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Manitoba Conservation
Forest Practices
Guidebook

Forest Management Guidelines

For Terrestrial Buffers

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Protecting
& Managing
our Future

Manitoba 

2010

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Forest Practices
Guidebook

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**Forest Management Guidelines
For Terrestrial Buffers**

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www.gov.mb.ca/conservation/forestry/forest-practices/practices/fpp-guideline-pdfs.html

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The public is encouraged to send any comments
and/or recommendations to [forestguidelines@
gov.mb.ca](mailto:forestguidelines@gov.mb.ca).

Preface

Manitoba Forest Practices

This guidebook has been developed as part of Manitoba Conservation's Forest Practices Initiative. Led by the Forestry Branch, this guide provides direction for resource managers, timber operators, natural resource officers and auditors when conducting or assessing forestry activities.

A primary goal of the initiative is to advance best practices using guidelines and standards for sustainable forest management activities in Manitoba. These guidelines present alternative procedures or standards that can be applied to satisfy principles the guidelines are based on. Guidelines are then used to develop prescriptions. Specific guidelines are enforceable when included as conditions of a Work Permit. Forest practices guidebooks ensure all forest resource values are appropriately addressed for the full range of forest activities.

Forest practices guidebooks are references available for resource managers, timber operators, natural resource officers and auditors. Others include provincial guidelines, forest management plans, annual operating plans and standard operating procedures, which are developed independently by each forest industry company.

Committee membership consists of one member from each Manitoba Conservation branch, one regional resource representative and one member each from Manitoba Water Stewardship Fisheries and Water Quality branches. Committee membership also includes one forest industry member from all Forest Management Licensees, Spruce Products Ltd and the

Department of Fisheries and Oceans. Committee members co-operate in a consensus seeking manner to develop forest practice guidebooks.

Each guidebook has a complete set of guidelines for a specific forest practice, pertinent references to science, legislation, policy, agreements and licences, as well as recommendations for the planning, implementation, monitoring and enforcement of this forest practice.

The recommendations, as much as possible, are:

- measurable
- practical
- based on scientific evidence and traditional knowledge
- flexible and applicable in a variety of ecological conditions
- clearly presented for consistent interpretation and application
- supported by technical terminology and definitions

Forestry practices in Manitoba are continuously monitored and appropriately amended when necessary. Guidebooks are reviewed every five years (or earlier, if required).

Guidebooks can be found on the Manitoba Conservation Forestry Branch website: manitoba.ca/conservation/forestry/forest-practices/practices/fpp-guideline-pdfs.html.

The public is encouraged to submit comments and recommendations to forestguidelines@gov.mb.ca.

Table of Contents

Preface	II
Forest Management Guidelines for Terrestrial Buffers	1
Purpose	1
Background	1
Goal	1
Objectives	1
Species at Risk	1
Wildlife Features	2
Planning for Connectivity	2
Physical Features	10
Insects and Disease	11
Implementation	11
Glossary of Terms	12-13
Literature Cited	14

List of Tables

Table 1 Wildlife Features and Associated Buffers	3
Table 2 Physical Features and Associated Buffers	10

List of Figures

Figure 1	Eagle nest	5
Figure 2	Heron rookery	5
Figure 3	Snakes at entrance to the hibernacula	5
Figure 4	Entrance to bat hibernacula	6
Figure 5	Bat hibernacula	6
Figure 6	Aerial view of mineral lick	7
Figure 7	Mineral lick near Rainy Lake	7
Figure 8	Small mineral lick containing water.	7
Figure 9	Native grass meadow in Duck Mountains	8
Figure 10	Bear den on north shore of Athapap Lake	9
Figure 11	Landscape view of wallow	9
Figure 12	Wallow	9

Forest Management Guidelines for Terrestrial Buffers

Purpose

This document provides minimum buffer widths and other key considerations for maintaining important and sensitive natural, cultural and recreational features. These features require mitigation when planning and implementing forestry operations.

