ECOLOGICAL MOISTURE REGIME:
xeric - (subxeric)

ECOLOGICAL NUTRIENT REGIME:
(oligotrophic) - submesotrophic

DISTRIBUTION: occurs frequently on exposed and rapidly drained sites along the Skeena and Bulkley rivers, uncommon elsewhere; minor extent and importance.

PHYSIOGRAPHIC FEATURES:
Slope position: slope apices and ridge crests, terraces; exposed shedding positions.
Slope range: level to moderately sloping (0 - 25%).
Surface shape: convex, irregularly mounded; flat.
Landforms: rock outcrops; glaciofluvial outwash terraces; eskers.
ICHg3/02 PINE - LICHEN ECOSYSTEM ASSOCIATION

VEGETATION:

Trees: small, low vigour; spacing open to quite dense.
  lodgepole pine (Pinus contorta)

Shrubs: a low-lying layer, poorly to moderately developed.
  black huckleberry (Vaccinium membranaceum)
  [Scouler's willow (Salix scouleriana)]
  [Saskatoon (Amelanchier alnifolia)]
  [soopolallie (Shepherdia canadensis)]
  [prickly allie (Rosa acicularis)]

Herbs: poorly to moderately well-developed layer.
  dwarf blueberry (Vaccinium caespitosum) — all good dry-site
  kinnikinnick (Arctostaphylos uva-ursi) — indicators
  narrow-leaved cow-wheat (Melampyrum lineare)
  prince's pine (Chimaphila umbellata)
  twinflower (Linnaea borealis)
  western fescue (Festuca occidentalis)
  ricegrasses (Oryzopsis asperifolia, D. pungens)
  white-flowered hawkweed (Hieracium albiflorum)

Moss layer: a mixture of mosses and lichens; drier sites have more lichens.
  Pleurozium schreberi — dominant moss
  Cladina spp. — lichens
  Peltigera spp.
  Cladonia spp.
  Stereocaulon spp.
  [Polytrichum juniperinum] — characteristic
  [Dicranum polysetum] — dry-site mosses
  [Rhacomium spp.]

Remarks: This ecosystem association occurs on the driest, most extreme sites
in the ICHg3. It also appears, but to a lesser extent, in the gl and g2
variants. Pine is maintained by frequent fire and even reproduces
sometimes in stand openings. The trees are short and small in diameter.
Radial growth may be quite good in very young stands but it tapers off
rapidly as the stand begins to close. These ecosystems are submarginal
for commercial timber production.

Hemlock reproduction may appear in understory layers but generally
dies back when the overstory of pine is removed. The extreme droughtiness
of these habitats is reflected in the lack of species such as bunchberry
(Cornus canadensis), Hylcomium splendens, and Ptilium crista-castrensis.
SOILS: These soils occur as dry shallow deposits, rapidly drained and leached of nutrient cations. Although sampling of this association was limited, certain features were noted. Soil profiles are characterized by strong brown (Bf) and/or yellowish brown (Bm) loamy sandy mineral horizons containing a high volume of coarse fragments (often greater than 40%), which contribute to rapid drainage. Very coarse subsurface horizons may extend to depths greater than 1 m, or may be intruded by bedrock at fairly shallow depths. Organic horizons are very thin, often between 3 and 5 cm thick and may lack moisture for the majority of the growing season.

Soil Classification: major Orthic Humo-Ferric Podzols and minor Eluviated Dystric Brunisols.

Humus Form Classification: Orthixeromors; Orthihelemors.

Schematic Profile:

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    L(S)  - dry, loose, needle and twig litter with thin moss accumulation.
     F    - brown; moderately decomposed; compact matted.
   Bf    - strong to dark yellowish brown; loamy sand to sands; structureless; few to plentiful fine, medium, coarse roots; abundant gravels.
    BC   - light yellowish-brown; loose gravelly sands; few to plentiful fine roots; bedrock may occur.
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Orthic Humo-Ferric Podzol

Average pH: mineral horizons - 4.3 (limited data)
organic horizons - 3.7 (limited data)

Key Characteristics:

- soils developed from either coarse textured glaciofluvial outwash or morainal veneers over bedrock (both rapidly drained).
- generally deep rooting (where possible), to satisfy moisture requirements.
- very thin organic horizons (3-5 cm) suggest a low capacity for water interception or retention.

Comments: Because of their thin humus and coarse soils (which are often shallow), these ecosystems are sensitive and highly susceptible to erosion. Moisture deficiencies would be expected for a significant part of the growing season.
ECOLOGICAL MOISTURE REGIME:  
(subxeric) - submesic

ECOLOGICAL NUTRIENT REGIME:  
submesotrophic - (mesotrophic)

DISTRIBUTION: uncommon in the ICHg3 because of history of disturbance; most such dry, poor sites presently occupied by the seral ecosystem association, ICHg3/08.

