Joint Oil Sands Monitoring: Environment Canada Cause and Effects Monitoring for Landbirds

Standard Operating Procedure (SOP) 4: Classifying Vegetation

This Standard Operating Procedure gives step-by-step instructions for classifying vegetation and completing the Point Count and Vegetation Form and the Summary Form which are provided as separate documents. Classifying vegetation includes determining the ecosite, identifying the habitat types based on the Avian Habitat Classification System developed for stratifying the study area, and classifying vegetation structure and composition. Vegetation classification should be conducted at the end of each 10 minute point count at each point count site. Procedures for locating point count sites are described in the document Sampling Design and Sampling Plan 2012, 2013.

The objective of the habitat and vegetation classification is to: (1) verify mapped habitat types and mapped/tabular Forest Resource Inventory (FRI) vegetation variables; (2) determine relationships between Forest Resource Inventory variables (dominant species, crown closure, age, moisture regime) and additional site and vegetation variables (ecosite, ecosite phase, soil moisture/nutrient regime, shrub cover, and height); and (3) aid in point relocation in subsequent years. Ecosite, habitat, and vegetation will be classified within a 10 meter radius circle centered on the point count. All vegetation within the 10 meter radius circle should be assessed.

1. Complete Habitat and Vegetation Classification

1.1 Complete Site, Natural Region/Subregion, and Observer Fields

Site ID: Consisting of a two-letter code for Geographic Location (GL), a three-digit Survey Area (SA) code, and a two-digit Point Count Site ID Number. This Site ID must match the Site ID of the point count data on the front of the vegetation data sheet.

Natural Region: Two-letter code indicating the Natural Region of the site, as described by the Field Guide to Ecosites of Northern Alberta by Beckingham and Archibald (1996).

Natural Subregion: Two-letter code indicating the natural subregion of the site, as described by Beckingham and Archibald (1996) (see Table 1).

Date: The date the vegetation survey is conducted in the format DD/MM/YY.

Time: The time the vegetation survey is started in the format HH:MM using a 24-hr clock.

Observer: The unique ID assigned to each observer at the start of the season (usually their 2 initials).

1.2 Complete Ecosite Information

Ecosite Unit 1: Five-digit alpha-numeric code as described in Section 4 of Beckingham and Archibald (1996). Code includes a two-letter ecological area followed by a three-character code indicating the ecosite (first single character), ecosite phase (first two characters), and plant community type (all three characters) in the format BM-d2.2.

Each additional character in the ecosite unit code designates a more specific determination of the site classification. Field crew staff must complete ecosite and ecosite phase. Enter “0” (zero) as the plant community type. Table 1 lists the natural subregions, ecological areas, and ecosites and ecosite phases occurring in the study area.

Disturbed habitats (burns and harvest units) should remain unclassified—enter “N/A” as the ecosite/ecosite phase.

Ecosite Unit 2: If there are multiple ecosite units occurring within the 10 meter radius sampling area, indicate the secondary ecosite unit.

Transition: If a second ecosite unit is indicated, record the transition relationship between the two units (see Table 2).

Mesoslope: Record the topographic position of the site as described in Figure 16.1.9 in Appendix 1 of Archibald and Beckham (1996) (see Table 3).

1.3 Complete Avian Habitat Classification Information

Habitat Type Mapped: Record the habitat type indicated by your field map (see Table 4).

Habitat Type Observed: Record the habitat type as observed in the field based on your best assessment. This will most often be the same as the mapped habitat type identified on the field map, but in the case of mapping or classification errors, the observed habitat type will aid in refinement of future classification.

Structural Stage: Record the structural stage of the stand as described in the Field Manual for Describing Terrestrial Ecosystems (1998) using the codes from Table 5.

1.4 Complete Vegetation Information

Canopy Cover: Describe the proportion of ground area covered by the vertically projected crowns of the tree cover within the 10 meter radius sampling area (i.e. the percentage of the sky that you can't see because of the trees). Record using a percentage value rounded to 5%.

Canopy Height: Estimate the average canopy height within the sampling area using a clinometer and/or rangefinder. Record the height rounded to 5 meters.

Canopy Conifer: Determine the proportion of the Canopy Cover that is composed of conifer species. Record the percentage value rounded to 5%.

Dominant Tree Species: List the dominant tree species in decreasing order of abundance for all dominant tree species in the canopy using the two-letter codes in Table 6.

Dominant trees include the tallest trees of the main canopy layer which may be veterans of one or more fires, or the tallest trees of the same age class as the main canopy; usually a minor portion of the stand composition.

Codominant Tree Species: List the codominant tree species in decreasing order of abundance for all tree species in the canopy using the two-letter codes in Table 6.

