

Coastal Northern Goshawk - *Stads K'un* Identification Workshop



Stads K'un (wings brushing boughs)
Haida Gwaii's national bird



Photos: Harvey Thomas, Veronica Woodruff, TimberWest, Paul Chutvik and Ryan Murphy

24-Feb-2018

Workshop Objective

How to identify, document and report Northern Goshawk (*Accipiter gentilis laingi*): detections, signs, nests, habitat and behaviour.



This workshop is intended for forestry workers and other professionals conducting work on forested lands.

Photo: Harvey Thomas

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Workshop Overview



- ◉ **MODULE 1:** Status
- ◉ **MODULE 2:** Biology
- ◉ **MODULE 3:** Identification
- ◉ **MODULE 4:** Habitat
- ◉ **MODULE 5:** Now What?

Goshawk Coastal Subspecies
Accipiter gentilis laingi
Queen Charlotte Goshawk
Stads K'un

Photo: TimberWest

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MODULE 1: Status



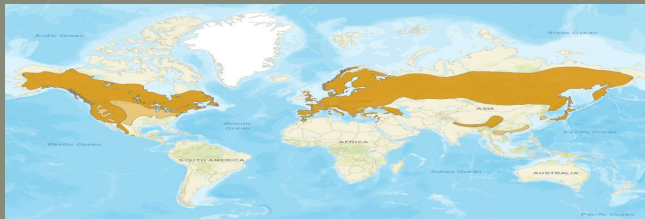
- Distribution and Range
- Conservation Status
- Population Trend
- Primary Threats
- Recovery Strategy Goals and Objectives
- Implementation Plan

Photo: Rory Hill

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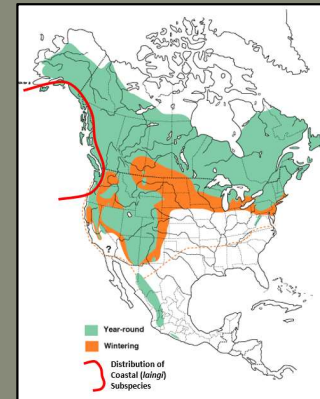
Northern Goshawk Global Range

- Restricted to forested habitats of the northern hemisphere.
- Widely distributed, but uncommon to rare across their range.



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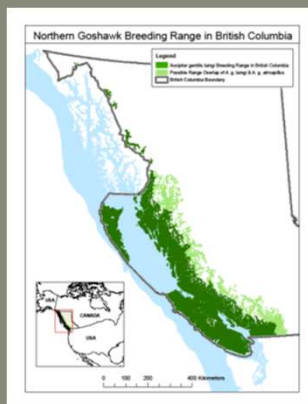
Northern Goshawk North American Range



- Across most of Canada and the western United States.
- Resident across most of its range in N. America.
- Short, southern movements in winter when prey species are low in number.
- *laingi* subspecies is restricted to the Pacific Northwest.

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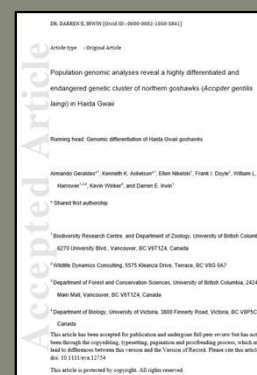
Northern Goshawk B.C. Range



- Coastal subspecies *laingi* occurs west of the Coast Range (dark green)
- Interior subspecies *atricapillus* occurs east of the Coast Range
- Possible range overlap and interbreeding of the 2 subspecies (light green transition zone)

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Goshawk Coastal Subspecies Recent Genomics Analysis

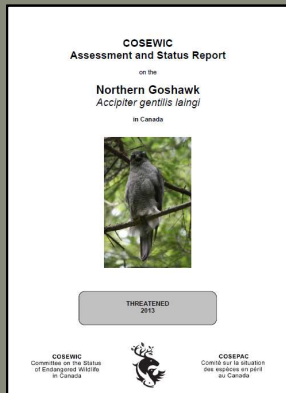


(Geraldes et al. 2018)

- Results of a 2018 genome analysis do not change the taxonomy of Northern Goshawk in BC
- Results suggest that *laingi* subspecies predominates in Haida Gwaii, while *atricapillus* predominates in the rest of BC, Alaska, Washington
- Both subspecies are provincially ranked as species at risk

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Goshawk Coastal Subspecies Conservation Status



- Nationally – Threatened
- Provincially – *laingi* is Red-listed (equivalent to Threatened)
- Provincially – *atricapillus* is Blue-Listed (equivalent to Special Concern)

Threatened - A wildlife species that is likely to become endangered if nothing is done to reverse the factors leading to its extirpation or extinction.

