rural areas. Skylines are of course zones of greatest visual contrast and therefore have a high level of prominence to viewers. In this situation we need to ensure that they are fully maintained as they are a key factor in the rural visual character in this situation.

Conclusions

To help retain the visual character

of any rural area, plantations need to be designed so as to integrate well with both the man-made and natural patterns present in a scene. Hills and steep slopes (being the most prominent parts) especially need to be treated with extreme care to ensure that the natural flow of ridgelines and skylines is not dominated by introduced shapes and lines. Where rural clearings occur low on a hillside, coupes can emulate these while native forest is retained on steeper slopes. Streamside reserves through a plantation area can help to break up the expanse of a clearing and provide a visual link to creek-side vegetation below.

A prime characteristic of rural areas is the openness of paddocks and plains. It is important to maintain this to a high extent and also to ensure retention of existing vistas from roads and residential areas. This does not need to apply in all cases as monotony could be the result – sometimes simply setting the plantation back for the road edge can be very effective. In most

cases, preserving the visual dominance of agricultural scenery allows a greater appreciation of both cultural and historic values for those travelling through a rural landscape.

These design suggestions and prescription can be considered either as *constraints* on plantation establishment, or they can be taken as *positive and creative* guidelines for the design of plantations for the management of scenic rural landscapes. Of course there are many types of landscapes and that around Deloraine is but one. Each rural area has differences in topography, vegetation cover and pattern etc. all of which contribute to a specific and definable landscape character. This will need to be carefully identified if plantations are to be successfully designed to integrate into the scenery.

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(from page 7)

Under the new arrangements, the responsibility for preparing the report will transfer from Forestry Tasmania to the Forest Practices Board, in collaboration with relevant agencies such as Forestry Tasmania, Private Forests Tasmania and the Department of Primary Industries, Water and Environment.

11. *Provide for the Board to undertake monitoring and reporting functions for the purposes of implementing provisions within the RFA that relate to the maintenance of a permanent native forest estate.*

The RFA provides that the State will maintain an extensive and permanent Native Forest Estate, under the policy and arrangements developed by the Woodchip Export Licence Advisory Group (WELAG) after extensive consultation with Forestry Tasmania, private forest owners and the forest industry. The policy provides that Tasmania will maintain at least 80% of the native forest area in existence at the time of the 1997 Comprehensive Regional Assessment (CRA). The targets will vary by regional differences in the IBRA regions,

in recognition of current regional differences in the proportion of native forest within reserves. The maintenance of the permanent Native Forest Estate will be delivered under processes involving three year plans and forest practices plans under the forest practices system. The Forest Practices Board will monitor and report on the achievement of the reforestation targets and the maintenance of the Native Forest Estate.

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Archaeology

Call for help – arboreta system

Denise Gaughwin, Senior Archaeologist, Forest Practices Board

There is a paucity of information available concerning the system of arboreta that was established in Tasmania in the period after World War II.

The origins of the system are unclear at this time. Recently, I have been asked for advice on the heritage significance of individual arboretum. In the absence of a full understanding of the system, it has not been possible to assess their significance.

As a first step to overcome this problem, an inventory of the arboreta across Tasmania is being prepared. So far information has been provided indicating that the following plantings are known:

<u>Arboreta name</u>	<u>Date planted</u>
Little Plain	1947
Poimena	1947
Lottah	1947 (not extant)
Sidling	
Springfield	
Hollybank	1935
Upper Natone	?
Mawbanna	?1930/1944
Melrose	?
Badgers	?
Stoodley	1946
Smiths Plains	1946
Dromedary	1990

If you know of any not listed please send the following information

- Name of any arboretum (both existing and non-extant).
- Location (includes position on 1:25 000 map).
- Condition of arboretum.
- Additional information (such as age of planting, existence of records, photographic record etc)
- Useful oral sources

I am particularly interested in oral history of the establishment of the arboreta. At present it appears that there were two reasons; useful

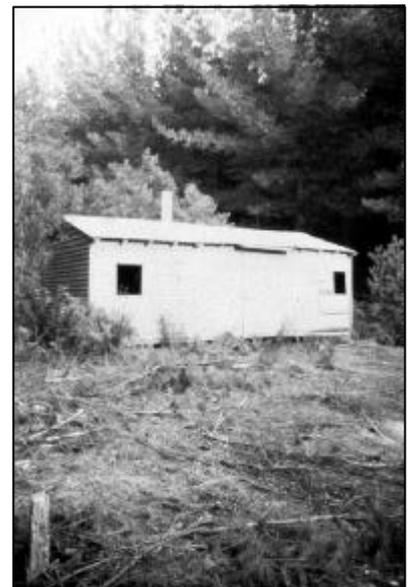


activities for unemployed youths during the Depression and as part of the resettlement of soldiers after WW 2. The silvicultural research potential of the arboreta that must have stemmed from the Forestry Department and the individual key players are less clear at present.

