CAPS Ecological Community Descriptions – November 2011

This appendix lists the natural communities mapped and used in this version of CAPS. An index of ecological integrity is estimated for each of these communities (except ocean). Remember that IEI is scaled by comparing each cell in a community to other cells in the same community, thus IEI must be interpreted in terms of communities.

Note that developed types are all from MassGIS's 2005 land use layer and are not described here. Roads, railroads, abandoned railroads, rail trails, and dams are described in Appendix B, Input Data Layers, and not here.

Powerline shrubland – Powerlines from MassGIS 2005 land use. We did some GIS processing to ensure that narrow powerlines are continuous in our grid representation. Powerlines are one of the few shrubland communities in Massachusetts, and provide habitat for many early successional birds, plants, and insects, as well as nesting sites for several turtle species.

Open land – Open land is directly from MassGIS 2005 land use. The full description of this type is "vacant land, idle agriculture, rock outcrops, and barren areas. Vacant land is not maintained for any evident purpose and it does not support large plant growth." We assume that most areas mapped as open land provide habitat for early successional species.

Forest – This broad class of upland forests is directly from MassGIS 2005 land use.

Forested wetland – Forested wetlands are from DEP wetlands "wooded swamp" classes. We lumped their three classes (deciduous, mixed, and coniferous) because we didn't consider the distinctions to be consistently ecologically meaningful. We also lumped the barrier beach versions of these wetlands.

Shrub swamp – DEP wetlands shrub swamp and barrier beach-shrub swamp classes.

Bog – DEP wetlands bog and barrier beach-bog classes.

Shallow marsh – DEP wetlands "shallow marsh, meadow, or fen" and barrier beach-marsh.

Deep marsh – DEP wetlands deep marsh and barrier beach-deep marsh.

Vernal pool – This is from the Natural Heritage and Endangered Species Programs Potential Vernal Pools layer. We used this layer to capture small wetlands that were not mapped by DEP. We placed a one cell (30×30 m) vernal pool on any upland where a potential vernal pool fell, after moving potential vernal pool points out from under road cells for roadside vernal pools. Thus, our vernal pool community primarily represents small upland vernal pools.

Pond – Ponds are nonflowing unvegetated waterbodies < 5 ha.

Lake – Lakes are nonflowing unvegetated waterbodies > 5 ha.

Sea cliff – DEP wetlands "coastal bank, bluff, or sea cliff" class.

Vegetated dune - DEP wetlands "barrier beach system" class.

Coastal dune – DEP wetlands coastal dune and barrier beach-coastal dune.

Coastal beach – DEP wetlands coastal beach and barrier beach-coastal beach.

Salt marsh – DEP wetlands salt marsh and barrier beach-salt marsh.

Tidal flat – DEP wetlands tidal flat.

Rocky intertidal – DEP wetlands rocky intertidal shore.

Ocean – DEP wetlands "open water ocean" (poly_code = 10). Note that although ocean is a natural community, CAPS does not run metrics or build an IEI for ocean.

Salt pond/bay – Lentic waterbodies that coincide with "brackish" in the salinity settings variable.

Streams, by order and gradient – Streams are mapped by approximate order (first through fifth and higher) and gradient (low vs. high). Streams are derived from open water in DEP wetlands, which we split between lentic and lotic. Approximate orders are defined by selecting cutpoints of watershed area based on a series of logistic regressions to Strahler stream order from centerline data. All streams with watershed areas larger than the 5th order cutpoint were lumped. Gradient was split between low (flatwater, pool-riffle, plane-bed) and high (step-pool and cascade) at 3% gradient.

Estuaries, by order – Estuaries are mapped by order (but not gradient) using the same process we used for streams. Estuaries are derived from lotic open water that corresponds to "brackish" in the salinity settings variable.