Background

Manitoba's forests contain a rich diversity of natural resources that are important to Manitobans at multiple scales and for multiple values. On a broad scale, Manitobans expect managed forests to contribute to healthy ecosystems, maintain biodiversity and conserve wildlife populations. They also provided opportunities for recreational and cultural purposes, and commercial resource uses. On a finer scale, tangible values are provided by forests through the related economic benefits by the harvest of forest resources. Forests also provide intangible values associated with spiritual and cultural uses, as well as pure aesthetic enjoyment.

As a result, Manitoba's forests must be managed in a sustainable manner to meet the needs and demands of all Manitobans. When planning forestry operations, all resource values must be recognized and integrated into any harvesting or renewal activities.

Please note: Manitoba Natural Resources' *Consolidated Buffer Management Guidelines* were developed in 1996, incorporating water and terrestrial buffers in one book. *These Consolidated Buffer Management Guidelines are no longer applicable.*

Manitoba Conservations' *Forest Management Guidelines for Riparian Management Areas* were developed in 2008 by the Forest Practices Committee to replace Table 2 of the *Consolidated Buffer Management Guidelines*. The *Forest Management Guidelines for Terrestrial*

Buffers replace the terrestrial section of the *Consolidated Buffer Management Guidelines*.

Table 1 in the *Forest Management Guidelines for Terrestrial Buffers* (see page 3) replaces parts of the *Forest Management Guidelines for Wildlife in Manitoba* (1989).

Goal

The goal of this guidebook is to maintain the integrity and functional values of important and/or sensitive natural, cultural and recreational features within a managed forest to ensure the sustainability of other resource values while managing for timber resources.

Objectives

The guidebook's objectives are to:

- ensure the sustainability of other resource values while managing for timber resources
- protect critical wildlife habitat
- maintain wildlife habitat and travel corridors
- maintain visual barriers for recreational and aesthetic values
- ensure forest health issues are incorporated into terrestrial buffer prescriptions
- ensure that the functional value of the features are protected
- protect sites that are of cultural importance
- protect aesthetic and experiential features associated with public use facilities, sites and areas

Species at Risk

Species at risk – protected under either provincial (*The Endangered Species Act, MESA*) or federal (*Species At Risk Act, SARA*) legislation – are managed through direction from official recovery strategies, action plans or other provincial directives. Proponents must report the occurrence of any species listed as extirpated, endangered, threatened or of special concern by provincial or federal legislation, to provincial and/or federal authorities.

Wildlife Features

A proposed forest harvest area may include features that are important, or critical, to local wildlife populations, or strategically significant to a wider range of populations. These features require special consideration to ensure their integrity and functional values to wildlife are maintained through protective or mitigative prescriptions.

Table 1 outlines these wildlife features, the objective of the buffer, the buffer widths required and the effective period. Where a range of buffer widths, or those “to be determined by Integrated Resource Management Team (IRMT),” is indicated, the selected buffer width is determined by the wildlife species implicated, and factors which will include, but are not limited to, the value, uniqueness and/or abundance of the feature. Wildlife features that require planning for connectivity shall be planned for in a manner that protects their functional value through harvest block designs. The final determination of buffer width is approved by the IRMT.

Planning for Connectivity

In Table 1, the column titled Planning for Connectivity is to help planners develop prescriptions for the wildlife features. This planning may mitigate the shape of the harvest block to allow for security cover and greater use of the wildlife features.

The listed wildlife features for birds and bats do not require planning for connectivity because of their mobility and visual capabilities.

Snake hibernacula require planning for connectivity to mitigate safety concerns around the movement of garter snakes to and from the hibernacula.

Mineral licks require planning for connectivity because visual screens to the mineral licks provide security cover and increase the use of this wildlife feature. Ungulates and other mammals use mineral licks in the spring and summer to obtain their required minerals and nutrients.

Springs require planning for connectivity. Fresh water springs in certain locations are rare and used extensively by wildlife. Planning for connectivity may increase the use of this wildlife feature.

Native grass meadows require planning for connectivity because elk are more likely to use these meadows if they can access and use them without detection and/or disturbance.

Because active large mammal dens tend to be discovered only during harvest operations, any planning for connectivity to protect the dens from disturbances cannot be achieved.

Other important wildlife features may include calving areas, wallows or important travel corridors. The IRMT decides if planning for connectivity is required on a case-by-case basis.