Other plantings such as Memorial groves are also of considerable interest.

If you can help with any information please forward it soon as I want to complete the study. When there is enough information I will write it up in a subsequent newsletter for your interest.

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Mason's Hut, demountable used by Forestry Dept. for workers planting pine plantations in the Wilmot area, late 1940s–early 1950s. Photo: Anne McConnell

Soils

First Impressions of Tasmania

Peter McIntosh, Senior Soil & Water Scientist, Forest Practices Board

Peter McIntosh is the newly appointed Soil and Water specialist at the Forest Practices Board and is based in Hobart. He comes from Dunedin, New Zealand where he worked for Landcare Research. He has a research background in pedology, soil mapping and sustainability monitoring.

First the trivia and the inevitable comparisons. Tasmanian drivers are much more polite than their Kiwi counterparts. To drive in Hobart you need a Ph.D. in lane-changing. Road engineers have made lanes especially narrow to lower the population of cyclists. Supermarkets have car parks on slopes to make trolley-wheeling more exciting. Road signs are poor – the worst example was a sign on the Tasman Peninsula indicating a left turn for a town down the road I had just passed. Speed cameras are sneaky small affairs, not visible at 400 m distance like they are in New Zealand. The bureaucracy is slow: it takes 4 weeks to get an imported car registered and over a week for Telstra to fix a faulty line.

Now the serious observations. From the soil and geological point of view Tasmania presents very different issues and problems to New Zealand. Richard Doyle at the University of Tasmania described the state as “The land with no loess” (wind-blown dust) and this phrase neatly sums up the differences. Soils in the South Island of New Zealand are

dominated by the influence of uplift and climate, with mountains, floodplains, terraces and braided rivers and their associated loess deposits all having a major influence on soil distribution and properties. In Tasmania by contrast the local geology is a much more important in determining soil properties. However, it was surprising to me (given the generally low relief of Tasmania) the extent to which the Last Glaciation has had a major influence on landforms. Example, the widespread boulderfields and talus from the dolerite plateau and the deeply glaciated upper Mersey Valley.

Lastly, the plans for the future. The soils and water specialist at the FPB is there to be on call to help with any soils and water questions that local foresters consider require a second opinion or a scientific investigation. The specialist also has responsibilities for monitoring and research to support and improve the provisions of the Forest Practices Code. I am still talking about plans for research with colleagues, but issues I would like to tackle include (1) How to

define soil quality in forests, which is related to the question of establishing sustainability indicators. (These indicators should be soil properties which foresters can easily measure); (2) Whether stream and water quality protection provisions in the code are adequate (this is quite a tricky question to answer); (3) Landslide risk on different soils; (4) Long-term effects of fire on soil properties in forests. Because technical and financial resources in the FPB are limited, these issues will have to be addressed by joint research with other researchers. I envisage the primary outputs of this research to be Technical Guides for foresters, rather like the Forest Soil Conservation Manual and the Threatened Fauna Manual.

I look forward to working with foresters and researchers, and to plenty of cooperation on soil and water issues relevant to the forestry industry.

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Small streams can have big effects

The effects of forest practices on soil and water quality on class 4 streams is an issue the Forest Practices Board hopes to tackle in cooperation with FPOs and researchers.



Erosion in previously forested farmland, South Australia



Erosion after cultivation, Southland, New Zealand

Geomorphology

Landscape evolution in the Dazzler Range

Kevin Kiernan, Senior Geomorphologist, Forest Practices Board

The inventory and study of sites of geoconservation significance constitutes an important part of nature conservation. Undertaking such work can also have important spinoffs for understanding geohazards and for achieving sustainable forest management. One example of this sort of useful cross-fertilisation comes from recent research into the fluvial geomorphology of the Dazzler Range. Fluvial geomorphology is that branch of geomorphological science that deals with the role of running water in landscape evolution.

The Dazzler Range has long been of significance to forestry, while some of the surrounding lowlands have been developed for agriculture. In some cases neighbouring farmers have artificially straightened naturally meandering stream channels to improve the drainage of pasture on alluvial fans and floodplains. Unfortunately this has triggered significant headward erosion upstream along some stream channels, producing long gullies that sometimes exceed 5m in depth and some tens of metres wide (Figure 1), while downstream areas have been damaged by sedimentation.

