

INSTRUCTIONS
NATURAL COMMUNITY SURVEY FORM
Maine Natural Areas Program
June 2007

For the past several years the Maine Natural Areas Program has been trying to improve the quality and quantity of data on natural community occurrences in Maine. This form is the latest iteration in our attempts to standardize data collection for unusual occurrences of natural communities. It draws on our field experience and attempts to balance the reality of time available in the field vs. information needed to document and describe natural communities.

The major change from the 1990's field forms is the elimination of the Reconnaissance form. Instead, all information for a particular community occurrence is on one four-page form, designed to allow for different levels of detail. Minor changes from the 2001 form are in mapping instructions and the order of EO Ranking.

One important purpose of the former Reconnaissance form was to record what community types were encountered on a surveyed piece of land. This purpose is now served by the "Element Table" portion of the Site Survey Summary Form. The SSS should list all natural communities encountered in the area surveyed and assign each an Observation Point (Obs.Pt.). This allows us to keep track of the different vegetation types in an area, even if none of them turn out to be particularly unusual, which is important information for landowners and land managers. The Natural Community Survey form can then be completed for each observation point, so that at least basic information is available for each.

If you would like a electronic version of this form as an MS-Word template, please contact the Natural Areas Program.

When to use this form: Fill out the natural community survey any time you are surveying an area with any natural attributes. Areas that appear to be unusual natural communities will receive more attention. An unusual natural community can either be an occurrence of a highly-ranked type (S1, S2, or S3), such as a Hudsonia river beach, or an outstanding example of a more common community type such as an old-growth beech – birch - maple forest.

If you were checking an area which turned out to have been clearcut a few months ago, you would just fill out the Site Survey Summary. But if you were checking an area which had 50-year post-harvest pine forest, a large undisturbed red maple alluvial swamp, and an oak-pine woodland, you should:

- list all three on the SSS;
- fill out a "brief descriptive" NC survey for the pine forest, noting that it is obviously not EO quality (Parts I, II, III);
- fill out more complete information— generalized cover estimates or nested plots-- on the red maple swamp, a probable EO (Parts I, II, III, and IV);
- fill out more complete information— generalized cover estimates or nested plots-- on the oak-pine woodland, a possible EO (Parts I, II, III, and IV).

NOTE!! The impetus for this revision was to standardize information collection. We found that with the large amount of information requested on earlier forms, we would frequently get partial information, not necessarily consistent with "partial information" from another site. These forms ask for less information, but what they do ask for is very important in assessing the results of field surveys. Your completed form will contain all the information needed for minimum documentation of community occurrences. ***PLEASE BE THOROUGH IN COMPLETING THESE FORMS.***

How this form is structured: The Natural Community Survey has four pages; they're listed below, and then each is described in detail.

Part I is the identifying information, needed for all observation points. Note that much of the information will be the same for all obs.pts. at a site, but each form still needs to stand on its own.

Part II is the Strata and Vegetation Data.

You have three options for vegetation data (this is where the flexibility comes in). It might help to know that Levels 1 & 2 can be used in refining our classification, and in confirming and documenting a particular occurrence. Level 3 can be used only as data on the distribution of a particular type in the state (it has enough data to confirm the type assignment but not for EO documentation).

1. **The “great when we get it but seldom realized in the field” detailed plot samples.** This is our standard nested plot approach, with plots of 0.02 ha for trees, one 25 m² subplot for saplings and tall shrubs, and four 1-m² subplots for dwarf shrubs, herbs, and bryoids, arrayed on one or more transects through the community. Data from nested plots have been indispensable in describing, assessing, and comparing natural communities statewide; but we all know that they’re not always feasible. If you’re doing nested plots, please append the plot data sheets to this NC form. Four plots work well in most communities, unless they are very large “matrix” EOs; if you can’t do at least two, don’t bother.
2. **A compromise level—“more than reconnaissance but no detailed plots”.** Focusing on a particular portion of the community, you would record species and general cover class, along with some vegetation summary information, as laid out on page 2 of this survey form (details below).
3. **The “we’re outa here” level:** given a community that’s obviously not EO quality, you can record brief descriptive information (similar to our former Reconnaissance data), skipping the cover classes and recording only the dominant species. This information is useful in determining the distribution of types statewide as well as being of interest to the landowner.