Table 1 Wildlife Features and Associated Buffers

Wildlife Feature	Buffer Width	Objective of Buffer	Effective Period	Planning for Connectivity
Nests of Eagles, Ospreys and Heron Rookeries*	200m radius	Protect from sensory disturbance during breeding season.	April 1 to July 31	Not required
	100m radius	Protect nest trees and maintain integrity of nesting site.	August 1 to March 31	Not required
Active Large Stick Nest	50m radius	Protect nest trees and maintain integrity of nesting site.	When discovered during operations	Not required
Bat Caves	200m radius	Protect from sensory disturbance and physical harm. Protect distinct feature and maintain integrity of surrounding habitat.	All year	Not required
Snake Hibernacula	200m radius	Protect from sensory disturbance and physical harm. Protect distinct feature and maintain integrity of surrounding habitat.	All year	Is required
Mineral Licks and Springs	50-200m from the outer perimeter of the feature	Provide security cover. Protect from disturbance.	All year	Is required
Native Grass Meadows	To be determined by IRMT	Provide escape cover for elk. Protect intrinsic value, if grassland is a rare type of plant community such as fescue prairie.	All year	Is required
All Active Large Mammal Dens	50m	Protect animals from harm.	When discovered during operations	Not required
Other (Important Wildlife Features)	To be determined by IRMT	Variable depending on the feature.	To be determined by IRMT	May be required

*The buffers for these wildlife features take priority over the ones in the *Forest Management Guidelines for Wildlife in Manitoba*.

There are features that haven't been included in this table because they're covered by provincial legislation. As specified in the Forest Use and Management Regulation Section 4 (b) under *The Forest Act*, below:

Restricted zones

4. Restricted Zones

The following are restricted zones:

(a) Crown lands in provincial parks and provincial recreational areas as listed in Schedule C but not included in clause 3(b); and

(b) all Crown lands on a strip up to 150 metres in width depending on land topography along both sides of provincial trunk highways, provincial roads, railway right-of-way, hiking trails, riding trails, portages, streams, rivers and lakeshores; [emphasis added]

(c) all Crown lands comprised of islands of less than 10 hectares in area situated in rivers and lakes.

Restricted zones may be harvested with the approval of a supervising officer.



Figure 1 Eagle nest

Eagle and Osprey Nests

Eagles and ospreys usually nest in tall trees near water. Buffers are required to protect the nest trees, perching trees and feeding areas during the breeding season, when the birds are most sensitive to human activity. The Forest Management Guidelines for Riparian Management Areas (2008) do not necessarily identify the full buffer required for eagle, osprey, heron and other active stick nests, when they occur in the riparian zone. Use the guideline that results in the most protection (widest reserve) being applied.



Figure 2 Heron rookery

Heron Rookery

A rookery is the breeding ground for herons, where they nest as a group or a colony in trees. Disturbing a colony has the potential to interfere with the reproductive success of many individuals and nesting pairs.



Figure 3 Snakes at entrance to the hibernacula

Snake Hibernacula

A snake hibernacula is a secure area, usually some sort of cave or den, used by snakes during hibernation. They overwinter in these protected areas below the frost line in large, communal groups. Most hibernacula are dark and secluded to protect the snakes from harm by predators or human disturbances. However, these underground caves and fissures make the area more fragile and, therefore, more vulnerable to cave-ins by heavy equipment. As a result, the snakes require year-round protection from disturbances, particularly in the spring and fall when they are leaving or returning to the hibernacula.



Bat Hibernacula (caves)

Hibernating bats are very sensitive to disturbances. They require sites that provide relatively constant, low temperatures, with high humidity and no air currents. It's important that the entrance to a bat hibernacula site not be enlarged or blocked with logging debris. Any change in the size of a cave opening may result in changes in airflow and temperature, causing the bats to abandon it.

Unnatural disturbances can create a significant energy demand that may exhaust the limited fat reserves bats need to survive the winter (Asmundson and Larche, 1996). The caves require protection year-round because of the risk of cave-ins by heavy equipment.

Figure 4 Entrance to bat hibernacula (cave) in northwestern Manitoba, discovered during a winter harvesting operation, and not in a pre-harvest survey. Harvesting was immediately stopped and, when the bats were found, a buffer was placed around the opening.