Codominant trees include the main layer of tree cover, composed of trees whose crowns form the upper layer of foliage; typically the major portion of the stand composition.

Tall Shrub Density: Record the overall density of the Tall Shrub (≥ 1 meter and < 4 meter) layer using the four-point scale given in Table 8.

Tall Shrub Species: List the Tall Shrub (≥ 1 meter and < 4 meter) species in decreasing order of abundance using standard seven-letter codes. Codes for common shrub species are given in Table 7.

Short Shrub Density: Record the overall density of the Short Shrub (≥ 0.5 meter and < 1 meter) layer using the four-point scale given in Table 8.

Short Shrub Species: List the Short Shrub (≥ 0.5 meter and < 1 meter) species in decreasing order of abundance using standard seven-letter codes. Codes for common shrub species are given in Table 7.

Ground Cover: Estimate the category and percent cover of the primary, secondary, and tertiary ground cover below 0.5 meter. If all vegetation ≥ 0.5 meter was removed

and you looked directly down at the ground, what would you see? Record using a percentage value rounded to 5% using the categories in Table 9.

2. Store Data Form

After completing all point counts for the day, store all data sheets (Point Count/Vegetation Form and Summary Form) in a secure location (file box assigned to the Field Crew Lead).

3. References:

Beckingham, J.D. and J.H. Archibald. 1996. Field Guide to Ecosites of Northern Alberta. UBC Press, Vancouver, B.C., CAN.

Province of British Columbia. 1998. Field Manual for Describing Terrestrial Ecosystems. Land Management Handbook Number 25. B.C. Ministry of Environment, Lands, and Parks and B.C. Ministry of Forests, Victoria, B.C., CAN.

Table 1. Natural Subregions, Ecological Areas, and Ecosite/Ecosite Phases

Boreal Highlands (BH)		**Central Mixedwood (CM)**	
Boreal Highlands (BH)		**Boreal Mixedwood (BM)**	
a1	lichen Pj	a1	lichen Pj
b1	blueberry Pj-Aw (Bw)	b1	blueberry Pj-Aw
b2	blueberry Aw	b2	blueberry Aw(Bw)
b3	blueberry Sw-Pj	b3	blueberry Aw-Sw
c1	Labrador tea-mesic Pj-Sb	b4	blueberry Sw-Pj
d1	low-bush cranberry Aw	c1	Labrador tea-mesic Pj-Sb
d2	low-bush cranberry Aw-Sw-Sb	d1	low-bush cranberry Aw
d3	low-bush cranberry Sw	d2	low-bush cranberry Aw-Sw
e1	fern Sw	d3	low-bush cranberry Sw
f1	horsetail Sw	e1	dogwood Pb-Aw
g1	Labrador tea-hygric Sb-Pj	e2	dogwood Pb-Sw
h1	treed bog	e3	dogwood Sw
h2	shrubby bog	f1	horsetail Pb-Aw
i1	treed poor fen	f2	horsetail Pb-Sw
i2	shrubby poor fen	f3	horsetail Sw
j1	treed rich fen	g1	Labrador tea-subhygric Sb-Pj
j2	shrubby rich fen	h1	Labrador tea/horsetail Sw-Sb
j3	graminoid rich fen	i1	treed bog
		i2	shrubby bog
		j1	treed poor fen
		j2	shrubby poor fen
		k1	treed rich fen
		k2	shrubby rich fen
		k3	graminoid rich fen
		l1	marsh

Table 2. Ecosite Transition Codes

Code	Description
IN	Intermediate
TD	Two Distinct Sites
GT	Gradual Transition
PS	Primary and Secondary

Table 3. Mesoslope Codes

Code	Description
CR	Crest
UP	Upper Slope
MD	Middle Slope
LW	Lower Slope
TO	Toe
DP	Depression
LV	Level

