Wildlife Tree Retention: Management Guidance

Introduction

Wildlife trees are one of the most valuable components of stand-level biodiversity. With over 70 species of vertebrates in British Columbia known to be critically dependent on wildlife trees, the appropriate management of this resource is vital to proper land stewardship and ecosystem integrity.

Policy direction for wildlife tree management was initiated in 1985 with the release of *Protection of Wildlife Trees*. Based on operational experience and research, the 1985 policy was updated in February 2000 and re-released as the *Provincial Wildlife Tree Policy and Management Recommendations*.

Additional information on the implementation and effectiveness of wildlife tree management in British Columbia came out of a province-wide evaluation released in 2002 titled, *Evaluation of Wildlife Tree Retention for Cutblocks Harvested Between 1996-2001 Under the Forest Practices Code.* This new information, combined with the release of the *Forest and Range Practices Act* (FRPA) and Regulations, has prompted revision of wildlife tree management guidelines.

The purpose of this document is to:

- Provide guidance for ecologically sound wildlife tree retention in British Columbia within the context of Provincial legislation which blends economic, logistic and ecological considerations;
- Describe provincial policy and guiding principles for setting appropriate site-specific wildlife tree retention targets and objectives;
- Assist foresters in the development and implementation of ecologically effective management for wildlife tree retention; and
- Reference the regulatory framework for managing wildlife tree retention in British Columbia.

Guiding Principles for Wildlife Tree Retention

The guiding principles in this document are a combination of recommended policies and practices designed to promote effective wildlife tree retention at the stand level.

Objectives for Wildlife Tree Retention

The FRPA objective for wildlife tree retention is found in Section 9.1 of the *Forest Planning and Practices Regulation* (FPPR). It reads, “the objective set by government for wildlife and biodiversity at the stand level is, without unduly reducing the supply of timber from British Columbia's forests, to retain wildlife trees.”

Land-use objectives, either those established or continued under Sections 3-5 of the *Forest Practices Code of British Columbia Act*, or objectives established under the *Land Act*, may also identify wildlife tree requirements. Any result or strategy proposed must

be consistent with the established land-use objective and the objective set by government in legislation.

In the case of any inconsistency between a land-use objective and another objective set by government, the land-use objective will prevail. In such a case, results or strategies are not required for the inconsistent objective set by government or portions thereof.

Results and Strategies for Wildlife Tree Retention

The desired stand structure for the site must be clearly understood and defined when designing strategies or specifying results for wildlife tree retention. The characteristics of individual trees (e.g., species, longevity, evidence of wildlife use) and natural processes, such as succession, wind patterns and other natural disturbances, should also be considered in the planning process.

Wildlife tree retention is identified in operational plans. Under the Forest Practices Code, Forest Development Plans must specify general objectives regarding wildlife tree retention targets. Under FRPA, Forest Stewardship Plans must either undertake to follow the default practice requirement in Sections 66 and 67 of the FPPR, or specify results or strategies for wildlife tree retention if retention is to be different from the default practice requirements.

Document site-specific wildlife tree retention strategies or results in an FSP if they differ from the FRPA default practice requirements. (see FPPR Sections 9.1, 12.5, 66 and 67; FRPA Section 5(1)(b)).

Wildlife Tree Retention Practice Requirement

In the FPPR, the default wildlife tree retention practice requirement is a minimum of 7% of the total area of all cutblocks harvested by an agreement holder within a one-year period (April 1 to March 31). In addition, the minimum amount of wildlife tree retention that relates to each cutblock is 3.5% of the area of the cutblock. Wildlife tree retention areas may relate to more than one cutblock, provided all the cutblocks related to the retention area collectively meet the 7% and 3.5% requirements.

Ideally, wildlife tree retention should be established within and/or adjacent to every cutblock, recognizing that some flexibility exists for biological reasons. Flexibility in cutblock retention levels should be based on sound ecological principles.