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Goshawk Coastal Subspecies Population Trend



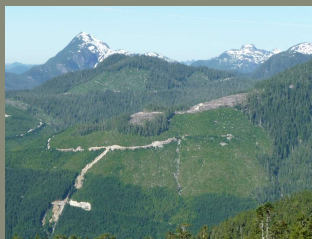
- Provincial population trend is unknown
- Habitat trend has declined since historic capability



Photo: John Deal, Harvey Thomas

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Goshawk Coastal Subspecies Primary Threats



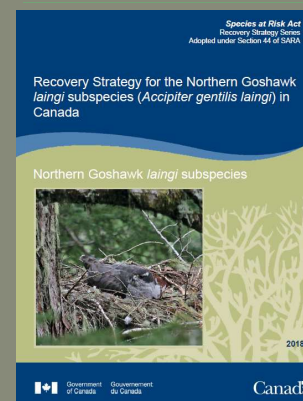
- Habitat loss and fragmentation
- Forest seral stage conversion (primarily to younger forests)
- Reductions in prey diversity, abundance and availability
- Genetic isolation
- Introduced species (particularly on Haida Gwaii)
- Disturbances near nests can reduce breeding success

Primary Threats are exacerbated by the biology of the species, including: high mortality and low reproduction and survivorship.

Photo: Paul Chylok

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Federal Recovery Strategy (2018) Federal Recovery Goals



- Sets the strategic direction to arrest or reverse the decline of the species in Canada
- Includes short-term and long-term population and distribution objectives for nesting and foraging habitat in each of the four conservation regions

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B.C. Recovery Implementation Plan (2018) Provincial Implementation Plan Goals

Implementation Plan for the Recovery of Northern Goshawk, *laingi* Subspecies (*Accipiter gentilis laingi*) in British Columbia



Prepared for the Ministry of Forests, Land, Natural Resource Operations, and Rural Development

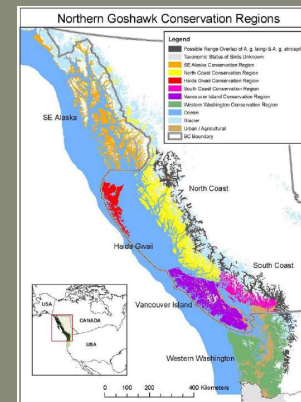


February 2018

- The provincial IP outlines senior provincial government direction on how to manage and recover Northern Goshawk *laingi* subspecies
- The provincial IP differs from the federal RS in some key areas, particularly around managing foraging habitat, long-term population objectives, and list of Critical Habitat sites

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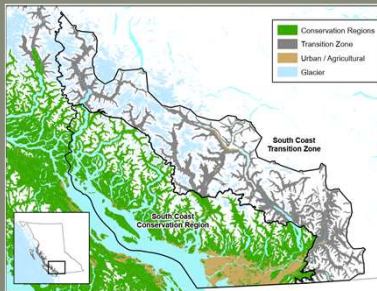
B.C. Recovery Implementation Plan (2018) Provincial Implementation Plan Goals



- Contains management actions and commitments to meet population and distribution objectives and long-term recovery goal
- Home range targets, existing landscape-level habitat protection, and total habitat “gaps” are provided for each conservation region
- Demonstrating progress on priority actions in the IP is a high provincial priority

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B.C. Recovery Implementation Plan (2018) Transition Zone



- The IP contains specific population and distribution objectives, and management actions for the Transition Zone
- Suitable breeding area habitats will be prioritized for reserve implementation in the Transition Zone

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B.C. Recovery Implementation Plan Short-term Objectives

- By 2020, protect at least 95 new priority breeding areas
 - 5 in Haida Gwaii
 - 30 in each of the 3 other regions
- Research foraging habitat requirements
- By 2020, update the Implementation Plan and provide recommendations

More information, the BC Implementation Plan is available at:
<https://www2.gov.bc.ca/assets/gov/environment/plants-animals-and-ecosystems/species-ecosystems-at-risk/recovery-planning/implementation-plan-for-the-recovery-of-northern-goshawk.pdf>

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Goshawk Coastal Subspecies Other Provincial Management Tools



- Under IWMS, currently 35 WHAs established for coastal goshawks
- Goshawks are a focal species under the Great Bear Rainforest LUO – landscape reserve design polygons are being developed to encompass suitable goshawk breeding habitat
- The Haida Gwaii LUO contains Objectives for goshawk, including established reserves around known nests and reserve zones established around new nests
- Additional legal tools for conserving or protecting goshawk habitat include OGMAs, Parks & Protected Areas
- Sec. 34c of the provincial Wildlife Act

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MODULE 2: Biology



- Breeding
- Nesting Chronology
- Hunting
- Prey Species
- Predators

Photo: Rory Hill

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Adult Coastal Subspecies Biology Breeding



Photo: Harvey Thomas

- Most males initiate breeding at 3 years of age.
- Some females may breed as early as 1-2 years old.
- Adults do not necessarily breed every year.
- Annual occupancy rates are variable (Vancouver Island 55% and Haida Gwaii 30%).

