LEGEND

1. Explanatory Notes

This map shows the areas which appear to be most intensively used by caribou at various times during the year. This map was assembled using a Wildlife Habitat map and on observations of caribou within the area. More information on this area is presented in a report entitled "Caribou Habitat Use on the Level Mountain and Horseranch Ranges, British Columbia" (see box 4). The Level Mountain Range covers an area of approximately 2400 km², with mapping carried out and presented at a scale of 1:100000.

2. Example of a Map Symbol and Map Unit Boundary Type

R Rutting Area (see box 3)

Caribou use boundary

3. Description of Caribou Use Map Units

Map Unit Symbol Name	Typical Period of Use	Postulated Habitat Use Behavior	General Description of Habitat		Comments
			Elevation (m)	Vegetation/Terrain See Habitat Map	
W Winter	mid-Nov. to mid-April	During this season, caribou are attempting to find forage, minimize energy expenditures, and escape predation. Forests in these units modify snow so that it tends to be softer, shallower and less crusted than in the open. This enhances access to winter forages such as arboreal and terrestrial lichens, and sedges. When snow becomes deep, heavy or well crusted, and cratering difficult, caribou shift to windswept areas that occur mostly at higher elevations. These areas offer some forage and a greater opportunity to escape predation than less favourable snow conditions in the timber.	<1210 m <4000 ft.	Within the winter range map-units, the preferred units tend to be in the north and northeast portions of the map area. Habitat is mature forests of lodgepole pine (LP3) and white spruce (WS3) on shallow morainal deposits, (M1) interspersed with unvegetated rock outcrop and poorly drained organics principally supporting sedges and willows. The less preferred winter habitats tend to be in the western portion, consisisting of immature, sparsely stocked stands of lodgepole pine (LP1) growing on rock-cored drumlins (M1). Generally winter ranges are on undulating to hummocky relief.	Non-pregnant caribou do not appear to favour one habitat type over another and make a general movement from wintering sites to post-calving aggregation sites. The accompanying report (see box 4) details the number of caribou observations per season and lists the freqeuncy of the various habitat map units used.
C Calving	mid-April to mid-June	In spring, pregnant cows move to calving areas that minimize risks from predation, either by using escape terrain with good visibility such as steep, isolated rock outcrops situated higher than the usual areas travelled by terrestrial predators, or by dispersing widely over shrubby vegetation that affords concealment and a lowered probability of detection.	1360-1515 m (4500 - 5000 ft. and >5500 ft.	Calving habitat is of two types, corresponding to the two strategies used by pregnant cows. The first of escape is sparsely vegetated terrain with sedges and bluegrasses (RS and R3) growing on steeply sloping units such as avalanche slopes, and rocky ridges with a colluvial apron; Map units (C3, C4, R1, R2). These units are located in the central mountain core. The second type of calving habitat is the bog birch-fescue (BB-FE) communities on shallow, flat-lying moraine (M5, M2) occurring in a horseshoe-shaped area on the outer edges of the main plateau at 1360 - 1515 m (4500-5000 ft.).	Non-pregnant caribou occur in areas from 1210 to 1670 m (4000- 5500 ft.) between the winter ranges and post- calving aggregation sites, the rate and extent of movement is strongly influenced by snow melt patterns; terrain is mostly shallow to deep moraine with patterned ground common.
P Post-calving	mid-June to mid-July	After calving, all age and sex groups congregate on "traditional" sites offering good visibility and level terrain, presumably to "swamp" predators. These aggregations tend to persist until dispersed by insect harrassment.	>1515 m (5000 ft.	Aggregation sites occur in the unit characterized by being comparatively well vegetated, with abundant sedges and few to no shrubs, growing on broken rocky rubbly colluvial aprons derived from volcanics (C4). The sites occur above the shrub zone at about 1515 m.	Level micro-sites are selected as aggregation sites; sites are considered to be traditional. Sites used appear to be minor portions of much larger homogeneous habitat units shown on the habitat maps (see box 4)
S Summer/fall	mid-July to late Sept.	After post-calving, caribou disperse in response to insect harassment, by seeking out snow patches and exposed microsites where insect density is reduced; and a need to forage by seeking out nutrient-rich sites with minimal interferences or competition from conspecifics: vulnerability of calves to predation has reduced.	>1670 m (5500 ft.)	Occurring from about 1670 m (5500 ft.) to the upper limits of vegetation, this mid-summer/fall range is characterized by Kobresia/sedge sites over gently undulating, shallow morainal deposits; and by fescue communities above the treeline. Generally traditional, occurring within map units with vegetation symbols FE and SV and characterized by terrain that offers good visibility, generalized terrain symbol M5.	
R Rut	late Sept. to mid-Oct.	By late September, most caribou aggregate for the rut on gently sloping or rolling terrain with low vegetation, where herd members are easily visible to each other.			