Part III is the Environmental Description. This can be sketchy if you are doing only a “level 3” (reconnaissance) record of a community.

Part IV is the Summary Notes.

After you've filled out the various forms for an area, staple them all together along with a copy of the topo map showing the area you surveyed, the location of your observation points (from the reconnaissance page), and the maps showing observation points and community boundaries, as well as the location of any rare species.

Note: This form has boxes separating each data item. It's designed to cue you to **put something in each of the boxes**, except those in gray (these are to be filled in by MNAP staff when logging in the data). If a box does not apply, note that; to us in the office, blank boxes can mean "don't know," "didn't pay attention to this," or "not applicable here," all of which have very different meanings.

PART I: IDENTIFIERS/LOCATION

Survey Site Name - provisional name assigned by field worker; should represent an identifiable feature on topographic map. If you're dealing with a specific portion of a larger identifiable area, note both: "Pemetic Mountain, Acadia National Park."

Obs.Pt. – The number of the Observation Point, cross-referencing to the Site Survey Summary.

USGS 7.5' Quad - the name of survey map used, e.g. "Belgrade Lakes".

Town and County

Date visited- date of the fieldwork.

Surveyors - your name(s).

Field-assigned Community Type – using the MNAP 2001 Natural Community Classification. If it is intermediate or does not key well, indicate that. (The gray box below is for MNAP staff to confirm that they have reviewed the field assignment of community type and made any corrections needed; this is done post-field season, when data are being quality-controlled.)

Landowner Information – Since landowner permission is required before visiting a site, the Landowner Info here will ideally match what's already in our database. In that case, filling in the map, lot, and name will confirm that. (NOTE that if the community crosses a town line, you need to indicate which town's tax map you're referring to!) HOWEVER, if your fieldwork reveals that our landowner information was incorrect, or if you receive permission "on-the-spot", please give complete information including name, address, and telephone number along with the tax map and lot numbers. For more than four or so landowners, attach an additional sheet.

Geographic Location – The point where you are recording your data, given preferably as NAD 83 UTM Zone 19N coordinates.

Topographic Map: -Attach a copy of a USGS 7.5' (1:24000) scale topo map. Show the exact location of the community. When the observed area is **no larger than a pen point** on the map (very small patches), place small point(s) on the map and note each with an arrow. When the observed area is **larger than a pen point** on the map:

- Draw a thin solid outline showing the extent of the observed community
- Mark and number the observation points within the polygon(s)
- Indicate disjunct patches by drawing separate polygons
- If the boundary follows the edge of a lake, stream, road, tec., draw the boundary to match that edge
- Provide a route of travel taken, map this on the topo map

Add any directions or landmarks if necessary to clarify and allow someone to get back to the site.

Locational Uncertainty: Locational uncertainty refers to any uncertainty there is as to where the actual observation occurred. Is your depiction of the observed area on the map within 12.5 meters (~40 feet) of its actual location on the ground? If not, please indicate the uncertainty. This is not meant as a buffer, it just shows how certain your depiction corresponds to what is on the ground or how certain you were at the spot you said you were at.

Confidence extent indicates how confident you are that the observed area represents the full extent of the feature.

Directions - precise directions in words. Access notes can be extremely important and are often not apparent simply from a topographic map. If the topo or Maine Atlas shows directions clearly, it can be helpful to also attach a copy with your route of access marked.

Sample Type - Indicate what level of detail you're using for the vegetation data.

Photos – yes/no, with space for roll/frame #s to help when you're labeling all those slides in November.

GENERAL DESCRIPTION OF COMMUNITY – A few sentences that give a verbal picture; include setting, dominant species, indicator species, vegetation zones/gradients, etc. This is used for the GENDESC field in the EOR, so for points that will clearly not be EOs, it can be brief. This is so that someone who's not used to deriving meaning from six-letter species codes and cover class midpoints can have an idea of what this thing is. Continue on additional page if needed.