Such erosion occurs because a change in stream behaviour is caused by channel "improvement". When the capacity of a small, meandering, natural channel is exceeded during floods the surplus water simply spills onto the vegetated floodplain where its erosive potential is dissipated. In contrast, an "improved" channel is able to carry a greater volume of water than was naturally the case, and floodwater is focused in the one place where it is able to erode very effectively. The heads of some Dazzler Range channels have progressively eroded upstream from the pasture into the forest. Productive land and habitat have both been lost.

As unfortunate as this land degradation has been, there is a silver lining from a geoscientific perspective in that the erosion has revealed the nature and sequence of the subsurface sediments. In this area these sediments comprise bouldery to fine gravels that are overlain by sands and silts. Generally in Tasmania this sort of sequence has been interpreted as representing:

- (1) a period of colder climate during the late Last Glacial Maximum (LGM) when the vegetation was less dense than now, slopes were less stable, and rocks were broken up into chunks by mechanical weathering processes, including frost wedging (to produce the gravel); followed by
- (2) the advent of the present Holocene interglacial-type climate 10,000 years ago when warmer and moister conditions promoted a more dense forest cover, improved slope stability, and rocks were gradually decomposed by chemical weathering processes (to produce the sands and silts).

Or so theory suggests. But at two sites in the Dazzler Range abundant subfossil wood occurs in the upper part of the gravel, including logs that approach 1 m in diameter (Figure 2). Radiocarbon

dating of three logs has given ages between 4,100 and 5,200 years, implying that the gravels in which they occur were being deposited much more recently than the late LGM, which peaked 18-19,000 years ago. The overlying sand unit at the Dazzler Range sites is also thicker than Holocene sand units on many streams of comparable size in Tasmania – perhaps especially noteworthy because the radiocarbon age of the dated wood implies that all of the sand above it accumulated in just the second half of the Holocene. Charcoal and wood fragments from various levels within these sands have given radiocarbon ages of 350–2,900 years.

Why all this activity at a time when the Dazzler Range slopes might have been expected to be stable? Conditions should not have been cold enough to trigger widespread mechanical weathering in the Dazzler Range during the last 10,000 years. An alternative is that old gravels that were already present in various parts of the landscape may have been remobilised from stabilised hillslopes or along channels. But what may have caused it? There is no evidence of comparable gravels entering the stream channels in significant volumes today.

We still have much to learn about earlier Tasmanian climates. Back in the 1960s some researchers suggested Tasmania may have been warmer and a little more arid than now from about 7000 – 3000 years ago. More recent work on fossil pollen extracted from lake sediments indicated warmer and wetter conditions from 10,000 years ago until sometime prior to 5000 years ago (peaking at 7,800 years ago), after which Tasmanian climates became more variable, drought and frost prone. Work on stalagmite chemistry has most recently suggested temperatures were 2-3° C colder than now between 4,100 and 3000 years ago, but that is not cold enough to lower the treeline sufficiently to expose the slopes on this modest 500 m high range to intense cold climate mechanical weathering and slope instability. The best guess at this stage is that a change in vegetation structure sufficient to allow older deposits to be remobilised was caused by climate cooling in combination with changes in fire frequency.

From a geoconservation perspective the Dazzler Range sites are of considerable value

(despite the dubious means by which they were first revealed!). The sediments exposed within the gullies allow insight into landscape evolution, they are important for research including research into climate change and its implications, and they have potential value as sites for geoscience education. The gullies would also be useful sites for the education of land managers and process geomorphologists.

From a geohazard and forest management perspective a number of points are worth considering:

- It is not wise to muck around with stream channels. If you are developing plantation adjacent to an “improved” channel, be aware of the possible need for special management to guard against potential instability, and the possible loss of some investment adjacent to it and upstream of it (If your downstream neighbour is an “improver”, perhaps you might like to file your lawyer’s phone number in the back of your rainfall folder!).
- Where the main channel has

not been modified, remember that the swales, dry channels and drainage channels on a cleared floodplain may be part of the channel overflow system and if disturbed they may be susceptible to erosion by flows that are focused along them during floods.

- The volume of coarse material carried down the Dazzler Range stream channels in the geologically very recent past implies a history of slope instability even under natural conditions, and it highlights the need for caution in land management. Some slopes have obviously been relieved of loose sediment very recently but some localised hazardous areas doubtless remain.
- The considerable volume of sand deposited over the log-bearing beds in the Dazzler Range similarly suggests that significant soil erosion has been able to occur further upstream in the Dazzler Range catchments still more recently, again even under natural conditions. Hence, there is a need to be wary lest the problem be aggravated by land-use practices such as forestry. Buried soil profiles exposed in the gullies suggest that the sand did not all arrive during a single event, but that it has accumulated progressively, with intervening periods of stability during which the soils were able to form. Tread warily!

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Figure 1. One of the erosion gullies formed following artificial straightening of a stream channel. The log bearing bed is arrowed.