4. Sources of Information

Clement, C.C. and M.A. Fenger. 1981. Wildlife Habitat Map (Forest Zonation, Vegetation Landscapes and General Terrain Description) for the Level Mountain Range. Terrestrial Studies Branch, Ministry of Environment. A 1:10000 scale map, legend and descriptive notes.

Page, R.E. (in prep.) Caribou Calf Mortality in Northwestern British Columbia. M. Sc. Thesis. University of Victoria.

Elliott, J., D. Eastman, D. Hatler and I. Hatter. 1984. Northern B.C. Wolf-Caribou Study - a comparative study of caribou calf recruitment in an experimental wolf removal and control area. Fish and Wildlife Branch. B.C. Ministry of Environment.

Fenger, M.A., D.S. Eastman, C.I. Clement and R.E. Page. 1985. Caribou Habitat Use on the Level Mountain and Horseranch Ranges, British Columbia. Wildlife Branch Working Report WR 15 Surveys and Resource Mapping and Fish and Wildlife Branch, Ministry of Environment.

5. Credits

Habitat map unit ratings and Caribou Use Descriptions by: R. Page and D. Eastman
Habitat mapping boundaries and habitat description by: M. Fenger and C. Clement
Mapping correlated by: M. Fenger
Date of field mapping: 1980
Date drafted: April 1984
Revised dates: _____

Drafting services provided by Fish and Wildlife Branch, Terrestrial Studies Branch, Ministry of Environment, Victoria, B.C.

Base map provided by Surveys and Mapping Branch, Ministry of Environment, Victoria, B.C.

LEGEND

1. Explanatory Notes

This map shows the areas which appear to be most intensively used by caribou at various times during the year. This map was assembled using a Wildlife Habitat map and seasonal observations of caribou within the area. More information on this area is presented in a report entitled "Caribou Habitat Use on the Level Mountain and Horseranch Ranges, British Columbia" (see box 4). The Horseranch Range covers an area of approximately 1300 km², with mapping carried out and presented at a scale of 1:100000.

2. Example of a Map Symbol and Map Unit Boundary.

R Rutting Area (see box 3)