PART II: VEGETATION BY STRATA

Strata are defined by a combination of dominant plant type and height. Note that the herb layer can include small woody plants as well as herbaceous plants. The strata are:

- TREE LAYER = canopy trees (if emergents present, note as "E");
- SAPLING / TALL SHRUB LAYER = woody plants < 10 cm dbh but > 3 m tall;
- SHRUB LAYER = 1-3 m: woody plants 1 - 3 m tall;
- HERB LAYER = < 1 m: all herbaceous vascular plants plus any woody plants < 1 m tall;
- BRYOID LAYER = all ground-layer non-vascular plants.

How you complete this section will depend on the level of detail you or your schedule has chosen.

Whatever your level of detail, in the first row of the tree layer box record **additional canopy information**:

- *Total basal area of trees > 5 inches dbh*: (Leave blank if plot data are attached) Basal area based on several prism plots (>3) in the forest or woodland. You only need to use the prisms to get total basal area, so it should be fairly quick. Remember that the prism, not your body, is the center of the circle. Do not fail to record your units (ft²/acre or m²/ha).
- *Canopy conifer %*: an important descriptive and diagnostic feature. This is a relative percent, i.e., if both conifer and deciduous were recorded they would sum to 100%. If the canopy closure is 75%, and a third of the canopy was coniferous, you'd record 33% (not 25%).
- *Tree canopy height* - measure with a clinometer.
- *Supercanopy trees?* - indicate species, if present, e.g. "few, white pine 80-100 cm dbh"

If you are doing nested plots for any of the strata:

Fill out the upper line of boxes for each stratum (total cover, dominance, etc.), but leave the species/cover table in the rest of the box blank, put a check mark in the "plot data attached" box, and attach the standard plot sampling form. For the tree layer, you can leave the "Total Basal Area" box blank as that will be calculated from the plot data. FOREST/WOODLAND NOTE: it's certainly possible to do a few 0.02 ha tree plots, which give good information on dbh ranges and allow calculation of basal area, and then return to page 2 and do generalized cover for the lower layers.

If you are doing generalized cover estimates by species:

Work down through each stratum using the boxes on page 2. For each stratum, first give your closest estimate for its total cover by circling the appropriate percentage. For the tree layer, a few other bits of information are requested (see Additional Canopy Information, below). Then list the species present and give the general cover class midpoint for each. Standard cover classes are given at the bottom of the page. (Suggestion: work from more abundant to less abundant species.) If you run out of room, use the extra boxes on page 3. Even if you don't give all of the species, try to get the most abundant ones as well as any that seem particularly indicative or are unusual.

Dominance: in the herb and bryoid layers, the proportions of different plant-forms can be diagnostic. In the herb layer, record the percentages of tree regeneration, shrubs, graminoids, and forbs/ferns. They should sum to close to whatever your canopy total is. Thus, if the herb layer covers 40% and is mostly dwarf shrubs with some tree regeneration, the entries might be “dwarf shrub 30%, tree regen 6%, graminoids 2%, forbs 2%”. (You can also record it as relative dominance, where the numbers sum to 100%, if that’s easier.) Sometimes its easiest to picture the woody/non-woody portions and then subdivide each of those. The same idea applies to the bryoid layer, where you record the percentages of bryophytes vs. lichens.

If you are doing a brief descriptive survey : Work down through each stratum, fill in the upper row of information (total cover of stratum, canopy info for trees, relative dominance info for herb and bryoid layers), and record the dominant species for each stratum. If you record more than a couple, indicate which are most abundant with an asterisk or other indicator.

LSI Instructions: Late Successional Index. See Appendix 1.

PART III: ENVIRONMENTAL SETTING

Most of these are check-offs or otherwise quick. Soils will take the most time, but need not be very involved.

Soils: No large pit needed—a soil corer or trowel-dug hole will give some useful information. First, record the depth to which you dug or cored so that we can interpret the rest of the information better. Then complete as much as you can of the remainder. We recognize that pH won’t always be recorded, for example—but depth to obstruction, texture, drainage, and relative mineral/organic depths are very important. For peatlands, you may record the vonPost decomposition value (See Appendix 2); please note the depth below the surface from which you drew your handful.

