



## The Evolution of Variable Retention: Western Canada, the USA and Tasmania

**THE USE OF VARIABLE RETENTION (VR) IN CANADA,** the USA and Tasmania, the island state off southern Australia, varies widely. Variable retention, a harvesting technique that retains biological legacies at the site-level, is increasingly being used worldwide in place of clearcutting. Usually the aims are greater social acceptability for timber harvesting and improved biodiversity outcomes.

VR has been broadly implemented in western Canada. However, implementation within Canada varies regionally. The retention system is strictly defined in BC through legislation, whereas different companies in Alberta have widely varying practices as specified in their Forest Management Agreements. The practice of variable retention silviculture is advanced on Vancouver Island. There are well developed research and adaptive management programs, which integrate biodiversity and operational factors.

In the USA's Pacific Northwest, VR is only used occasionally. There is a different political and legal context in the US and acceptability of forest management activities varies widely according to land tenure. Clearcutting is relatively

acceptable on industrial lands, while little or no cutting is acceptable on federal lands.

Forestry Tasmania, a government body, has recently started implementing variable retention in most wet old-growth forests in Tasmania. However, clearcutting is still practised in regrowth wet forests and partial cutting methods are employed in other forest types.

Forestry practices in Tasmania receive high levels of public scrutiny. Like Canada and the USA, this can lead to conflicts with environmental groups including protests, blockades, court cases and marketing campaigns. Using variable retention instead of clearcutting is one way of balancing social, ecological and timber objectives. This is a potential way of developing greater public support for the forest industry.

Canada appears to have been particularly successful at brokering agreements with forestry and environmental groups. Examples are the Canadian Boreal Forest Agreement (2010), the Coast Land Use Decision for the 'Great Bear Rainforest' (2006), the BC Coastal Forest Project (1998) and the Clayoquot Scientific Panel (1995).

*This is aggregated retention harvesting from Tasmania (harvested and burnt in 2007). Some of the aggregates ended up getting a bit burnt, including the small one to the bottom, left which was 100% burnt. However, the site did fall in under our threshold for acceptable outcomes.*

*Today, we rarely use such small aggregates and much less area ends up burnt.*

It is hard to say exactly why these projects have been successful while harvesting of US federal forests and Tasmanian state forests are still subject to controversy. However, processes of directly engaging with environmental groups, if done carefully, may be more successful than attempts at resolving conflict where the main opposing groups are less directly involved.

In the case of the Canadian Boreal Forest Agreement, extended mediated negotiations were conducted secretly away from media pressure and without government involvement. In another case, the BC Coastal Forest Project (MacMillan Bloedel, then Weyerhaeuser, now Western Forest Products), used a science-based approach guided by workshops with independent scientists nominated by both industry and environmental groups. This proved to be successful for developing a new ecological-based strategy for forest management without getting railroaded by politics.

Neither of the examples above would have been possible without commitment from both the forest industry and environmental groups to work together and make some compromises.



Photo: Susan Baker

## Different Kinds of Variable Retention

There are two types of variable retention being practiced: aggregated retention and dispersed retention. Aggregated retention involves leaving intact clusters of both overstorey and understorey forest while the trees around them are harvested. Dispersed retention involves retaining individual overstorey trees throughout a cutblock.

Biodiversity benefits of VR are being clearly shown in research trials in Canada, the USA and Tasmania. Results are species specific, but in general the aggregated retention form of VR appears to be beneficial for more plants, animals and fungi than the dispersed retention form.

Compared to retaining single scattered overstorey trees, aggregates contain undisturbed soil, leaf litter and understorey vegetation, and snags can usually be safely retained in aggregate centres. Aggregates also have buffered microclimatic conditions much more similar to undisturbed mature forest. Aggregates thereby provide habitat for many more species of animals and epiphytic plants, than are recorded in dispersed retention treatments.

While these short-term results are demonstrating that aggregates can initially retain late-successional species at the site-level, it is largely unproven whether the aggregates also achieve the longer-term goal of facilitating recolonisation of harvested areas (forest influence). Better understanding of this process will be the topic of a series of upcoming studies in Tasmania.

Also, these positive findings regarding aggregated VR should be considered carefully by forestry professionals, since there may be trade-offs between advantages of aggregated retention for biodiversity versus advantages of dispersed retention for visual outcomes.

In contrast to these Canadian examples, the USA's Northwest Forest Plan included provisions for  $\geq 15\%$  retention by area in those areas designated as 'matrix,' as opposed to 'reserved,' forest. However, the high success rate of court injunctions preventing harvesting means that, in practice, thinning to accelerate old-growth characteristics is the only harvesting activity that occurs in the Pacific Northwest federal forests. (Interestingly, the strong emphasis on encouraging old-growth characteristics in Pacific Northwest forests is leading to concerns amongst forest ecologists over reductions in the area of high-quality habitat for the many plants and animals associated with early-seral forests.)

In Tasmania, VR is currently used in only a small proportion of the overall harvested area. Clearcutting is still the predominant silvicultural system in wet eucalypt forests, since aggregated retention is mostly used in the small proportion of old-growth forests that are available for harvesting. Since harvesting of old-growth forests and clearcutting are both unpopular with sections of the Tasmanian community, these practices are likely related to

the persistent campaigning by environmental groups. Much broader application of VR on Vancouver Island appeared sufficient to temper opposition from environmental groups.

In an odd cyclical turn, some companies on Vancouver Island appear to be moving away from using VR and use of clearcutting is currently increasing. Industry should carefully consider the risk that widespread return to clearcutting could result in a return to the conflicts that lead to development of VR initially. The fact that most companies moved to broad use of VR is relevant, since at a landscape scale it is the collective practices of all companies that leads to general public perceptions about harvesting practices. 🐾

*Sue Baker is conservation biologist with the University of Tasmania on a collaborative project with Forestry Tasmania (Australia). She is currently conducting a one-year fellowship at the World Forestry Institute in Portland USA to learn about variable retention and biodiversity. She recently visited Vancouver Island and Alberta, and would like to thank the many researchers and industry personnel that hosted her visit. Feedback on this article would be appreciated: sue.baker@forestrytas.com.au*