Caribou Use Boundary

3. Description of Caribou Use Map Units

Map Unit Symbol Name	Typical Period of Use	Postulated Habitat Use Behavior	General Description of Habitat Used		Comments
			Elevation (m)	Vegetation/Terrain (See Habitat Map) Box 4	
W Winter	mid-Nov. to mid-April	During this season, caribou attempt to find forage, minimize energy expenditures, and escape predation. Forests in these units modify snow so that it tends to be softer, shallower and less crusted than in the open. This enhances access to winter forages such as arboreal and terrestrial lichens, and sedges. When snow becomes deep, heavy or well crusted, caribou shift to windswept areas that occur mostly at higher elevations. These areas offer some forage and a greater opportunity to escape predation than less favourable snow conditions in the timber.	<1210 m (4000 ft)	Located mostly to the east and north parts of the map area, winter ranges are usually mature (>60 years) white spruce (WS3) and lodgepole pine stands (LP3) growing on moraines channelled by glacial meltwater and, to a minor extent, on kame deposits (M3 G1)	Much of the column titled Postulated Habitat Use Behavior has been extrapolated from the more numerous and detailed observations of caribou for the Level Mountain Range. It is postualted that the seasonal patterns and habitat types caribou use there are similar for the Horseranch Range caribou.
C Calving	mid-April to mid-June	In spring, pregnant cows move to calving areas that minimize risks from predation, either by using escape terrain with good visibility such as steep, isolated rock outcrops situated higher than the usual areas travelled by terrestrial predators, or by dispersing widely over shrubby vegetation that affords concealment and a lowered probability of detection.	1210-1670m >1820 m (4000-5000 ft. and >6000 ft.)	Alpine tundra in cinquefoil-rock, dwarf willow, and cassiope-fescue plant communities (C8, D4, CF) found on moderately to steeply sloping bedrock outcrops and associated rubbly, colluvial aprons; on both east and west sides of the Range (C4, R2).	Non-pregnant caribou occur in areas from 1200 to 1670 m (4000-5500 ft.) between the winter ranges and post-calving aggregation sites, the rate and extent of movement is strongly influenced by snow melt patterns; terrain is mostly shallow to deep moraine with patterned ground common.
P Post-calving	mid-June to mid-July	After calving, all age and sex groups congregate on "traditional" sites offering good visibility and level terrain, presumably to "swamp" predators. These aggregations tend to persist until dispersed by insect harrassment.	1515 m (5000 ft)	Alpine tundra, mostly in willow-moss and mountain avens plant communities (WM, MA) growing on deep moraines (M6) dissected by glacial meltwater channels.	Level micro-sites are selected as aggregation sites; sites are considered to be traditional. Sites used appear to be minor portions of much larger homogeneous habitat units shown the habitat maps (see box 4).
S Summer/fall	mid-July to late Sept.	After post-calving, caribou disperse in response to insect harassment, by seeking out snow patches and exposed microsites where insect density is reduced; and a need to forage by seeking out nutrient-rich sites with minimal interferences or competition from conspecifics: vulnerability of calves to predation has diminished.	>1515 m (5000 ft) to crest of ridges	Alpine tundra communities mostly willow-moss and cinquefoil-rock (WM, CF) on the east side of the main spine of the range, landscape includes deep and shallow moraine, rubbly colluvial sites and steep rock outcrops (M6, C4, R1), rubbly colluvial and steep rock outcrops with their associated rubbly aprons.	
R Rut	late Sept. to mid-Oct.	By late September, most caribou aggregate for the rut on gently sloping or rolling terrain with low vegetation, where herd members are easily visible to each other.		Willow-moss communities (WM) in the alpine tundra mostly over gently to moderately sloping morainal deposits (M6), usually deep.	

4. Sources of Information

Clement, C.C. and M.A. Fenger. 1981. Wildlife Habitat Map (Forest Zonation, Vegetation Landscapes and General Terrain Description) for the Horseranch Range. Terrestrial Studies Branch, Ministry of Environment. A 1:10000 scale map, legend and descriptive notes.

Elliott, J., D. Eastman, D. Hatler and I. Hatter. 1984. Northern B.C. Wolf-Caribou Study - a comparative study of caribou calf recruitment in an experimental wolf removal and control area. Fish and Wildlife Branch. B.C. Ministry of Environment.

Fenger, M.A., D.S. Eastman, C.J. Clement and R.E. Page. 1985. Caribou Habitat Use on the Level Mountain and Horseranch Ranges, British Columbia. Wildlife Working Report WR 15 Surveys and Resource Mapping and Fish and Wildlife Branch, Ministry of Environment.

5. Credits

Habitat map unit ratings and Caribou Use Descriptions by: R. Page and D. Eastman
Habitat mapping boundaries and habitat description by: M. Fenger and C. Clement
Mapping correlated by: M. Fenger
Date of field mapping: 1980
Date drafted: April 1984
Revised dates: _____

Drafting services provided by Fish and Wildlife Branch and Cartography Unit. Terrestrial Studies Branch, Ministry of Environment, Victoria, B.C.

Base map provided by Surveys and Mapping Branch, Ministry of Environment, Victoria, B.C.