PHYSIOGRAPHIC FEATURES:  
Slope position: upper slopes and ridge crests, some terraces and benches; generally moisture-shedding positions. 
Slope range: level to moderately steep (0 - 45%+). 
Surface shape: usually convex, occasionally straight or irregular. 
Landforms: morainal (colluvial) veneers over bedrock; some morainal blankets; coarse textured glaciofluvial and fluvial deposits.
ICHg3/03 DRY HEMLOCK - MOSS ECOSYSTEM ASSOCIATION

VEGETATION:

Trees: typically a dense canopy of small, short trees.  
western hemlock \((Tsuga heterophylla)\) -dominant cover  
lodgepole pine \((Pinus contorta)\) -scattered in and above main canopy  
[subalpine fir \((Abies lasiocarpa)\) -poor growth, generally restricted to sub-canopy layers  
[western redcedar \((Thuja plicata)\)]

Shrubs: a very poorly developed layer, sometimes absent; little advance regeneration.  
[black huckleberry \((Vaccinium membranaceum)\) -scattered, low vigour  
[false azalea \((Menziesia ferruginea)\)]  
[false box \((Paxistima myrsinoides)\)]  
[prickly rose \((Rosa acicularis)\)]  
[Saskatoon \((Amelanchier alnifolia)\)] -seral remnants, dying out

Herbs: a very poorly developed layer, occasionally absent.  
[one-sided wintergreen \((Orthilia secunda)\)] -scattered individuals or small patches  
[bunchberry \((Cornus canadensis)\)] of low vigour  
[green wintergreen \((Pyrola chlorantha)\)]  
[twinflower \((Linnaea borealis)\)]  
[rattlesnake plantain \((Goodyera oblongifolia)\)]  
[round-leaved rein-orchid \((Plantanthera orbiculata)\)]

Moss layer: generally a well-developed solid carpet of feather mosses.  
Hylocomium splendens  
Pleurozium schreberi  
[Ptilium crista-castrensis]  
[Rhytidialdelphus triquetrus]  
[Dicranum polysetum]

Remarks: The Dry hemlock-moss ecosystem association primarily represents submesic-to-subxeric ecosystems with a relatively poor nutrient status. The dominant visual features of this e.a. are the usually dense canopy of small trees and the nearly bare understory that often contains little more than a carpet of feather mosses. Hemlock dominates climax stands. Pine is its most frequent associate and tends to be the dominant cover in seral stands belonging to this association. Pine also appears to be the fastest growing tree in this unit. Small, suppressed cedar and subalpine fir are quite common below the main canopy but they rarely reach a co-dominant position in the stand. Spruce are very rare and have low vigour.
It may be difficult to differentiate this ecosystem association from the Zonal hemlock - moss e.a. (ICHg3/01) except by comparing relative tree productivity and the relative diversity and vigour of understory species. Both productivity and diversity are lower in the ICHg3/03. In this Dry hemlock - moss e.a., also, Pleurozium schreberi tends to be a dominant moss and herbs such as queen's cup and wild sarsaparilla are generally absent.
ICHg3/03(a) DRY HEMLOCK - MOSS ECOSYSTEM ASSOCIATION: LITHIC PHASE

SOILS: The major feature of soil profiles in the lithic phase is the presence of bedrock, often within 40 cm of the mineral surface. Such shallow mineral soils tend to be rapidly drained and relatively coarse textured. Yellowish brown (Bf) to brown (Bm), loamy sand, mineral horizons may or may not be overlain by a pale brown mineral horizon (Ae) that has undergone intense leaching. Organic materials are very thin, generally ranging from 3 to 5 cm in thickness.

Soil Classification: dominantly Orthic Humo-Ferric Podzols and Typic Folisols (these Folisols have more than 10 cm of organic soil horizons (L, F, and H) over bedrock).

Humus Form Classification: Orthihemimors.

Schematic Profile:

<table>
<thead>
<tr>
<th>Horizon</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>S,L</td>
<td>- moss layer with discontinuous litter.</td>
</tr>
<tr>
<td>F</td>
<td>- slightly to moderately decomposed; brown organic materials; abundant fine, medium roots; abundant white and/or yellow mycelia.</td>
</tr>
<tr>
<td>Ae</td>
<td>- pale brown; loamy sand; few roots.</td>
</tr>
<tr>
<td>Bf</td>
<td>- yellowish-brown to brown; loamy sand to sandy loam; plentiful fine, medium, coarse roots; coarse fragment content often greater than 40%.</td>
</tr>
<tr>
<td>R</td>
<td>- bedrock.</td>
</tr>
</tbody>
</table>

Orthic Humo-Ferric Podzol

Average pH: mineral horizons - 4.8
       organic horizons - 3.0

Key Characteristics:
- thin accumulation of organic materials (less than 5 cm) suggests low capacity for insulation and retention of moisture.
- shallow soils; bedrock often within 40 cm of the mineral surface.
- soils rapidly drained, having low moisture- and nutrient-holding capacities.
- effective rooting generally to bedrock.