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Goshawk Coastal Subspecies Biology Nesting Chronology



Courtship and Breeding (late February to April)

- Males perform aerial displays to attract females.
- Pairs mate and nest is built.



Incubation Phase (May)

- Female lays 1-4 eggs, one every 2 days, and incubates for 30-32 days.
- Male provides female with food.

Photos: Irma Imha and Bob Armstrong

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Goshawk Coastal Subspecies Biology

Nesting Chronology



Nestling Phase (late May to late June)

- Chicks hatch and remain in the nest (38-42 days), fed by the adults.
- Male forages afar; female close by.



Fledgling Phase (late June to mid-August)

- Males fledge earlier than females.
- Chicks begin to fly, but stay close.
- Still fed by the adults (35-55 days).

Photos: TimberWest and TimberWest

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Goshawk Coastal Subspecies Biology

Nesting Chronology



Dispersal (mid-August to early September)

- Adults stop feeding young.
- Fledglings' feathers harden and birds disperse from nest area.



Non-breeding Season (October to January)

- Female moves to wintering area.
- Male remains in or near the breeding territory.

Photos: TimberWest and Todd Manning

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Adult Coastal Subspecies Biology

Hunting



- Generally, do not soar in open habitats when hunting or foraging.
- Instead, they have an ambush style of hunting.
- Goshawks use a stop-and-go, perched, short-stay and leave hunting style.
- Generalist predator of medium-sized bird and small mammals.

Photo: TimberWest

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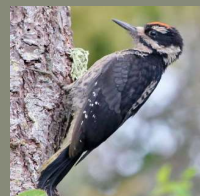
Goshawk Coastal Subspecies Biology

Preferred Prey Species



Thrushes

- Varied Thrush
- Swainson's Thrush
- Hermit Thrush
- American Robin



Woodpeckers

- Hairy Woodpecker
- Northern Flicker
- Red-breasted Sapsucker
- Downy Woodpecker

Photos: John Schwarz and John Gatchel

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Goshawk Coastal Subspecies Biology

Preferred Prey Species



Grouse and Jays

- Sooty Grouse
- Ruffed Grouse
- Canada Jay
- Steller's Jay



Mammals

- Red Squirrel

Seasonally (winter)

- Waterfowl

Photos: Bill Hubick and Kim Smith

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Goshawk Coastal Subspecies Biology

Predators



Adults have few natural predators. Young are likely preyed upon by:

- Great Horned Owl
- Barred Owl
- Bald Eagle
- Red-tailed Hawk
- Raccoon
- Black Bear
- American Marten

Photo: Tony Varola

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MODULE 3: Identification



- Coastal vs. Interior
- Adult vs. Immature
- Perched vs In Flight
- Young
- Similar Species
- Vocalizations
- Signs

Photo: Rory Hill

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Identification

Coastal Subspecies Variation



Interior
atricapillus



Coastal
laingi

Photos: Douglas Herr and Rory Hill

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Identification
Adult Coastal Subspecies (Perched)



- Overall smudgy or sooty appearance.
- Fine barring and streaking on breast.
- Upright perched posture.
- Dark cap and face mask with lighter eyebrow stripe.

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Photo: John Deal

Identification
Adult Coastal Subspecies (Perched)



- Contrast between dark back and lighter breast.
- Barred tail is round and has a whitish tip.
- Conspicuous eyebrow stripe.

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Photo: Rory Hill

Identification
Adult Coastal Subspecies (Perched)



- Conspicuous white undertail coverts that are flared when agitated.
- Slightly smaller than a raven in size.
- Adults look notably 'fierce' or 'angry' when disturbed.

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Photo: Harvey Thomas

Identification
Adult Coastal Subspecies (Perched)



- Subadult (2-3 years old) has some brown feathering on back.



- Adult (4 years and older) has dark, blue-black back.

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Photos: Mel Diette and Mark Schwan

Identification

Adult Coastal Subspecies (Perched)

- Subadult (2-3 years old)
- Grey-black feathering.
- Yellow/orange to mahogany coloured eye.

- Adult (4 years and older)
- Black feathering.
- Red eye.

Photos: Todd Mahon and USFWS

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Identification

Immature Coastal Subspecies (Perched)

- Few distinguishing characteristics.
- Mottled brown overall.
- Darker head.
- Long, rounded tail with wavy barring and lighter coloured tip.

Photo: John Deal

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Identification

Immature Coastal Subspecies (Perched)

- Thick, brown vertical streaking on breast.
- Tan upper breast, fading lighter below.
- Indication of a lighter eyebrow stripe.
- Upright perched posture.