Table 4. Avian Habitat Types

Code	Description
PJ7	Jack Pine-Old Forest
PJ6	Jack Pine-Mature Forest
PJ5	Jack Pine-Young Forest
PJ4	Jack Pine-Pole Sapling
DM7	Deciduous-Mesic-Old Forest
DM6	Deciduous-Mesic-Mature Forest
DM5	Deciduous-Mesic-Young Forest
DM4	Deciduous-Mesic-Pole Sapling
DW7	Deciduous-Wet-Old Forest
DW6	Deciduous-Wet-Mature Forest
DW5	Deciduous-Wet-Young Forest
DW4	Deciduous-Wet-Pole Sapling
MM7	Mixedwood-Mesic-Old Forest
MM6	Mixedwood-Mesic-Mature Forest
MM5	Mixedwood-Mesic-Young Forest
MM4	Mixedwood-Mesic-Pole Sapling
MW7	Mixedwood-Wet-Old Forest
MW6	Mixedwood-Wet-Mature Forest
MW5	Mixedwood-Wet-Young Forest
MW4	Mixedwood-Wet-Pole Sapling
SW7	White Spruce-Old Forest
SW6	White Spruce-Mature Forest
SW5	White Spruce-Young Forest
SW4	White Spruce-Pole Sapling
SB7	Upland Black Spruce-Old Forest
SB6	Upland Black Spruce -Mature Forest
SB5	Upland Black Spruce -Young Forest
SB4	Upland Black Spruce -Pole Sapling
BG5	Bog-Treed (Lowland Black Spruce)
BG3	Bog-Shrub
BG1	Bog-Open
FN5	Fen-Treed (Tamarack)
FN3	Fen-Shrub
SP3	Swamp
MA2	Marsh
SH3	Shrubland
GR2	Grassland
BU3	Burn-Old
BU2	Burn-Recent
CC3	Clearcut-Old
CC2	Clearcut-Recent

Table 5. Structural Stage Codes

Code	Description
SB	Sparse/Bryoid
SH	Shrub/Herb
PS	Pole/Sapling
YF	Young Forest
MF	Mature Forest
OF	Old Forest

Table 6. Tree Species Codes

Code	Common Name
FB	Balsam fir
FA	Alpine fir
MM	Manitoba maple
BW	Paper (White) birch
LT	Tamarack
LW	Western larch
LA	Alpine larch
SE	Engelmann spruce
SW	White spruce
SB	Black spruce
PU	General Pine
PA	White-bark pine
PJ	Jack pine
PL	Lodgepole pine
PF	Limber pine
PY	Ponderosa pine
PA	General Poplar
CN	Narrow-leaf cottonwood
PB	Balsam poplar
CP	Plains cottonwood
AW	Trembling aspen
FD	Douglas fir

Table 7. Shrub Species Codes

Code	Common Name
PICEGLA	White Spruce
POPUTRE	Trembling Aspen
ABIEBAL	Balsam Fir
ROSAACI	Prickly Rose
VIBUEDU	Low-Bush Cranberry
SALISPP	Salix Species (Willow)
ALNUVIR	Green Alder
SHEPCAN	Canada Buffalo-berry
RIBESPP	Ribe Species (Currant)
CORNSTO	Red-Osier Dogwood
LONIINV	Bracted Honeysuckle
RUBUIDA	Wild Red Raspberry
CORYCOR	Beaked Hazelnut
VACCMYR	Common Blueberry
LEDUGRO	Labrador Tea
VACCVIT	Bog Cranberry

Table 8. Shrub Density Codes

1	Scattered (0-25%)	You could (but shouldn't) roller skate naked through this. Visibility (due to shrubs) is unlimited.
2	Low (25-50%)	You can easily walk through. You could avoid touching any shrubs with a few detours. Visibility may extend to 50+ m in some directions.
3	Medium (50-75%)	You will occasionally have to push some bush to get through this. Visibility may extend to 20+ m in a few directions.
4	High (75-100%)	It takes a lot of effort to walk through this. You will push bush almost continuously. Visibility is generally less than 10 m.

Table 9. Ground Cover Codes

Code	Name	Description
V	Vegetation	Includes dwarf shrubs, forbs (including grasses, sedges, reeds), mosses/lichens/liverworts.
OM	Organic Matter	Includes organic layers (e.g. leaf litter), layers of decaying wood (< 10 cm thick), large animal droppings.
DW	Decaying Wood	Includes fallen trees, large branches on the ground, partially buried stumps with an exposed edge. Does not include freshly fallen material that has not yet begun to decompose. May be covered with mosses, lichens, liverworts, or other plants. Decaying wood must be ≥ 10 cm thick.
MS	Mineral Soil	Mineral material of variable texture not covered by organic materials. May have a partial covering of mosses, lichens, liverworts. Often associated with cultivation, tree tip-ups (rootwads), active erosion, or deposition, severe fires, trails, or late snow retention areas. Includes small cobbles and gravel < 7.5 cm in diameter.
R	Rock	(Cobbles and stones). Exposed rock fragments > 7.5 cm in diameter. May be covered by mosses, lichens, liverworts, or an organic layer < 1 cm in thickness. Does not include gravels < 7.5 cm in diameter.
B	Bedrock	Exposed consolidated mineral material. May have a partial covering of mosses, lichens, or liverworts. Does not quality as bedrock if covered by mineral or organic material ≥ 1 cm thickness.
W	Water	Streams, puddles, or areas of open water in marshes, bogs, fens.

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