Comments: As with the dry hemlock outcrops and pine - lichen sites, the lithic phase of the Dry hemlock - moss ecosystem association is sensitive to logging activity, due to shallow soils and thin humus. Bedrock chemistry may strongly influence the nutrient status of such ecosystems, because there is good root penetration of the shallow soils.
ICHg3/03(b) DRY HEMLOCK - MOSS ECOSYSTEM ASSOCIATION: COARSE TEXTURED PHASE

SOILS: Soil profiles of this phase have formed on coarse sand to sandy loam textured parent materials (fluvial, glaciofluvial, washed till). Brown (Bf) to yellowish brown (Bm) surface mineral horizons show a gradation to lighter yellowish brown sandy horizons with depth. The volume of gravels usually varies from 30 to 60%. Relatively thin (5-10 cm), matted organic layers have developed on these well-drained soils.

Soil Classification: Orthic Humo-Ferric Podzols and Orthic Dystric Brunisols.

Humus Form Classification: Orthiemimors.

Schematic Profile:

<table>
<thead>
<tr>
<th>Horizon</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>F</td>
<td>moderately decomposed organic horizon; dark brown; abundant fine, medium roots; common fungal mycelia; acidic.</td>
</tr>
<tr>
<td>Ae</td>
<td>pale brown; loamy sand; few coarse roots.</td>
</tr>
<tr>
<td>Bf</td>
<td>strong brown (Bf) to yellowish brown (Bm); sandy loam to loam; plentiful medium, coarse roots.</td>
</tr>
<tr>
<td>BC</td>
<td>olive brown; loose; sands, loamy sands; few fine roots; high coarse fragment content (often greater than 40%).</td>
</tr>
</tbody>
</table>

Orthic Humo-Ferric Podzol

Average pH: mineral horizons - 4.9
           organic horizons - 3.6

Key Characteristics:
- surface organic layers, although relatively thin and acidic, are still important in retaining moisture and releasing nutrients.
- coarse textured, rapidly drained soils, particularly in subsurface mineral horizons.
- soils derived from fluvial, glaciofluvial, and washed morainal parent materials.
- effective rooting often deeper than 60 cm.
ICHG3: HAZELTON VARIANT

/04.1 DEVIL'S CLUB - OAK FERN - FEATHER MOSS ECOSYSTEM ASSOCIATION, HEMLOCK - CEDAR SUBASSOCIATION (232)

ECOLOGICAL MOISTURE REGIME:
(mesic+) - subhygric

ECOLOGICAL NUTRIENT REGIME:
(mesotrophic) - permesotrophic

DISTRIBUTION: occurs throughout the ICHG3, but most common above major valley floors.

PHYSIOGRAPHIC FEATURES:
Slope position: primarily lower slopes, some mid-slopes, minor drainages; valley floors; positions receiving some seepage moisture.
Slope range: primarily gentle slopes; level to moderately steep (0 - 60%).
Surface shape: straight to slightly concave, (flat); rarely convex.
Landforms: morainal blankets, occasionally washed; fluvial over morainal deposits; glaciofluvial deposits.
VEGETATION:

Trees: most species have moderately good vigour.
- western hemlock (Tsuga heterophylla)
- western redcedar (Thuja plicata)
- hybrid spruce (Picea glauca x sitchensis
  ? x engelmannii)
- paper birch (Betula papyrifera)
  - either one may be the dominant cover
  - scattered individuals in most stands;
    tallest tree
  - common seral remnant, subcanopy layers

Shrubs: a moderately well-developed layer.
- devil's club (Oplopanax horridus)
  - consistently present but not always dominant
  - consistently present but inconspicuous
- black gooseberry (Ribes lacustre)
- highbush-cranberry (Viburnum edule)
- thimbleberry (Rubus parviflorus)
- huckleberries/blueberries (Vaccinium ovalifolium,
  V. membranaceum)
- false azalea (Menziesia ferruginea)

Herbs: moderately to well-developed layer; fairly diverse species composition.
- oak fern (Gymnocarpium dryopteris)
  - characteristic dominant
- foamflowers (Tiarella trifoliata,
  T. unifoliata)
  - good indicator species
- clapping twistedstalk (Streptopus amplexifolius)
- bunchberry (Cornus canadensis)
  - consistently present, but not good indicator species
- one-sided wintergreen (Orthilia secunda)
- queen's cup (Clintonia uniflora)
  - important in some stands
- false sarsaparilla (Aralia nudicaulis)
- five-leaved bramble (Rubus pedatus)
  - wettest microsites

Moss layer: a well-developed carpet of moss; feather mosses dominate.
- Hylocomium splendens
- Ptilium crista-castrensis
- Pleurozium schröberi
- Rhytidiadelphus triquetrus
- Mnium spp.
  - wettest microsites only