Figure 5 Bat hibernacula The dark spots are clusters of bats on the roof of the cave shown in figure 4.



Figure 6 Aerial view of a mineral lick, showing wildlife trails



Figure 7 Mineral lick near Rainy Lake



Figure 8 Small mineral lick containing water

Mineral Licks

Mineral licks are areas of mud pools, or puddles, fed by slow seeping springs and used by wildlife. Mineral licks occur in areas of both sedimentary and volcanic bedrock, but rarely in granite bedrock, except where overlain by calcareous glacial till. Well-established mineral licks typically appear as open, muddy areas and are usually characterized by well-worn trails radiating from them (Ontario Ministry of Natural Resources 2007).

Mineral licks are not always in forested areas. The mineral lick pictured (figure 6) is not a potential logging site, but shows wildlife trails leading to the mineral lick. The winter road, seen in the photo, was originally the proposed location for a summer road. However, the summer road was relocated because of the mineral lick.

Springs

The point where an aquifer intersects with the ground surface and discharges water (Dunster, 1996).



Figure 9 Native grass meadow in the Duck Mountains

Native Grass Meadows

This refers to an opening in a forested landscape, dominated by herbaceous species (typically grasses and other graminoid species), often with a significant shrub component.

Local conditions may vary, from xeric (dominant species are upland grasses, forbs and shrubs) to wet-mesic (dominant species are associated with wetlands and include sedges, rushes and other species that require irregularly flooded-to-saturated soil conditions). The soil texture of some native grass meadows south of Swan River is coarse.

Within a broader landscape context, these meadows typically form isolated patches in a forested matrix. As a result, they often provide refugia for species that require this type of habitat, either for a portion of their life cycle, or to get nutrition from the associated vegetation (Pedersen and Adams, 1976; Winn, 1976). Native grasslands may have intrinsic value when they supply a rare type of plant community such as fescue prairie. Care should be taken not to destroy this habitat through activities like stockpiling or road construction.

Large Mammal Dens

Active large mammal dens in Manitoba are protected with a 50-metre buffer. However, locating the dens that need protection is difficult.

Bear and wolverine dens are used during the winter months, so are difficult to locate in the summer when the pre-harvest surveys are done. Wolf and coyote dens are also hard to spot in pre-harvest surveys because they occupy such a small space of the area being observed. The fact that these dens are usually found in the riparian areas, or reserve zones – close to bodies of water – decreases the likelihood they'll be discovered during pre-harvest surveys. Fortunately, it also decreases their chances of being disturbed during harvesting.

Bear Dens

In autumn, bears begin to search for den sites. While female bears usually line their dens with grass, ferns or leaves, males do not. Females usually seek the protection of their dens earlier, while males often wait until the first snowfall before entering a den. Bears generally emerge from their dens with the coming of spring and warmer weather.



Figure 10 Bear den on the north shore of Athapap Lake

A bear den may be located under a tree stump, beneath a clump of blown-down trees, in an overturned log, hole, or hillside, or in a cave. Most dens are only large enough to accommodate a bear curled up. The same bear dens are often used many years in a row.

Wolverine Dens

Wolverine dens in Canada are usually located in the northern boreal and tundra regions. They're mostly found in tunnels in the snow that are formed naturally around rock configurations.

Wolf Dens

Wolf dens are usually built close to water, in soils that allow for easy digging (ex: sand or gravel). They are also located in old stumps or rock crevices. As well, wolf dens can be found on gravel and sand-ridge landforms – elevated above the landscape and well-drained – but still within 200 to 300 metres from water.

Wolf pups are born in dens in the spring. Wolves may change dens throughout the year, moving their pups a kilometre or more, for reasons such as a parasite infestation of the den or a disturbance by humans or other animals. The same wolf dens are often used many years in a row.

Coyote Dens

Coyotes have many different dens they use year-round. However, these dens are particularly useful in the early spring and summer when they're raising their pups. Some coyote dens are dug under large trees, or formed in craggy openings in outcroppings of stones. However, most of them are earth excavations found on the side of a hill, usually close to water.