The following are examples of reasons for varying the percentage of wildlife tree retention on a cutblock (areas of lower retention need to be balanced by areas of higher retention on cutblocks where biodiversity is a higher priority):

- A lower percentage of retention on cutblocks adjacent to protected areas (e.g., parks, recreation areas, ecological reserves) containing wildlife tree attributes;

- A lower level of retention on cutblocks with few ecological attributes, such as high-value wildlife trees or habitat features, and which are located in a low-risk watershed (e.g., majority of watershed is inoperable or otherwise constrained);
- A higher percentage of retention in cutblocks with unusually diverse or high-value ecological attributes;
- A higher percentage of retention where multiple objectives must be met, such as a habitat feature found on site; and
- A higher percentage of retention for cutblocks >100 ha in size, with a gradual increase beyond that size (e.g., increase over default retention practice requirements by about 1% per 100 ha).

Wildlife tree retention targets are applied with appropriate flexibility while maintaining stand-level biodiversity (see FPPR Section 66).

Alternative Results or Strategies for Wildlife Tree Retention

While Section 66 of the FPPR sets out the default practice requirement for wildlife tree retention, licensees may choose to write alternative results or strategies to the Section 66 default which are consistent with the objective set by government in the FPPR section 9.1. The FPPR Schedule 1 Section 3(2) lists the factors to consider for wildlife tree retention (size, structure, amount, location and characteristics of trees) within the context of local ecological attributes when writing an alternative result or strategy for stand-level biodiversity/wildlife tree retention.

There are likely many reasons for developing alternative results or strategies. The following are two examples:

1. Exception to minimum 3.5% wildlife tree retention at each cutblock – A significant area for post-fledging success is needed to buffer four goshawk nests found in landscape unit X that are not protected by wildlife habitat areas. To allow greater retention area for these goshawk nests as in-block habitat features, other cutblocks in the landscape unit that are next to areas of long-term retention (anticipated to remain for the length of the rotation) may receive less than 3.5% wildlife tree retention.
2. Exception to meeting overall retention percentage in a one year harvesting period – Watershed A is predominantly steep ground (>65%) and 80% inoperable. The inoperable forest area is anticipated to remain and provide biodiversity value. Watershed B is predominantly gentle slopes and is largely operable. Watershed B has a diversity of tree species and opportunity for preservation of high-value biodiversity attributes. Harvesting from April 2006 through March 2008 will focus on these two watersheds. To allow for an appropriate balance of retention between the two watersheds (lower retention in Watershed A and higher retention in Watershed B), the percentage of wildlife tree retention will be determined over a two-year period starting April 1, 2006.

Locating Wildlife Tree Retention

Three important considerations when locating wildlife tree retention are below in order of priority:

1. Protect trees with valuable wildlife tree attributes (see Table 2).
2. Where there are few trees with valuable attributes, locate retention in areas most suitable for long-term wildlife tree recruitment.
3. Where there are no opportunities for current or future valuable wildlife tree attributes, locate wildlife tree retention to be representative of the pre-harvest stand.

The primary purpose of wildlife tree retention is to provide stand-level biodiversity and habitat for wildlife tree users on every cutblock. In addition to valuable wildlife habitat, wildlife tree retention provides a present and future source of coarse woody debris (CWD), a source of native mycorrhizal fungi, and habitat for invertebrates. In addition, patch retention maintains understory shrubs and herbs in an undisturbed state that can result in the protection of other elements of biological value and provides for recolonization of the cutblock. In general, wildlife tree retention provides for some structural diversity both now and in the future.

