PILEATED WOODPECKER

Scientific Name: *Dryocopus pileatus*
Species Code: B-PIWO

Status: Yellow-listed

Distribution

- **Provincial Range**

Pileated Woodpeckers are widely distributed in southern British Columbia, becoming relatively sparse across central BC, north through the Peace Lowlands to the northeastern regions of the province. Breeding likely occurs throughout their range (Campbell *et al*. 1990).

- **Elevational Range**: Sea-Level to Sub-Alpine

- **Provincial Context**

Pileated Woodpeckers occur more commonly in southern BC than in northern parts of their range. Few winter records of this species are found.

- **Project Area:**

Ecoprovince: Southern Interior Mountains
Ecoregions: Columbia Mountains and Highlands, Southern Rocky Mountain Trench
Ecosections: Eastern Purcell Mountains, East Kootenay Trench
Biogeoclimatic Zones: IDFdm2; ICHmk1; ICHmw1; MSdk; ESSFdk; ESSFdku; ESSFwm; ESSFwmu

Ecology and Key Habitat Requirements

Pileated Woodpeckers occur in mature, coastal and interior Douglas-fir and western hemlock forests, including adjacent logged and second growth areas, to the open deciduous and mixed woods of the Chilcotin-Cariboo Basin (Campbell *et al*. 1990). Breeding occurs in a variety of different forest types from open deciduous forests to dense, mature coniferous stands (Campbell *et al*. 1990). This species excavates its own nest cavities and nests occur mostly in deciduous trees, however conifers and man-modified structures (e.g., power poles) may also be used. Nests typically occur in the main trunk of large live trees (i.e., >25 cm DBH). The breeding period extends from April to early June. The Pileated Woodpecker feeds primarily on carpenter ants which it extracts from large diameter logs, stumps or standing dead trees. This species requires large territories and takes advantage of late successional stages of coniferous or deciduous forest, but also younger forests that have scattered, large, dead trees (Bull & Jackson 1995).

Territory size can be variable. Studies in Oregon show that territory size of individual birds varies from 200 - 1586 ha, with pair territories slightly larger than either partner (Bull & Holthausen 1993)

Habitat Use and Life Requisites

The life requisite that will be rated for Pileated Woodpeckers is living and reproducing.

- **Living**

Wood-dwelling insects are the primary diet of Pileated Woodpeckers throughout the year, and carpenter ants are a major food item in all seasons (Beckwith and Bull 1985; Bull et al. 1992). Carpenter ants are particularly important in winter, when they form the majority of the diet. Diet can vary seasonally, with woodpeckers making excavations in fairly sound wood to access carpenter ant colonies in winter. Foraging in summer can be excavations in soft wood, surface gleaning and probing. Pileated Woodpeckers can be opportunistic taking advantage of outbreaks in western spruce budworm larvae, as well as berries, nuts ands fruits. In winter Pileated Woodpeckers use deep excavations in sound wood, whereas summer food occurs near the wood surface precluding deep excavations.

Pileated Woodpeckers prefer logs ≥ 50 cm dhb, and snags with dbh ≥ 45 cm, and ≤ 5% bark remaining as foraging habitat.

- **Reproducing Habitat**

Eggs are laid in late April or early May and hatch after an 18 day incubation. Fledged young remain with the parents for most of the summer and leave in August or September. Reproductive habitat contains suitable trees for nesting. Pileated Woodpeckers almost always excavate their own cavity, and only trees with main trunks large enough to hold a large cavity high above the ground are used for nesting. Minimum nest tree dbh ranges from 29 to 33 cm dbh (Conner et al. 1976, Bonar and Bessie 1996). Nests usually are located in high (≥ 4 m) branch-free portions of the main trunk. In coastal forests, most nest trees were western hemlock (Aubry & Raley 1992). Pileated Woodpeckers show a preference for trees with fungal-softened heartwood at the cavity location, as softer hardwood is easier to excavate, and fungal respiration may heat the cavity.