- **Average Texture** – see Appendix 3 for a field key.
- **Drainage & moisture regime** – See Appendix 4. These classes indicate the amount of moisture available to plants, and are defined in terms of (1) actual moisture content (in excess of field capacity), (2) the extent of the period during which excess water is present in the plant-root zone, and (3) soil structure/texture. Permeability, level of groundwater, and seepage are factors affecting moisture status, but because these may not be directly observed or measured in the field, they are limited as criteria of moisture status. Soil profile morphology, for example mottling, normally reflects soil moisture status (indirectly), but because it does not always do so, it should not be the overriding criterion. Topographic position and vegetation as well as mottling or other morphological characteristics are useful field criteria for assessing soil moisture status.
- If soils are strongly influenced by seepage waters, please note.

Elevation - note whether in feet or in meters.

Aspect - Please record as 0-360^o; give range if appropriate. If your compass does not correct for declination, please do so yourself and record the true reading—make sure you ADD the number of degrees declination to the magnetic reading to arrive at the true reading.

Slope – Remember to record your units—degrees or percent. A 45^o slope = 100% slope.

Hydrologic regime - circle appropriate descriptor.

Habitat patchiness - describe pattern or patches. Are they substrate related?

Microtopography - hummocks and hollows, etc.

Bedrock type - name, if known; or check off the closest type of those listed. Indicate whether you confirmed the type in the field, or if this was taken off of the bedrock map.

- **Igneous Rocks:** Granitic (Granite, Schyolite, Syenite, Trachyte); Dioritic (Diorite, Dacite, Andesite); Gabbroic (Gabbro, Basalt, Pyroxenite, Peridotite)

- **Sedimentary Rocks:** Limestone (and Dolomite); Sandstone; Siltstone; Shale; Marl
- **Metamorphic Rocks:** Gneiss; Schist; Slate / Phyllite; Marble; Serpentine

Topographic Position - circle most appropriate descriptor.

Surficial deposit - circle the appropriate descriptor, or more than one if surficial geology is unknown/unclear.

Threats, Management Needs, Other Comments: record as appropriate.

This information is really important to interpreting the field data. If a box does not apply, please mark it out or put "n/a"-- do not leave it blank.

Fire, e.g. "charcoal bbs common in soil, no fire scars above ground"

Wind, e.g. "some pine with broken tops"

Cutting, e.g. "few stumps, mostly rotted"

Agriculture, e.g. "stone fences present"

Impoundment, e.g. "water level maintained by dam at bridge"

PART IV. SUMMARY AND RANKING

This should be mostly self-explanatory.

Current Condition: This applies to the community itself, NOT to its surroundings. Describe your assessment of the overall quality of the community. Also note the extent of natural and human-caused disturbance, as well as whether the disturbance is in the past or is current.

Size: Refer to your carefully drawn topographic map. If you have a grid or other reliable estimator for deriving acreage from your outlined area, do so; otherwise, leave it for MNAP staff—don't just eyeball it, please.

Landscape Context: This applies to the lands surrounding the community.

Overall Rank: Based on your experience, please give an overall "grade" to the community EO. Feel free to add comments explaining your rank.

APPENDIX 1. Late Successional Index Field Form

Site Name: _____ Obs pt: _____

Instructions: Using a prism and a second person with a DBH tape, identify and measure all trees (live or dead) within your prism plot with a DBH greater than 40 cm (16 inches). Use the center chart to convert DBH to trees/acre. Total the trees/acre and convert that number to the LS Index using the chart at the right of the page. For greater accuracy, average the trees/acre from at least three prism plots before converting to the LS Index. LS values 6 or higher are considered high value late successional forest.