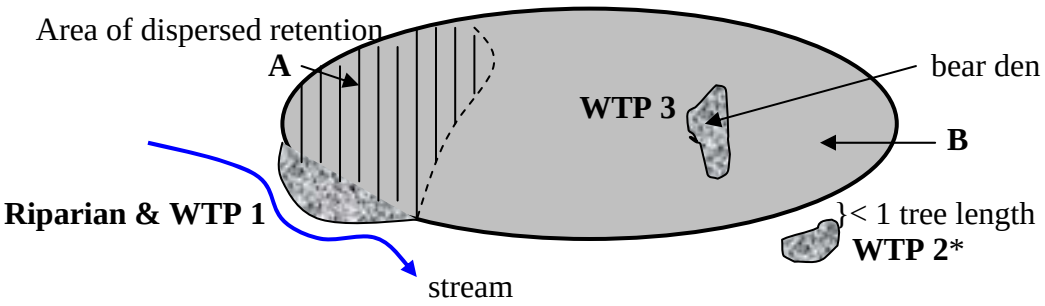

Figure 1: Types of wildlife tree retention

Descriptor	Area (ha)	Volume equivalency for dispersed retention (ha)
Polygon A	10	0.2
Polygon B	27	0.0
WTP 1	1.8	
WTP 2*	0.5	
WTP 3	1.4	
Gross area	40.7	
% retention is 9.6% = ((0.2+1.8+0.5+1.4)/40.7)x100[1]		

* Non-contiguous patch shown as a wildlife tree retention (WTR) area that is related to the cutblock. Non-contiguous patches are not as effective for WTR purposes, thus other retention options available within or adjacent to the harvest area boundary should be considered first.

Table 1: Breakdown of area as presented in Figure 1.

[1] Non-contiguous wildlife tree retention (WTR) is included in the gross area of the cutblock only for the purposes of WTR percent calculations.

As shown in Figure 1, although not the ecologically preferred option, there may be instances where it is necessary or appropriate to have wildlife tree retention non-contiguous with the harvest area as long as the trees are in close proximity to the cutblock (e.g., within one-tree-height distance of the cutblock boundary). By locating non-contiguous retention areas within a one-tree-height distance, the trees will be more capable of impacting the cutblock or being directly impacted by the cutblock as per the FPPR definition for a wildlife tree retention area. This distance also increases the probability that important elements of stand-level biodiversity are associated with the cutblock over both the short and long term.

Wildlife tree retention areas that are non-contiguous with the cutblock should only be established where there are limited options to manage appropriate habitat within the harvest area. Wildlife trees chosen for retention outside and non-contiguous with the cutblock should have significant wildlife tree value, be included on the post-harvest map submission, and be identified as wildlife tree retention areas (see FPPR section 86 for reporting requirements, and, the RESULTS mapping guidelines at http://www.for.gov.bc.ca/his/results/Silv_Map_Stand.pdf), Non-contiguous retention may benefit worker safety when establishing a patch with valuable but dangerous wildlife trees that otherwise could impact the work area.

Guiding Principle: As a first priority, wildlife tree retention protects trees with valuable wildlife tree attributes (see Table 2).

Guiding Principle: Wildlife tree retention is optimally located within or adjacent to the harvested area (see Figure 1).

Selecting the Location and Type of Wildlife Tree Retention

A pre-harvest assessment of stand-level biodiversity attributes should be carried out to determine the best location and type of wildlife tree retention. Important considerations include existing areas of high-value biodiversity/wildlife trees, and areas with operational constraints that contain valuable wildlife tree attributes. Including operationally constrained areas with valuable wildlife tree attributes within retention areas will help minimize timber supply impacts.

Patch Retention

A general approach for selecting an area of patch wildlife tree retention is to anchor the patch on ecologically valuable attributes (see Table 2) such as:

- A high-value wildlife tree (e.g., veteran tree);

- A valuable wildlife habitat feature (e.g., raptor nest, bear den, bat hibernacula, mineral lick);
- An area of high wildlife use (e.g., wetland, avalanche chute, riparian management zone, confluence of two small streams); or
- Resource features requiring protection, provided there are also high- or medium-value wildlife trees that will be retained (e.g., cave entrances, culturally modified trees, habitat for species at risk).

In the absence of ecologically valuable anchors for a wildlife tree patch, consider the following (in order of ecological preference):

1. Retaining the largest trees possible;
2. Retaining trees representative of the pre-harvest stand; and
3. Maintaining ecological inter-patch spacing.

Where possible, choose trees that have the potential of developing high-value wildlife tree attributes within the rotation period. Characteristics to look for include trees that are more open grown, have current defects (e.g., stem scars, broken tops) or larger branches. Uncommon tree species or stand characteristics present in the stand should also be considered for retention.