Photo: Jack Williamson

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Identification

Adult Northern Goshawk (In Flight)

- Uniformly grey below.
- White undertail coverts.
- Long, barred tail.
- Dark back.
- Dark head with lighter eyebrow stripe.
- Bulky body with powerful, stiff wingbeat.
- Long, rudder-like tail for manoeuvring through forest.

Photos: Mathias Peize, Mikko Pihala and Holter Merker

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Identification

Northern Goshawk (In Flight)



Body adapted to pursue prey through forest.

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Video: BBC

Identification

Immature Northern Goshawk (In Flight)



- ◉ Few distinguishing characteristics.
- ◉ Heavily mottled brown from below.
- ◉ Distinct barring on underwings.
- ◉ Long-tailed with dark barring.
- ◉ Faint eyebrow stripe.
- ◉ Flight pattern is weaker or clumsier than adult.

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Photos: Alexander Vidnitsky, Seve Ryland and Seve Ryland

Identification

Northern Goshawk (In Flight)



Distinctive flight pattern: flap-flap-flap-glide.

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Video: Nik Unika

Identification

Northern Goshawk (Courtship Flight)



Deep, slow, deliberate wingbeats – 'butterfly' flight.

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Video: Marcus Nash

Identification

Goshawk Coastal Subspecies(Young)



14-17 days old



32-34 days old

- Until 10-12 days, all white down.
- Day 14, first dark pin feathers begin to appear.
- Day 24, young are partially feathered and half the size of an adult.
- Day 32, young are mostly feathered and practice flapping in the nest.
- Day 34, males fledge.
- Day 42, females fledge.

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Photos: TimberWest and TimberWest

Identification

Northern Goshawk (Young)



Nestlings around 12-14 days of age.

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Video: Aaron Allred

Identification

Goshawk Coastal Subspecies (Young)



Nestling around 36-38 days of age.

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Video: Barry Wildeven

Similar Species Identification

Cooper's Hawk



$\frac{3}{4}$ the size of goshawk

Adult

- Dark grey back.
- Chestnut barred front.
- Black cap, no eyebrow stripe.
- White undertail coverts.
- Barred, rounded and long tail.

Immature

- Fine brown streaking on light coloured breast.



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Photos: Ewan Linton and Gilles Archambault

Similar Species Identification Sharp-shinned Hawk



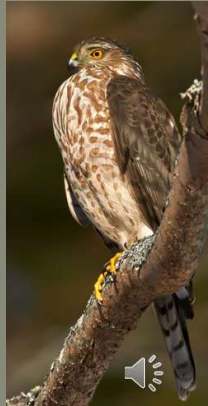
½ the size of goshawk

Adult

- Dark grey back.
- Chestnut barred front.
- Black cap, no eyebrow stripe.
- Thin, delicate legs.
- Barred, squared and long tail.

Immature

- Coarse brown streaking on light coloured breast.



Photos: Tonia Irvine and Beverly Lee

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Similar Species Identification Red-tailed Hawk



slightly larger than goshawk

Adult

- Overall mottled brown.
- Darker belly-band.
- Rufous upper side of tail.

Immature

- Similar to adult, but with buffy coloured breast.

In Flight

- Short, red, fanned tail.
- Dark 'armpit' patches.



Photos: Bob Moul and David Levinson

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Similar Species Identification Common Raven



Bulkier and larger than goshawk

Adult and Immature

- Large, all black body.
- Shaggy throat.
- Large bill.
- Perches more horizontally.

In Flight

- Long, wedge-shaped tail.
- Flaps more frequently.

Photos: Dick Daniels and Sergey Yeliseyev

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Questions?



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Goshawk Coastal Subspecies (Adult) Vocalizations



- Adults are generally quiet most of the year.
- Give alarm calls during the breeding season or when agitated.
- Pitch varies among individuals.
- Females call deeper in tone than males.
- Females give wail calls to elicit male to bring food.

Photo: TimberWest

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Goshawk Coastal Subspecies (Adult) Vocalizations



Adult responding to alarm call playback.

Video: TimberWest

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Goshawk Coastal Subspecies (Immature) Vocalizations



- Start giving begging calls by 3 weeks of age.
- By 5.5 weeks of age may start giving alarm calls.



Photos: TimberWest, Harvey Thommas and TimberWest

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Mimic Species Vocalizations



Jays and Sapsuckers

- Can give convincing mimics of both goshawk alarm and begging calls.
- Canada Jay mimic calls can be particularly misleading.
- Have patience, the mimic species almost always inserts at least one of its own calls or songs while it is mimicking.