Coyote dens can also be found on gravel and sand-ridge landforms elevated above the landscape, such as abandoned rail-lines or side slopes in undulating terrain. These sites are generally well-drained, but can still be within 200 to 300 metres from water. Coyotes prepare multiple dens and are not hesitant to pick up and relocate from one to another.



Figure 11 Landscape view of a willow



Figure 12 Willow

Other Important Wildlife Features

These refer to habitats necessary for wildlife species, which also affect the species' potential future population.

The absence of these habitats may not necessarily prevent the species from being in the area, but may affect how much the area is used (Manitoba Natural Resources, 1989). In cases like these, important wildlife features are identified by the regional IRMT. They may include calving or rutting areas and wallows.

Physical Features

A proposed forest harvest area may include, or be next to sites, developments and other features important to Manitobans for their cultural, recreational and/or economic significance. These features require special consideration to ensure sensitive sites are protected, and related spiritual, aesthetic and experiential values are maintained.

Table 2 lists these physical features, the objectives of the buffer, the required buffer widths and the effective period. Proposed buffer widths are generally determined by communications between the proponents and the affected stakeholders and/or First Nations communities. The final determination of buffer widths (including where a range is indicated) is made by the IRMT.

Table 2 Physical Features and Associated Buffers

Physical Features	Buffer Width	Objective of Buffer	Effective Operating Period
Residential & Commercial Lots	50-200m from the edge	Visual and aesthetic screening	All Year
Intensive Public Recreation Areas	50-200m from the edge	Visual and aesthetic screening	All Year
Trapper's Cabin (away from water)	50-200m from the edge	Visual and aesthetic screening	All Year
Research & Permanent Sample plots	100m from the edge	Maintaining integrity of research	All Year
Designated Recreation Trails	0-50m from the edge	Visual and aesthetic screening Safety	All Year
Sink Holes in Karst Topography	15m from the edge	Safety Water quality Maintaining integrity of unique habitat	All Year
Cultural/Heritage Sites	To be determined by IRMT	Preservation of feature	All Year
Provincial Parks and Protected Areas	To be determined by IRMT	Visual and aesthetic screening Maintaining integrity of feature	All Year

The features listed in Tables 1 and 2 were either identified in a pre-harvest survey or known before the survey.

Provincial trunk highways, provincial roads, railways and portages are buffered according to the *Forest Use and Management Regulation* Section 4(b) (1988) under *The Forest Act*.

Insects and Disease

When considering terrestrial buffers, a proponent assesses the occurrence of insects and diseases in the existing forest. The proponent may propose alternative buffer widths from the requirements listed in tables 1 and 2, depending on the type and severity of the forest health concerns. Non-host tree species are used for retention in the block and buffer.

Occurrences of insects and disease may affect the future state of buffers. An important consideration in changing terrestrial buffer requirements is the trade-off between the risk of disease to nearby healthy stands, and the need to maintain wildlife habitat, wildlife travel corridors and visual barriers. The final determination of buffer width will be subject to IRMT approval.

Implementation

Forest Management Guidelines for Terrestrial Buffers will be used by proponents in developing Crown land and may be amended based on results of new information brought forward for formal review.

Forest companies will:

- use the *Forest Management Guidelines for Terrestrial Buffers* in the development of their annual operating plans (AOPs)
- conduct pre-harvest surveys to document occurrences of all terrestrial features, and communicate this information to Manitoba Conservation and its stakeholders

- propose the buffer prescription for a feature in their AOPs
- immediately implement a revised prescription for the remainder of the harvest (where the occurrence of a feature is identified after a harvest operation has begun)
- evaluate aspects of these guidelines to ensure their harvest objectives and targets (within the AOP prescriptions) are being met

Manitoba Conservation will:

- review and approve proposed buffer prescriptions
- evaluate aspects of these guidelines to ensure harvest objectives and targets (within the AOP prescriptions) are being met
- conduct post-harvest surveys to assess whether the approved buffer prescriptions have achieved the objectives set out in Tables 1 and 2

Regional Integrated Resource Management Teams (IRMTs):

