8 March 2010
Spatial Data Notes: CLIFFS

New Hampshire Fish & Game Department
Spatial Data Notes

DATA LAYER:	Cliff habitats of New Hampshire
COVER NAME:	Cliffs
COVER CONTENTS:	Cliff polygons (below elevation of alpine habitat)
COVER TYPE:	polygon
SOURCE:	Analysis of 10 m Digital Elevation model to identify areas >65 degree slope combined with cliff landforms identified by The Nature Conservancy's Ecological Land units data layer and New Hampshire Natural Heritage Bureau (NHB) exemplary cliff communities.
SOURCE SCALE:	1:24,000; 30-meter (ecological land units); 30-meter (elevation data)
SOURCE MEDIA:	digital
AUTOMATED BY:	NH Fish & Game Department
HORIZONTAL DATUM:	1983
TILE:	State
STATUS:	Complete
LAST REVISION:	June 2005; attributes revised December 2009

General Description of the Data

- Development of this coverage provides general cliff locations within the state of New Hampshire. Analysis was completed for incorporation into the New Hampshire Wildlife Action Plan. Funding for the Plan was provided by State Wildlife Grants administered by the US Fish & Wildlife Service.

- Definition of cliffs used in this analysis: areas greater than 65 degree slope (NHB 2004). Slopes derived from a 10-meter USGS Digital Elevation Model for New Hampshire, provided by Ingraham (2004). The dem was projected to NH Stateplane feet NAD83 using bilinear interpolation; 10m coverage for 2/3 of the state, all but southeast where 30m dem used to fill in missing data. Slopes $>35^{o}$ were identified (this corresponds to on-the-ground slope of 65 degrees according to models developed by The Nature Conservancy, Boston). Areas identified as cliffs by The Natural Conservancy's Ecological Land units data layer were also included (TNC 2003).

- NH Natural Heritage Bureau's data depicting exemplary cliff communities were also included to ensure all cliff areas were captured to the extent possible (Sperduto and Nichols 2004).

  NHB natural communities included:
  - Montane acidic cliff
  - Montane circumneutral cliff
  - Alpine cliff
  - Lowland acidic cliff
  - Lowland circumneutral cliff

  Cliff polygons within the alpine habitat layer were erased. The number of polygons was parsed down to those cliffs greater than or equal to 10 acres in size (some smaller cliffs within PEFA or specifically identified by NH Audubon were retained).

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Item definitions for CLIFFS polygon attributes:

ITEM NAME	DESCRIPTION
FGID	unique ID number
NAME	Name given to each cliff polygon.
NHB_TYPE	NHB natural community type
UNITNAME	Name given to each conservation planning unit
ACRES	Area (acres)
HECTARES	Area (hectares)
CLIMBED	recreational rock climbing (Y=yes, U=undetermined)
CLIMBSRC	literature source for recreational use[1]
PEFA_STAT	Peregrine Falcon habitat status
DISTROAD	Distance to nearest road (meters)
HIKEDENS	Density of hiking trails in the polygon (km/km2)
DISTHIKE	Distance to nearest hiking trail (meters)
ELU30VAR	Variety of ecological land units (ELU30 = elevation, substrate, landform)
AREA_M2	Total area (square meters)
PERIM_M	Total perimeter (meters)
NEARDIST	Distance to nearest neighbor (meters)
PROXINDEX	Proximity index
SHAPEINDEX	Shape index
IFESMEAN	Mean IFES score (Integrated Fragmentation Effects Surface, TNC; Zankel, 2005)
A_RICH_BUF	Species richness of rare animals within their dispersal distances (2009)
A_RICH_POL	Species richness of rare animals within polygon (2009)
P_RICH_POL	Species richness of rare plants in polygon (2009)
C_RICH_POL	Richness of rare and exemplary natural communities in polygon (2009)
BIO	Raw biological score (high score = high quality)
LAND	Raw landscape score (high score = high quality)
HUMAN	Raw human impact score (high score = low impact)
COND	Raw habitat condition score (high score = good condition)
ECOSUB	Ecoregional subsection
CONDITION	WAP Priority based on COND score
PRIORITY	WAP Priority based on COND score with EO add-ins
CONS_AC	Conservation (acres)
CONS_PCT	Conservation (percent)
TOTALAC	total area of contiguous ridge/talus/cliff (acres)
TOTALHA	total area of contiguous ridge/talus/cliff (hectares)

NOTES:

BIO Condition score =
$(A\_RICH\_BUF_R*.25) + (A\_RICH\_POL_R*.25) + (P\_RICH\_POL_R*.25) + (C\_RICH\_POL_R*.25)$
where all biological variables are positive indicators of biological quality and subscript R denotes percentile rank, thus "good" sites score high (maximum percentile rank=100) and "poor" sites score low (minimum percentile rank=0).

LAND Condition score = $(HECTARES_R*.34) + (TOTALHA_R*.33) + (PROXINDEX_R*.33)$
where all landscape variables are positive indicators of landscape integrity and subscript R denotes percentile rank, thus "good" sites score high (maximum percentile rank=100) and "poor" sites score low (minimum percentile rank=0); and TOTALHA is total contiguous area of adjacent ridge/talus/cliff habitat combined, many small cliff polygons are within ridge/talus.

HUMAN Condition score = $(CLIMBED_R*.34) + (DISTHIKE_R*.33) + (DISTROAD_R*.33)$
where deleterious human impact variables have been transformed so that all variables are positive indicators of ecological integrity and subscript R denotes percentile rank, thus "good" sites score high (maximum percentile rank=100) and "poor" sites score low

COND Condition index = (BIO+LAND+HUMAN)/3 as defined above

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The list above represents the complete set of attributes developed for the WAP habitat data layer. Only select attributes are distributed in the public release version WAP data layers. For more information, please contact the NH Fish and Game Department, Wildlife Division, 11 Hazen Dr, Concord NH 03301 Phone: (603) 271-2461 E-mail: wildlife@wildlife.nh.gov

The fields: A_RICH_BUF, A_RICH_POL, P_RICH_POL and C_RICH_POL, provide species richness counts (number of different species potentially present in the habitat polygon) from the NH Natural Heritage Bureau as of December 2008. Care must be taken in interpreting these counts as most areas of NH have never been surveyed for biodiversity elements. See *Important Background Information for Interpreting Species Richness Counts based on NH Natural Heritage Bureau Data* for details.

DATA SOURCES:

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