Photos: Corey Shearwater, Jeff Maw and Paul Shumling

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Goshawk Coastal Subspecies Signs



Prey Remains

- Plucked feathers, bones and fur tufts of prey species.
- Found on the forest floor, plucking posts, or at the base of nest trees.



Plucking Posts

- Used regularly or habitually.
- Typically an elevated stump, mossy mound, log, branch or snag; frequently in sight of the nest.

Photos: Paul Chivuk and Paul Chivuk

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Goshawk Coastal Subspecies Signs



Moulted Feathers

- Adult flight and tail feathers are frequently shed or moulted during the nesting season.
- Often found on ground near nest.



Pellets

- Indigestible bones, fur and feathers are regurgitated in pellets.
- Typically grey, tubular, 2-6 cm long.

Photos: Ryan Murphy and Sue McDonald

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Goshawk Coastal Subspecies Signs



Whitewash

- Defecate over the nest and at roosts where whitewash accumulates.
- Easier to detect on even ground or on vegetation with large leaves.



Eggshells

- Pale bluish-white and are about the size of a small chicken egg.
- Adult removes the eggshell from nest and discards it on the ground.

Photos: TimberWest and Ryan Murphy

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MODULE 4: Habitat



Photo: Rory Hill

- Nesting Habitat
- Foraging Habitat
- Nest Trees
- Nests
- Mistletoe Structures
- Active or Inactive?

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Goshawk Coastal Subspecies Nesting Habitat



Photo: Pamela Zevit

Nesting Habitat Suitability is likely based more on:

- stand structure rather than on stand age and tree species composition
- abundance and accessibility of prey rather than prey species diversity

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Goshawk Coastal Subspecies Nesting Habitat



Photo: Paul Chayak

Preferred Stand Structure

- closed canopies
- open understories
- structural complexity
- subcanopy flyways
- suitable nesting platforms

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Goshawk Coastal Subspecies Nesting Habitat

Preferred Stand Characteristics

BEC Zone

- **Suitable:** CDF (all) and CWH (all except vh)
- **Less Suitable:** CWH (vh), ESSF (all) and MH (all)
- **Unsuitable:** AT

Tree Species

- **Highly Suitable:** western hemlock, Douglas-fir and Sitka spruce
- **Moderately Suitable:** amabilis fir, red alder and black cottonwood
- **Unsuitable:** yellow-cedar, western redcedar, lodgepole pine, subalpine fir, mountain hemlock

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Goshawk Coastal Subspecies Nesting Habitat

Preferred Stand Characteristics

Stand Height

- **Highly Suitable:** stands > 27 m
- **Moderately Suitable:** stands 23-27 m
- **Unsuitable:** stands < 23 m

Stand Age

- **Highly Suitable:** old (SS 7) and mature (SS 6) ≥ 90 years old
- **Moderately Suitable:** young (SS 5); approx. 65-89 years old
- **Unsuitable:** pole/sapling (SS 4); < 65 years old

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Goshawk Coastal Subspecies Nesting Habitat

Preferred Stand Characteristics

Canopy Closure

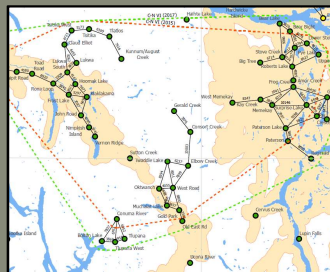
- **Highly Suitable:** 50-75% canopy closure

Slope

- **Suitable:** ≤ 60% slope
- **Less Suitable:** 61-100% slope
- **Unsuitable:** > 100% slope

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Goshawk Coastal Subspecies Breeding Territory Size



Spacing between breeding territories varies regionally and on the quality of habitat and availability of prey.

Territories are spaced, on average:

- 6.9 km apart on Vancouver Island
- 10.4 km apart on Haida Gwaii

In highly productive forests or along narrow valleys, territory spacing can be smaller, between 4-5 km apart.

Photo: Parks Canada Agency

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Goshawk Coastal Subspecies Foraging Habitat



Foraging habitat is more varied than nesting habitat and includes:

- Forests
- Wetlands
- Estuaries
- Edges
- Subalpine
- Alpine
- Clearcuts

Photos: Paul Chyrek, Paul Chyrek, Public Commons and Public Commons

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Goshawk Coastal Subspecies Foraging Habitat



Goshawks will forage in any habitat that has available and accessible prey.

Habitats with:

- Structural complexity
- Abundant flyways
- Open understories
- Greater canopy cover

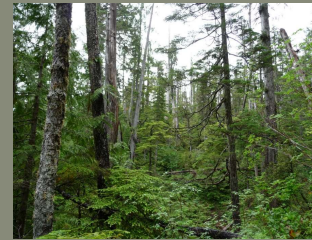
better facilitates the goshawk's surprise and ambush hunting technique.