- have the authority to revise buffer width based on site-specific evaluations
- will discuss, with proponents, the *Other Important Features* row in Table 1, to ensure that appropriate prescriptions and procedures are included in AOPs and/or Work Permits

Glossary

Active large mammal den

any den with adults/offspring in or around the den (includes bears, wolverines, coyotes and wolves)

Active large stick nes

any stick nest with birds/chicks in or around the nest (includes owls, hawks and falcons)

Calcareous

soils high in calcium or magnesium carbonate, derived from limestones

Connectivity

a measure of how well different areas (patches) of a landscape are connected by links such as habitat patches, single or multiple corridors, or stepping stones of like vegetation (Dunster, 1996)

Critical wildlife habitat

habitat crucial to the size, distribution or stability of a wildlife population in an area; degradation of a component of this type of habitat potentially can cause significant reduction of a wildlife species within a local geographic area (Manitoba Round Table for Sustainable Development 2001)

Designated recreation trail

a trail managed or maintained for a specific type of recreational use (For example, a trail may be maintained by a local group who use it for a particular sport/activity like cross-country skiing, snowmobiling, hiking, horseback riding, bicycling or hunting.)

Forest practices

activities conducted during all stages of forest management (Examples are surveys, harvesting, road construction and silviculture.)

Guidebook

a collection of policies, guidelines, procedures and standards related to a specific forest practice

Guideline

an alternative procedure or standard that can be applied to satisfy a principle the guideline is based on (Specific guidelines are enforceable when included in the conditions of a Work Permit.)

Integrated Resource Management Team (IRMT)

a regional management team organized to review natural resource issues (The IRMT is made up of members of Manitoba Conservation – director, assistant director, chief natural resource officer and resource managers representing forestry, wildlife, parks and lands’ interests – and Manitoba Water Stewardship’s fisheries manager.)

Intensive public recreation areas and sites

a variety of outdoor, facility-oriented, road accessible, recreational opportunities in natural-looking settings in Manitoba’s provincial parks. (Permitted activities include recreational trails, low and medium-density, road accessible cottaging, full-service campgrounds, and services like sewage lagoons, and fire management and control.)

Karst

describes landforms and processes associated with dissolution of soluble rocks such as limestone, marble, dolomite, or gypsum; characterized by underground drainage, caves and sinkholes (Dunster, 1996)

Mitigation

actions taken during the planning, design, construction and operation of works and undertakings to alleviate adverse effects on the land base

Policy

a deliberately chosen course of action (Policy, in this document, refers to governing principles and corresponding procedures and standards of the provincial government.)

Procedure

a step, or series of steps, taken to implement a policy or guideline

Permanent sample plot (PSP)

a research plot established for ease of location and ability to measure and re-measure conditions (Measurements in the plot are taken when it's established and then repeated at intervals to monitor changes over time.)

Prescription

authoritative recommendation about a particular course of action

Recovery strategy and action plan

a plan that gives details about the actions or conditions necessary to promote a species recovery

Sink holes

depressions formed when underlying limestone bedrock is dissolved by groundwater (Sinkholes vary greatly in area and depth and may be very large. The two main varieties are those caused by the collapse of a cavern roof and those caused by the gradual dissolving of rock under a soil mantle [Encyclopedia Britannica online 2007].)

Standards

descriptions of targets or goals (may be general or specific) used to measure the success of procedures

Ungulate

any animal in the group *Ungulate*: hoofed, grazing mammals, many of which have horns (ex: deer, elk, moose, caribou) (Dunster, 1996)

Wallow

a shallow depression or pit in the ground that is:

a) created by ungulates through digging, trampling or rolling

- ranges in size from two metres to several metres wide and typically less than 20 centimetres deep
- may be dry or wet

b) an existing depression used by ungulates to wallow in. Ungulates will roll in wallows to cover themselves in dust or mud to provide relief from biting insects. Wallowing also serves a social function during the breeding season. A male ungulate (ex: moose, elk) urinates in the wallow and rolls in it to attract females.

A wallow, characterized by disturbed vegetation (grasses/sedges/low shrubs) caused by pawing, digging or rolling, may be found in forested and non-forested areas. The site often emits a strong odour of urine and may have tracks, hair or droppings nearby.

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