Prism Plots		
Species	DBH (cm)	Trees/Acre
Prism Plot 1	TOTAL	

Prism Plot 2	TOTAL	

Prism Plot 3	TOTAL	

Plot ave.: _____

Trees/Acre Conversion	
DBH (cm)	Trees/acre
40	7.4
41	7.0
42	6.7
43	6.4
44	6.1
45	5.8
46	5.6
47	5.4
48	5.1
49	4.9
50	4.7
51	4.5
52	4.4
53	4.2
54	4.1
55	3.9
56	3.8
57	3.6
58	3.5
59	3.4
60	3.3
61	3.2
62	3.1
63	3.0
64	2.9
65	2.8
66	2.7
67	2.6
68	2.6
69	2.5
70	2.4
71	2.3
72	2.3
73	2.2
74	2.2
75	2.1
76	2.0
77	2.0
78	1.9
79	1.9
80	1.8

LS Index: _____

Northern	Hardwood
Trees/acre	LS Index
0	0
2	1
4	2
6-8	3
10-12	4
14-16	5
18-20	6
22-26	7
28-34	8
36-40	9
42+	10

Northern	Pine
Trees/acre	LS Index
0	0
2	1
4	2
6	3
8	4
10-12	5
14	6
16-32	7
34-50	8
52-64	9
66+	10

Upland	Spruce Fir
Trees/acre	LS Index
0	0
2	1
4	2
6	3
8-10	4
12-14	5
16-18	6
20-22	7
24-34	8
36-38	9
40+	10

APPENDIX 2. MINERAL SOIL TEXTURE KEY

Simplified Key to Texture

- A1 Soil does not remain in a ball when squeezed **sand**
- A2 Soil remains in a ball when squeezed **B**
- B1 Squeeze the ball between your thumb and forefinger, attempting to make a ribbon that you push up over your finger.
Soil makes no ribbon **loamy sand**
- B2 Soil makes a ribbon; may be very short **C**
- C1 Ribbon extends less than 1 inch before breaking **D**
- C2 Ribbon extends 1 inch or more before breaking **E**
- D1 Add excess water to small amount of soil; soil feels at least slightly gritty **loam or sandy loam**
- D2 Soil feels smooth **silt loam**
- E1 Soil makes a ribbon that breaks when 1-2 inches long; cracks if bent into a ring **F**
- E2 Soil makes a ribbon 2+ inches long; doesn't crack when bent into a ring **G**
- F1 Add excess water to small amount of soil; soil feels at least slightly gritty **sandy clay loam or clay loam**
- F2 Soil feels smooth **silty clay loam or silt**
- G1 Add excess water to a small amount of soil; soil feels at least slightly gritty **sandy clay or clay**
- G2 Soil feels smooth **silty clay**

APPENDIX 2. VON POST SCALE OF PEAT DECOMPOSITION

- H1:** Completely undecomposed peat; only clear water can be squeezed out.
- H2:** Almost undecomposed and mud-free peat; water that is squeezed out is almost clear and colorless.
- H3:** Very little decomposed and very slightly muddy peat; when squeezed water is obviously muddy but no peat passes through fingers. Residue retains structure of peat.
- H4:** Poorly decomposed and somewhat muddy peat; when squeezed, water is muddy. Residue muddy but it clearly shows growth structure of peat.
- H5:** Somewhat decomposed, rather muddy peat; growth structure visible but somewhat indistinct; when squeezed some peat passes through fingers but mostly very muddy water. Press residue muddy.
- H6:** Somewhat decomposed, rather muddy peat; growth structure indistinct; less than 1/2 of peat passes through fingers when squeezed. Residue very muddy, but growth structure more obvious than in unpressed peat.
- H7:** Rather well-decomposed, very muddy peat; growth structure visible, about 1/2 of peat squeezed through fingers. If water is squeezed out, it is porridge-like.
- H8:** Well-decomposed peat; growth structure very indistinct; about 2/3 of peat passes through fingers when pressed, and sometimes a somewhat porridge-like liquid. Residue consist mainly of roots and resistant fibers.
- H9:** Almost completely decomposed and mud-like peat; almost no growth structure visible. Almost all peat passes through fingers as a homogeneous porridge if pressed.
- H10:** Completely decomposed and muddy peat; no growth structure visible; entire peat mass can be squeezed through fingers.

APPENDIX 4. Soil Drainage Classes

Natural soil drainage classes define the “frequency and duration of wet periods under conditions similar to those under which the soil developed”.¹ Soil drainage class does *not* ask how wet the soil feels at the particular moment it is sampled.