Photo: Paul Chivuk

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Goshawk Coastal Subspecies Foraging Habitat

Poorer Quality Foraging Habitats



Open canopied stands with dense, cluttered understories.

Dense, pole-stage stands with heavy canopy cover, few flyways and little understory.



Photos: Paul Chivuk and Paul Chivuk

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Goshawk Coastal Subspecies Nest Trees



It remains unclear why goshawks choose a particular nest tree over others.

Most nest trees are:

- Live conifers.
- One of the larger or taller trees in a stand.
- Sufficiently sized branches to support a nest structure.
- Has adjacent open sub-canopy flyways.

Photo: Ross Vennesland

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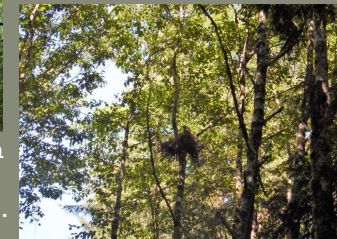
Goshawk Coastal Subspecies Nest Trees

In Second Growth Forests



Nests are generally built on a deformity (i.e., multiple leader or mistletoe structure).

Deciduous trees with large branch forks to support a nest structure may be used.



Photos: Ross Vennesland and TimberWest

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Goshawk Coastal Subspecies Nest Trees

Preferred Nest Tree Characteristics

Tree Species

- ◉ **Preferred:** western hemlock, Douglas-fir and Sitka spruce
- ◉ **Less Preferred:** amabilis fir, western redcedar, red alder and black cottonwood
- ◉ **Not Preferred:** yellow-cedar, lodgepole pine, mountain hemlock and subalpine fir

Location

- ◉ **Preferred:** > 200 m of recent hard edge
- ◉ **Less Preferred:** < 200 m of recent hard edge
- ◉ **Not Preferred:** along recent hard edge

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Goshawk Coastal Subspecies Nest Trees

Preferred Nest Tree Characteristics

Tree Size

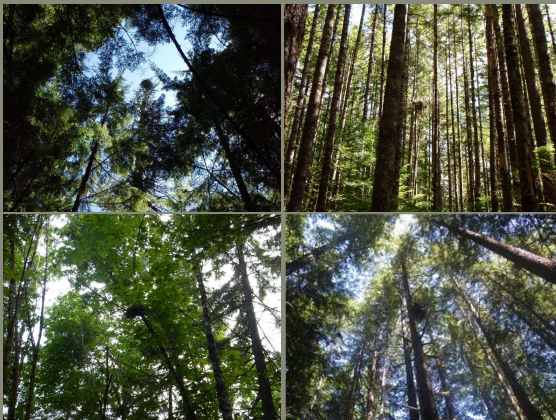
- ◉ **Preferred:** taller with large dbh and suitable branches for nest platforms
- ◉ **Less Preferred:** smaller with deformities (i.e., mistletoe or forked tops)
- ◉ **Not Preferred:** trees < 20 m tall

Terrain

- ◉ **Preferred:** even slopes, mid-slope flat benches and toes of slopes
- ◉ **Less Preferred:** uneven, steep slopes with deep ravines
- ◉ **Not Preferred:** very seep, craggy topography

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Goshawk Coastal Subspecies Nest Trees



Photos: Veronica Woodruff, TimberWest, Veronica Woodruff and TimberWest

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Goshawk Coastal Subspecies Nests



Most Mature and Old Growth Nests Are:

- ◉ Built against the tree trunk.
- ◉ On the first live branch from the ground.
- ◉ Between 15-25 m height.
- ◉ 1/3 to 1/2 way up the tree.



Photos: Paul Chvotok and Ryan Yenniciand

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Goshawk Coastal Subspecies Nests



Most 2nd Growth Nests Are:

- Built on deformities such as mistletoe structures, branch whorls or forked-tops.
- 2/3 to 4/5 up the tree.



Photos: TimberWest and Ryan Murphy

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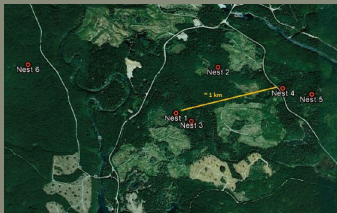
Goshawk Coastal Subspecies Nests



Photos: Michael Shepard, Ryan Murphy, TimberWest, and TimberWest

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Goshawk Coastal Subspecies Alternate Nests



Alternate nests are commonly built in the breeding area and are used in successive years.

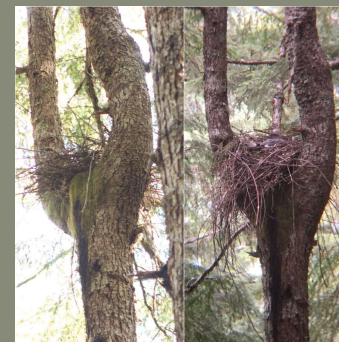
It is unclear why goshawks use them.