Areas that are not operational (e.g., seasonally wetted areas, seepage sites), but contain wildlife tree attributes, should be considered for retention to minimize timber supply impacts. If there are two areas that are equal in terms of wildlife tree and biodiversity benefits, and both are within (or contiguous to) the cutblock, select the non-operable area for retention.

In some cases, it is reasonable to incorporate a small wetland, rock outcrop, or other marginally productive area into a wildlife tree patch. For example, a small wetland can serve as a good biological anchor, attracting high levels of wildlife use. Where marginally treed/non-treed areas have been included in wildlife tree patches, their area contribution to wildlife tree retention should be adjusted to account for the actual area containing wildlife trees. For example, a 3.0-ha patch with half the stocking of the average pre-harvest stand would provide half, (1.5 ha) of the wildlife tree retention objectives. It is recommended that small non-treed areas that are surrounded by suitable wildlife trees should contribute less than 0.25 ha of patch retention, and such treeless areas should only represent a small proportion of the patch retention for any given cutblock.

Guiding Principle: Locate wildlife tree patches around ecologically valuable anchors.

Guiding Principle: It is important to retain uncommon tree species and stand structures for stand-level biodiversity.

Dispersed Retention

Dispersed retention can be made up of single retained trees, or clumps of trees comprising areas that are too small to be mapped[2]. Dispersed retention provides structural diversity, perching and feeding opportunities within the cutblock, and a potential source of CWD and invertebrate habitat outside of wildlife tree patches. Valuable biodiversity attributes can be maintained with dispersed retention, although due to worker safety concerns, the more decayed, dangerous (and often more highly used wildlife trees), should be retained in patches. For more information on dangerous trees, please see the Worker Safety section in this document and the *Workers Compensation Act* and Regulations.

Clumps of dispersed trees can be particularly effective for biodiversity when the forest floor is protected by a machine-free zone. This may be an effective strategy when harvesting around low economic-value trees or an inoperable area such as a small wetland (some trees are removed for harvest, with sufficient retention around the wetland). Clumped trees will often be more windfirm than more open retention.

Stubbing is a process of cutting high stumps of low quality/defective wood to help improve vertical stand structure and habitat outside of patches. To increase the effectiveness of stubs as wildlife habitat, it is recommended that they be cut as high as practical.

Stubbing is not a preferred strategy for leaving retention, and stub trees do not replace full-height wildlife trees. If stubbing is to occur, the highest value candidates are those with pre-existing heart-rot as they are most likely to provide cavity nesting opportunities. To allow for cavity nesting for most species, stub diameter should generally be greater than 30-cm dbh (Harris 2001)[3]**.** However, some cavity nesting species can also make use of trees smaller than 30-cm dbh. To account for this, the habitat needs of local species should be considered if planning on leaving smaller diameter stubs as potential nesting habitat.

Where stubs are used for wildlife tree retention, calculation of the contribution of stubs to retention targets can be done using the volume or basal area equivalency method (see side bar).

Where trees have been left on site for other objectives, such as a source of seed, shelter and/or visual quality, they can also contribute to wildlife tree retention targets, as long as the trees will be left on site for at least one rotation. Where dispersed trees will be left over the entire rotation, their contribution to wildlife tree targets should be calculated on a volume or basal area equivalency basis (see side bar).

---

[2] Ministry of Forests. 2005. British Columbia Mapping Standards for use in RESULTS Submissions. Version 1.1 http://www.for.gov.bc.ca/his/results/Silv_Map_Stand.pdf

[3] Harris, B. 2001. Observations on the Use of Stubs by Wild Birds: A 10-Year Update. Journal of Ecosystems and Management, Volume 1, Number 1.

Diversify Retention Strategies

Varying wildlife tree retention practices can help increase biodiversity. For example, utilizing a range of patch sizes, combined with dispersed retention, can be very effective in areas where this is possible. Attempt to develop retention strategies that best suit local site conditions. In general, larger wildlife tree patches support a greater number of ecological functions.