Seasons of Use

Pileated Woodpeckers are year round residents of the project area. They are closely associated with tree cover for nesting, roosting and foraging. In spring and summer, habitat use occurs in both open and closed canopied areas. In winter, use of open areas declines as logs and stumps are unavailable due to snow cover. However, the differences between winter and growing season habitats is not sufficiently known to rate them separately. Therefore, only one all- season rating will be used. Table 2 summarizes the life requisites required for each month of the year.

Table 2. Monthly Life Requisites for Pileated Woodpecker

Life Requisite	Month	Season*
Living	January	All (Winter)
Living	February	All (Winter)
Living	March	All (Winter)
Living, Reproducing	April	All (Winter)
Living, Reproducing	May	All (Spring)
Living, Reproducing	June	All (Spring)
Living, Reproducing	July	All (Summer)
Living, Reproducing	August	All (Summer)
Living	September	All (Fall)
Living	October	All (Fall)
Living	November	All (Winter)
Living	December	All (Winter)

Habitat Use and Ecosystem Attributes
Table 3 outlines how each life requisite relates to specific ecosystem attributes (e.g., site series/ecosystem unit, plant species, canopy closure, age structure, slope, aspect, terrain characteristics)

Table 3. Terrestrial Ecosystem Mapping (TEM) Relationships for each Life Requisite for Pileated Woodpecker.

Life Requisite	TEM Attribute
Living Habitat (feeding, roosting, security)	• site: structural stage • soil/terrain: flooding regime • vegetation: % cover by layer, coarse woody debris (CWD) (dbh, decay class, abundance)

	• mensuration: tree species, dbh, height, wildlife tree characteristics

Ratings
There is an intermediate level of knowledge on the habitat requirements of Pileated Woodpeckers in British Columbia and thus, a 4-class rating scheme will be used.

- **Provincial Benchmark**

Ecosection: Shuswap Highland (SHH); Nanaimo Lowland (NAL)
Biogeoclimatic Zone: ICH, CWH
Habitats: mature - oldgrowth forests with high abundance of large diameter trees and high abundance of CWD

- **Ratings Assumptions**

1. Units with large wildlife trees (≥ 25 cm dbh), such as mature and old-growth coniferous forests will be rated high roosting and reproducing habitat.
2. Units with high coarse woody debris abundance will be rated as high feeding habitat.
3. Units with closed canopy will be rated higher than units with open canopy.

Table 4 summarizes the habitat requirements for Pileated Woodpeckers in the study area for the seasons and life requisites being modeled.

Table 4. Summary of habitat requirements for Pileated Woodpeckers in the study area.

Season	Life Requisite	Structural Stage	Requirements
All Seasons	Living (Feeding)	2-3, 5-7	Mature & old-growth coniferous forests (high abundance CWD)
All Seasons	(Security/ Thermal)	2-3, 5-7	Mixed conifer/deciduous mature forest. Shrub cover >50% and canopy closure >66%.

- **Ratings Adjustment Considerations**

Final habitat capability and suitability maps may incorporate 1) landscape heterogeneity and connectivity; 2) habitats adjacent to significant anthropogenic disturbance regimes (e.g., settlements); 3) interspersion of different structural stages within the landscape

Literature Cited

Beckwith, RC and EL Bull. 1985. Scat analysis of the arthropod component of pileated woodpecker diet. Murrelet 66:90-92.

Bonar, R and W Bessie. 1996. Pileated woodpecker (Dryocopus pileatus) year-round habitat, draft habitat suitability index (HSI) model. in B. Beck, J. Beck, W. Bessie, R Bonar and M Todd (eds) 1996. Habitat suitability index models for 35 wildlife species in the Foothills Model Forest. Draft report. Foothills Model Forest. Hinton, Alberta.

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NORTHERN GOSHAWK

Scientific Name: *Accipiter gentilis atricapillus*
Species Code: B-NOGO

Status: Yellow-listed, but considered at risk in B.C. because it is associated with habitats that are becoming rare.