- Usually built in different trees, but a single tree can have multiple nests.
- VI territories typically had 3 alternate nests, but can have over 10.
- On average, 275 m apart on Vancouver Island and 375 m apart on Haida Gwaii.
- Can be < 50 m apart, or > 1 km apart.

Photo: Conifer

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Goshawk Coastal Subspecies Nest Starts



Inactive nest start in 2017 (left) and active nest in 2018 (right).

- In some cases, goshawks start to build a nest and abandon it before it is fully constructed.
- Nest starts may remain incomplete for years or be added to in subsequent years.



Photos: Ryan Murphy and Ryan Murphy

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Goshawk Coastal Subspecies

Mistletoe Structures



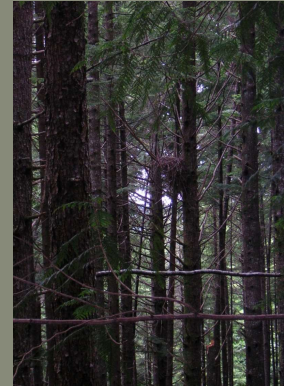
Mistletoe structures can look very convincingly like a goshawk nest from the ground.

Photos: Paul Chirvak, Paul Chirvak and Paul Chirvak

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Goshawk Coastal Subspecies

Other Large Stick Nests



- Some forest raptor nests can be similar in appearance to goshawk nests, making them difficult to differentiate.
- At times, species may use one another's nests.
- Sometimes the only way to confirm what species the nest belongs to is to see the bird.
- Look for fresh signs.

Photo: Paul Chirvak

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Goshawk Coastal Subspecies

Other Large Stick Nests

Cooper's and Sharp-shinned Hawk and Common Raven



- Typically, built higher in the tree than goshawks.
- Often more concealed by tree foliage and branches.
- Can be the same size as goshawk nest, but made with thinner branches.
- Raven nests are made with shorter, dead branches or sticks.

Photos: Paul Chirvak and BC Biodiversity Centre

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Goshawk Coastal Subspecies

Other Large Stick Nests

Red-tailed Hawk and Owls



- Red-tailed Hawks nests are sometimes larger in size, in branch crotches, more exposed and in upper tree crown.
- Great Horned and Barred Owls do not build their own nests and will often re-use old hawk nests, including goshawk nests.

Photos: National Geographic and Dale Martin

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Goshawk Coastal Subspecies Other Large Stick Nests



Bald Eagle and Osprey

- Typically, build nests near the top of the tree and close to waterbodies.
- Nests are large in size.
- Use thicker, dead branches and sticks for nest structure.
- Ospreys will build nests on artificial platforms or the tops of power poles.

Photos: Wikimedia Commons and Bill Galt

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Goshawk Coastal Subspecies Other Large Stick Nests



Great Blue Heron

- Typically nest in colonies up to 20-25 nests and near the coast.
- On Haida Gwaii, they nest singly or in small groups (< 5 nests), further inland.
- Nests are smaller, more ball-shaped or raggedly, and out on branches, not against the tree trunk.

Photo: Rob Ehner

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Goshawk Coastal Subspecies Active or Inactive Nest?



An incubating female can be difficult to detect on an active nest.

The following may help to determine if the nest is active or not.

- Robustness
- Greenery
- Feathers
- Flies
- Spiderwebs
- Whitewash
- Pellets, Eggshells and Prey Remains

Photo: Bob Brett

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Goshawk Coastal Subspecies Active or Inactive Nest?



Active nests often look fresh and fluffy due to the newly added branches.

Robustness

A newly built or repaired nest often appears robust, non-slumpy, and full-looking from the ground and may indicate the nest is active.

Photo: Ross Yancealand

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Goshawk Coastal Subspecies Active or Inactive Nest?



Fresh greenery added to top layer of an active nest.

Photo: TimberWest

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Greenery

Live conifer branches are often added to the nest each year, some still having green needles. This fresh greenery may be visible from the ground and may indicate the nest is active.

Goshawk Coastal Subspecies Active or Inactive Nest?



Moulted nestling down feathers caught in the nest branches.

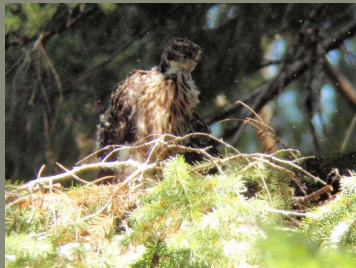
Photo: Paul Chyrvik

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Feathers

- Breast feathers from the female's brood patch or down feathers from the nestlings often get caught in the nest structure.
- Moulted adult feathers may also be found at the base of the nest tree.