Establish a distribution of wildlife tree patches to ensure that distances between available tree cover are not excessive. To ensure ecologically suitable spatial distribution, consider the ecological influence of standing live and dead trees when placing retention. Finally, it is recommended that inter-patch (greater than mappable size of 0.25 ha) spacing generally should not exceed 500 metres. This 500 metre distance serves only as a maximum distance – to meet specific objectives such as seed dispersal or security cover near foraging areas, much shorter distances may be required. In some cases, it may be necessary to select sub-optimal attributes to ensure suitable spatial distribution.

Guiding Principle: Use a diversity of wildlife tree retention strategies - no single retention strategy is appropriate for all sites.

Volume or basal area equivalency:

A*cceptable methods of comparing single-tree retention with patch retention for the purposes of determining the percentage of wildlife tree retention coming from dispersed retention. Volume equivalency is determined by comparing pre-harvest volumes from cruise data with post-harvest volumes of retained wildlife trees. Basal area equivalency is likewise calculated by comparing pre-harvest basal area to post-harvest basal area in dispersed wildlife tree retention areas. The area allocated to retention is the proportional amount of area in post-harvest volumes or basal areas (e.g., 10% of the pre-harvest basal area left dispersed over a whole cutblock would be equal to 10% retention).*

Table 2:Attributes of high-value wildlife tree retention strategies.

Attributes of a high-value wildlife tree	Attributes of a high-value wildlife tree patch	Attributes of high-value, dispersed wildlife tree retention	Attributes of high-value wildlife tree retention at the cutblock level
• Internal decay (heart rot or natural/excavated cavities present). • Crevices present (loose bark or cracks suitable for bats). • Large brooms present. • Active or recent wildlife use. • Tree structure suitable for wildlife use (e.g., large nest, hunting perch, bear den). • Large trees for the site (height and diameter) and veterans. • Locally important wildlife tree species.	• Trees with valuable wildlife tree attributes, including large dead trees. • Potentially dangerous trees have been assessed. • Large patches with no harvest-related modifications. • Patches anchored on high-value trees/habitats, and/or other biodiversity criteria (e.g., around raptor nests, cave entrances), and/or operationally difficult areas (e.g., wet areas). • Retention of uncommon species, stand characteristics, and other elements of stand-level biodiversity. • Designed in consideration of windthrow risk. • Designed to balance valuable wildlife tree habitat attributes (e.g., heart rot, brooms, insects) and forest health issues. • Considers how individual tree species and site conditions affect stand structure. • Patches distributed throughout the cutblock. • Undisturbed forest floor.	• Wildlife trees that can be safely worked around during current and near future forest operations. • Retained trees have the potential to achieve the desired stand structure attributes (e.g., tall, large diameter trees). • Considers the susceptibility to windthrow. • Includes deciduous trees, vets, “wolf trees” and other trees of generally lower economic value.	• Based on a pre-harvest field assessment that identifies best opportunities for retaining wildlife trees in the most ecologically and operationally appropriate locations. • Contains a diversity of wildlife tree retention strategies (e.g., a range of patch sizes combined with dispersed trees). • Captures a diversity of habitat types. • Any fallen trees within reserve areas are left in place to function as coarse woody debris, unless they pose a significant forest health or other concern. • Considers tree windfirmness. Patch and individual tree retention considers the site, stand and individual trees during layout (e.g., low height/diameter ratio). • Ecological interpatch distance has been incorporated into design. • Identifiable on a map for long-term tracking and evaluation/monitoring. • Higher levels of retention on cutblocks with high ecological values, and lower levels of retention on cutblocks with low ecological values. However, ideally some retention on every cutblock. • Increased retention levels where there are exceptional wildlife tree or other stand-level biodiversity values that can be retained.

Note: In general, no single retention strategy is appropriate for all sites. Factors, such as stand type and condition, tree species, and windthrow hazard, create unique conditions for each stand.

Attributes of High-value Wildlife Tree Retention at the Management Unit Level

Table 2 shows the attributes of high-value wildlife tree retention for a single tree, a patch, a dispersed area, and a cutblock. An ecologically successful strategy for wildlife tree retention at a management unit level (watershed or bigger) will utilize a variety of retention. Individual site plans should be tailored to best preserve the ecological values present in the particular stand. At a management unit level, this should result in:

- A wide range of patch sizes, including some patches greater than 4 hectares in size;
- Representative tree species maintained in reserves, including rare tree species;
- A variety of ecological attributes anchoring the patches (see Table 2);
- A mixture of patch and dispersed retention; and
- A flexible implementation of cutblock targets to improve biodiversity, with at least minimum levels of retention maintained on each cutblock.