Distribution

- **Provincial Range:**

Uncommon resident and breeder throughout the province, with species more common in the north of its range (Stevens and Lofts 1988).

- **Elevational Range:** Sea level to 2290 m

- **Provincial Context**

This essential non migratory bird is widely distributed throughout the province, being least numerous along the coast and most abundant in the northern interior (Campbell *et al* 1990).

- **Project Area:**

Ecoprovince: Southern Interior Mountains
Ecoregions: Columbia Mountains and Highlands, Southern Rocky Mountain Trench
Ecosections: Eastern Purcell Mountains, East Kootenay Trench
Biogeoclimatic Zones: IDFdm2; ICHmk1; ICHmw1; MSdk; ESSFdk, ESSFdku; ESSFdkp; ESSFwm; ESSFwmu; ESSFwmp.

Ecology and Key Habitat Requirements

Although primarily a bird of mixed , open and dense forests, it has been recorded in almost every forest type in B.C. Forest edge habitats are where this bird is most commonly observed, this is likely because they are more easily seen here than in dense forests (Campbell *et al* 1990).

Northern Goshawk nests in dense mature and old growth coniferous stands (structural stage 6-7) from April to mid June. During this time they lay from 1- 5 eggs that are incubated for 32 -34 days.

Northern goshawk is essentially nonmigratory, but will occasionally move south in response to reduced prey availability during extreme winter conditions (M.O.E. 1997).

Habitat Use and Life Requisites

The life requisites that will be rated for Northern Goshawk are: feeding, security/thermal cover and reproducing which are described in detail below.

- **Feeding Habitat**

A mature breeding pair may require up to 2400 ha for foraging, encompassing a variety of habitats(M.O.E.1997). The "foraging area" ideally incorporates a diversity of landforms and forest cover types, preferred by the goshawks preybase. These areas usually have a mosaic of structural stages and abundant CWD both standing and on the ground. Telemetry studies have shown that goshawk will avoid foraging in open habitats, selecting sites with more and larger trees, and increased canopy closure, an open understory, and trees with significant basal area are used most frequently for feeding (M.O.E.1997).

The diet of the goshawk changes seasonally. During the winter season diet consists of prey species that do not migrate or hibernate such as grouse, hare and squirrel. In the growing seasons its diet consists of mainly birds such as robin, Stellar's jay, crows, ducks and some small mammals (USDA Forest service 1997).

- **Security Thermal Habitat**

Security/Thermal habitat reserved to mature and old growth forests with moderately closed canopy and open understory. This habitat is typically found on gentle slopes (usually less than 30% slope) with an abundance of habitat attributes critical for goshawk prey (snags, coarse woody debris, forest openings) (M.O.E. 1997). Northern goshawks may have many nest sites throughout their home range, which are used for all activities from roosting to incubating edges and raising fledglings(M.O.E. 1997).

- **Reproducing Eggs**

Nesting or breeding habitat requirements are considerably smaller; 1-2 ha for the nest sites and up to 170 ha for the post fledgling stage. Preferred nest sites are found in stands of large trees with dense canopies and relatively open understories. This habitat is typically found on gentle slopes (usually less than 30% slope and always < 60 % slope) with an abundance of habitat attributes critical for goshawk prey (snags, coarse woody debris, forest openings). Nest sites are often located <450m from quietly flowing water (Campbell, Morgan and Palmateer 1988).
Nests are built in the crook of a tree that forks in 3 directions or on large, straight, horizontal branches or up-curving branches, usually one third - one half way up the nest tree. Campbell *et* al report that trembling aspen, and Douglas fir are the preferred nest trees (1990). The most suitable post-fledgling sites are also found in mid slope forests; with many snags, and horizontal branches for fledglings to perch upon and a dense canopy overhead to protect from predation (M.O.E. 1997)

Seasons of Use
Table 1 summarizes the life requisites required for each month of the year.