Drainage Class Descriptions (from Soil Survey Manual)

Very Poorly Drained

Water remains at or near the ground surface much of the growing season, and is removed from the soil very slowly. Internal free water occurs high in the soil profile (shallow) and is persistent or permanent.

Poorly Drained

Soil remains wet for *long periods* or is wet at shallow depths *periodically* during the growing season. Free water in the soil occurs in shallow or very shallow zones and is common or persistent.

Somewhat Poorly Drained

Soil remains wet for a *significant portion* of the growing season at shallow depths. Internal free water exists at shallow to moderately deep levels and is transitory to permanent. The soil may have a high water table, or receive additional water from seepage.

Moderately Well Drained

Water is *somewhat slowly removed* from the soil, during some parts of the year. Internal free water occurs in moderately deep soil and is transitory to permanent. Soils are wet within the rooting depth of plants for only a short time during the growing season.

Well Drained

Water is *readily removed* from the soil, but not rapidly. Internal free water occurs deep or very deep. Wetness does not inhibit plant root growth for significant periods, and water is available to plants throughout most of the growing season.

Somewhat Excessively Drained

Water is removed from the soil rapidly. Internal free water is very rare or very deep. Coarse-textured or very shallow soils.

Excessively Drained

Water is removed very rapidly. Any internal free water is very rare or very deep. Coarse-textured or very shallow soils.

¹ Soil Survey Division Staff. 1993. Soil Survey Manual. Soil Conservation Service. U. S. Department of Agriculture Handbook 18.

APPENDIX 4. Soil Drainage Classes (continued)

Field Key

Drainage Class	Key Soil Morphological Features	Common Site Indicators
Very poorly drained	<ul style="list-style-type: none"> • Has an O horizon $\geq 16''$ (40cm) thick (peat) • Can be underlain by a mineral gleyed or depleted matrix 	<ul style="list-style-type: none"> • Organic soils in very wet, lowest landscape position • Level or nearly level, seasonally ponded or flooded <p style="text-align: center;">- - - <i>wettest wetland soils</i> - - -</p>
Poorly drained	<ul style="list-style-type: none"> • Lacks thick O horizon • Dark (black) A horizon underlain by predominantly grey colored B horizon with redox features ("drainage mottles") • <u>Exception</u>: Spodosols which have reddish B horizon under an E horizon. (Look for organic streaks in E horizon & redox below spodic horizon or a cemented spodic B horizon) 	<ul style="list-style-type: none"> • Level to gently sloping, sideslopes, toe slopes, depressions, seepage areas <p style="text-align: center;">- - - <i>wetland soils</i> - - -</p>
Somewhat poorly drained	<ul style="list-style-type: none"> • Typically yellowish brown B horizon • Redox features @ $\sim 8-16''$ (20-40cm) 	<ul style="list-style-type: none"> • Level to strongly sloping, seepage areas, broad depressions • Transition to wetland and upland <p style="text-align: center;">- - - <i>not in wetlands</i> - - -</p>
Moderately well drained	<ul style="list-style-type: none"> • Redox features present @ $16-40''$ (40-100cm) 	<ul style="list-style-type: none"> • Level to steep, crests and upper part of long smooth slopes and broad terraces
Well drained	<ul style="list-style-type: none"> • Redox features (if present) below $40''$ (100cm) • Loamy very fine sand or finer • <u>Not sandy</u> (sandy = sand + loamy sand); ie, not glacial outwash 	<ul style="list-style-type: none"> • Level to very steep, knolls, convex slopes, terraces
Somewhat excessively drained	<ul style="list-style-type: none"> • No redox features • Loam, sandy loam, silt loam (predominantly sands and loamy sands) • Soil depth $\geq 20''$ (50cm) to bedrock 	<ul style="list-style-type: none"> • Level to very steep, knolls, convex slopes terraces • Sloping, ledgy, and dry • Outcrops usually present
Excessively drained	<ul style="list-style-type: none"> • No redox features • Sandy or loamy sand throughout • Soil depth $\leq 10''$ (25cm) to bedrock 	<ul style="list-style-type: none"> • Level to very steep, knolls, convex slopes, terraces • Sloping, ledgy, and dry • Outcrops usually present