Windthrow and Forest Health

Proper design, selection and layout of patch retention areas/trees can significantly reduce windthrow potential. Nevertheless, windthrow is a natural disturbance and does contribute to the creation of CWD, broken tree tops, and open stand conditions leading to multi-storied stands. An acceptable level of windthrow, based on forest health and other ecological factors, may be considered when planning for wildlife tree retention. This would set acceptable windthrow thresholds, above which a patch would be re-assessed for loss of ecological value. Potential impacts of windthrow on riparian, slope stability or other resource values may also be considered in setting such a threshold. Factors, such as number and quality of remaining wildlife trees, natural disturbance history, and remaining ecological value of the patch, would be considered in post-windthrow follow-up assessments by the appropriate qualified professional.

It may be appropriate to incorporate windfirming techniques on retention areas where there is a high level of windthrow risk. For example, wildlife tree patches placed within, or adjacent to, a riparian management zone can help reduce wind loading on riparian reserves. Windfirming techniques, such as limbing and topping, may also be appropriate. Studies by Steve Mitchell at the University of British Columbia indicate that most wind damage is concentrated within the first 25 metres of a cutblock edge, and edges exposed to multiple wind directions are substantially more vulnerable.[4] Larger patches with rounded boundaries are therefore less susceptible to damage than smaller or more angular ones.

Consider forest health issues when planning wildlife tree retention areas (e.g., wildlife tree retention should contain a diversity of tree species where possible to ensure the entire patch is not at risk of damage from insects and disease). Identification of potential risks to adjacent stands should be based on local knowledge and forest health hazard zones. For example, if potential wildlife tree retention areas within a proposed cutblock are at a

[4] Personal communication.

high risk for infestation in the near future, a forest health specialist should be consulted (also refer to published forest health documents). If Douglas-fir bark beetle or spruce bark beetle is likely, windthrow tolerance levels may be lower because of the potential for beetles to breed in freshly downed material. On the other hand, disturbances caused by some forest health factors, such as root rot and mistletoe, can provide valuable wildlife habitat. Ecological values and forest health concerns both need to be considered when developing appropriate wildlife tree retention plans.

Guiding Principle: When designing wildlife tree retention areas, consider present and future windthrow and forest health issues.

Future Coarse Woody Debris

A significant benefit of wildlife tree retention is the eventual input of coarse woody debris (CWD) on the site. The natural cycle of CWD results in large fluctuations in the amount of CWD on the ground throughout the life of a stand. If a wildlife tree patch is salvaged after a windstorm or other disturbance, natural levels of CWD may not occur within the patch. A reduction in CWD inputs may limit available habitat for invertebrates and other species that rely on large rotting logs, as well as potentially impact long-term site productivity. Stand-specific issues that influence the decision of where salvage may be appropriate include:

- Worker safety;
- The significance of forest health risks and/or fire hazards to the surrounding area;
- The ability of the remaining standing trees to provide suitable wildlife tree habitat;
- The contribution of fallen trees to site productivity and long-term habitat;
- The availability of wildlife trees and CWD in adjacent harvested areas; and
- The economic viability of the salvage operation and the potential timber supply impacts related to replacing the salvaged retention area.

When salvaging infested stands, non-susceptible tree species should be preferentially retained as wildlife tree patches where possible. Where all or part of a wildlife tree patch is salvaged, replacement of the salvaged area with other suitable habitat in the nearest possible location may be required (see FPPR Section 91(2)). If a wildlife tree patch suffers blowdown, but is not salvaged, it need not be replaced.

Guiding Principle: If wildlife tree retention is felled or blows down, leave the downed wood in place to function as CWD unless it poses a significant forest health or safety risk.