Goshawk Coastal Subspecies Active or Inactive Nest?



Black fly infestations at active nests may jeopardize chick health and can even contribute to nestling mortality.

Photo: Paul Chyrvik

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Flies

Flying insects (e.g., flies, black flies, gnats and mosquitoes) are often seen above active nests. Flies feed on prey remains in the nest, while blood-seeking insects feed on the young birds.

Goshawk Coastal Subspecies Active or Inactive Nest?



Note the biting gnats pestering the nestlings.

Video: TimberWest

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Goshawk Coastal Subspecies Active or Inactive Nest?



An inactive goshawk nest with a thin layer or spider webs where the nest meets the tree trunk.

Photo: Ross Yenneland

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Spiderwebs

Spiderwebs are sometimes seen above the nest. If the nest was active, then the adult birds would likely brush these away when flying in and out of the nest. If they are present, it may indicate the nest is inactive.

Goshawk Coastal Subspecies Active or Inactive Nest?



Accumulation of whitewash at the base of an active nest tree with three nestlings.

Photo: TimberWest

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Whitewash

At one week of age, nestlings begin to defecate over the edge of the nest. Whitewash amounts depends on how many young are present, how cluttered the ground is below the nest, and if recent rains have washed it away.

Goshawk Coastal Subspecies Active or Inactive Nest?



Photos: Barn Owl Trust, Mike Gadd, Paul Chorvick

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Pellets, Eggshells and Prey Remains

Fresh pellets, eggshells and prey remains may be found at the base of the nest tree or nearby and may indicate that the nest is active.

MODULE 5: Now What?



Photo: Ross Hill

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- Unknown Stick Nest Found
- Is It a Goshawk Nest?
- BC iSpecies Goshawk App
- Reporting Your Sighting
- Additional Information

Goshawk Coastal Subspecies

Is it a goshawk nest?



Photo: Paul Chivryk

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FOUND!!! Unknown Large Stick Nest

- Have any birds been detected?
- Is it suitable goshawk habitat?
- Is it a mistletoe structure?
- Are there any fresh signs?
- Are there alternate nests?
- Can you see into the nest from a vantage point with binoculars?

Goshawk Coastal Subspecies

Is it a goshawk nest?



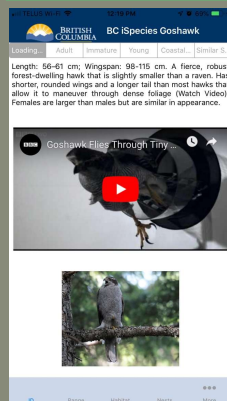
Photo: Paul Chivryk

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- Use BC iSpecies Goshawk App
- Compare your nest to App photos of goshawk nests, nests trees, and suitable habitat.
- Check your App's active/inactive nest hints.
- Broadcast goshawk alarm and begging calls.

Goshawk Coastal Subspecies

BC iSpecies Goshawk App



Download your free
BC iSpecies Goshawk App:
(weblink to be announced shortly)

- 65 ID photos and 9 ID videos
- 40 nest tree photos
- 35 nest photos
- 30 prey species remains photos
- 12 goshawk and raptor calls
- Aging nestlings key and photos
- Active/Inactive nest hints

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Goshawk Coastal Subspecies

Documenting and Reporting Your Sighting

Goshawk Field iForm

Field form uses FileMaker
Go (17) iOS software
<https://www.filemaker.com/products/filemaker-go/>

- Take a photo, video or audio recording of the bird, nest and habitat.
- Collect UTM's of the sighting or nest tree.
- If a nest is present, measure or estimate tree height, dbh & nest height above ground
- Collect pellets or prey remains in a bag and label.
- Fill-in electronic goshawk field form and submit.

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Goshawk Coastal Subspecies Documenting and Reporting Your Sighting



Photo: TimberWest

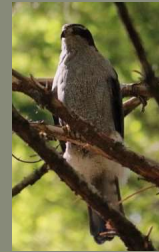
Submit your sighting information
to your regional biologist:

- West Coast Region
Janice Anderson (250-751-3212)
Janice.Anderson@gov.bc.ca
- South Coast Region
Melanie Wilson (604-586-5649)
Melanie.L.Wilson@gov.bc.ca
- Skeena Region
Anne Hetherington (250 847-7692)
Anne.Hetherington@gov.bc.ca

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For Additional Information

Detailed information on coastal goshawk ecology
and management of goshawk breeding areas can be
found at:



McClaren et al. (2015) – Science-based
Guidelines for Managing Northern
Goshawk Breeding Areas in Coastal
British Columbia.

URL: [http://jem-online.org/index.php/
jem/article/view/576](http://jem-online.org/index.php/jem/article/view/576)

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Further Questions?



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