Table 1. Monthly Life Requisites for Northern Goshawk.

Life Requisite	Month	Season
Feeding, Security/Thermal	January	All(Winter)
Feeding, Security/Thermal	February	All(Winter)
Feeding, Security/Thermal	March	All(Winter)
Feeding, Security/Thermal	April	All(Winter)
Feeding, Security/Thermal, Reproducing	May	All(Spring)
Feeding, Security/Thermal, Reproducing	June	All(Spring)
Feeding, Security/Thermal, Reproducing	July	All(Summer)
Feeding, Security/Thermal, Reproducing	August	All(Summer)
Feeding, Security/Thermal	September	All(Fall)
Feeding, Security/Thermal	October	All(Fall)
Feeding, Security/Thermal	November	All(Winter)
Feeding, Security/Thermal	December	All(Winter)

Habitat Use and Ecosystem Attributes
Table 2 outlines how each life requisite relates to specific ecosystem attributes (e.g., site series/ecosystem unit, plant species, canopy closure, age structure, slope, aspect, terrain characteristics).

Table 2. Terrestrial Ecosystem Mapping (TEM) Relationships for each Life Requisite for

Life Requisite	TEM Attribute
Feeding Habitat	• site: structural stage, slope, aspect • soil/terrain: • vegetation: % cover by layer, coarse woody debris (CWD) (dbh, decay class, abundance) • mensuration: tree species, dbh, height, wildlife tree characteristics
Security Habitat	• site: structural stage, slope, aspect • soil/terrain:

	• vegetation: % cover by layer, coarse woody debris (CWD) (dbh, decay class, abundance) • mensuration: tree species, dbh, height, wildlife tree characteristics
Reproducing Habitat	• site: structural stage, slope, aspect • soil/terrain: • vegetation: % cover by layer, coarse woody debris (CWD) (dbh, decay class, abundance) • mensuration: tree species, dbh, height, wildlife tree characteristics

Ratings
There is an intermediate level of knowledge on the habitat requirements of Northern Goshawk in British Columbia and thus, a 4-class rating scheme will be used.

• **Provincial Benchmark**
Ecosection:
Biogeoclimatic Zone:
Habitats

• **Ratings Assumptions**

1. Very steep slopes will rate nil for Reproducing eggs (RE)
2. Mature - old growth forests (structural stage 6-7) with closed canopy (>35%), open understory and gentle - moderate slopes rate high for all life requisites,
   cool or warm aspects rate down one
   Forests with an open canopy (, 20% crown closure) rate up to low for all activities
   Forests with dense tall shrub layers rate down one
3. Mature - old growth Cedar dominated forests of the ICH mk and ICHmw2 rate low at best for all activities due to the lack of prey species that are a result of the nudum understory, and lack of CWD
4. Gullied mature - old growth spruce dominated forests also rate high for all activities
5. Structural stages 2-5 rate up to moderate for feeding if adjacent to mature or old growth forests, and on moderate - gentle slopes. These sites rate nil for RE and ST.
6. Some closed canopy mature - old growth forest units of the ESSF parkland and upper subzones rate up to moderate for feeding and security thermal, but the more abundant open parkland forests rate low at best if structural stage 6 or 7. All other structural stages rate nil for cover and reproducing, and low for feeding.

• **Ratings Adjustment Considerations**
Final capability and suitability map products may incorporate 1) landscape heterogeneity and connectivity; 2) habitats adjacent to significant anthropogenic disturbance regimes (e.g. settlements); 3) interspersion of different structural stages within the landscape.

Literature Cited

Campbell, RW, NK Dawe, I McTaggart-Cowan, JM Cooper, GW Kaiser, and MCE McNall. 1990. The Birds of British Columbia, Volume Two, Nonpasserines, Diurnal Birds of Prey through Woodpeckers. Royal British Columbia Museum, Canadian Wildlife Service.

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