Worker Safety

Not all dead trees are dangerous and not all live trees are safe. A procedure for assessing potentially dangerous trees has been developed by the Wildlife Tree Committee of B.C. (see: http://www.for.gov.bc.ca/hfp/wlt/). Workers responsible for assessing dangerous trees must have successfully completed the Wildlife/Danger Tree Assessors Course and hold current certification. This course represents the Workers Compensation Board (WorkSafe BC) standard of care for assessing dangerous trees in forestry situations. For course information, see:

(http://www.unbc.ca/conted/courses/nrme/wldt.html).

Not all activities require a full dangerous tree assessment before operations can proceed. The intensity of assessment for potentially dangerous trees varies with the level of site disturbance associated with the work activity. For example, for low site disturbance activities, such as planting and brushing, a pre-work assessment can be done by a qualified person such as the planting supervisor. The planting supervisor will look for significant hazards on trees that could impact the worksite. Trees with significant hazards will be assumed to be dangerous unless otherwise rated by a certified Wildlife/Danger Tree Assessor.

Stubbing can be a relatively easy methodology for leaving dispersed structure; however, mechanically stubbing a tree does not guarantee it as safe in the work area (see Dispersed Retention section). A stub is only considered safe if it is cut from a wildlife tree class 1 (green healthy tree), class 2 (live with minor defect) or class 3 (recently dead, fine twigs on branches are present).

If there is exposure to potentially dangerous trees for workers, WCB Regulations require these trees to be:

- Surrounded by a no-work zone;
- Assessed as safe by a qualified assessor; or
- Removed during forestry operations.

Guiding Principle: The appropriate level of assessment of retained trees is necessary to ensure worker safety.

Time Frame for Wildlife Tree Retention

Wildlife tree retention areas must not be harvested until the related cutblock's net area to be reforested (NAR) develops mature seral condition attributes (see Section 67 of the FPPR). For practical purposes, the end of the rotation will be a main consideration. The rotation end does not guarantee mature seral conditions in the regenerated stand – particularly on the coast where there is movement towards shorter rotations in second growth stands. Rotation end does trigger the need to re-assess retention. At the end of the rotation period, when the stand is again available for harvest, the retention area should be re-assessed. If the original retention area still contains the best available stand-level biodiversity attributes, then that area continues to be the best choice for wildlife tree

retention. If better wildlife tree attributes are available elsewhere in the cutblock, consider re-locating the retention to those areas.

Wildlife tree reserves are maintained at least until related cutblock trees, have attained mature seral attributes (see FPPR Section 67).

Tracking and Monitoring Wildlife Tree Retention

Licensees should monitor their own wildlife tree retention areas to ensure compliance with legislation and to check overall effectiveness. An example of stand-level biodiversity monitoring field forms and methodologies can be found at the following website: http://www.for.gov.bc.ca/hfp/frep/3_indicators.html.

A monitoring program should at a minimum determine:

- The total wildlife tree retention area and percentage of cutblock area retained on each cutblock;
- The sum of all wildlife tree retention areas for the total area described in the alternative result or strategy, or the total area harvested in the year if default practice requirements are used; and
- The ecological attributes that are being retained.

The accurate location of wildlife tree retention is essential to ensure necessary long-term retention (a patch is considered to be mappable if it is larger than 0.25 hectares[5]). All wildlife tree retention areas under FRPA must be reported to government during the post-harvest submission as required under Section 86 of the FPPR. Section 86 refers to reporting on the location and approximate size of all associated wildlife tree retention areas. Reporting requirements for FPC blocks are stated in the *Timber Harvesting and Silviculture Practices Regulation* (THSPR) section 46 and 48. These THSPR reporting sections refers to the mappable reserves within or contiguous to the cutblock. The intent of these monitoring sections under the FPC or FRPA regulations is similar – though the wording is different. The FPPR refers only to wildlife tree retention areas, while the THSPR refers to mappable reserves. Since riparian reserves (or other treed areas left for similar biodiversity purposes) nearly always serve double duty as wildlife tree retention areas, it is expected that the full range of retention will be mapped for FRPA blocks, as with FPC blocks.

[5] Ministry of Forests. 2005. British Columbia Mapping Standards for use in RESULTS Submissions. Version 1.1