Modeling Pine Mushroom Habitat
in the
Nass Valley/ Cranberry River Area

UNBC, GEOG 413 - Advanced GIS Project   By Neal Foord and Aaron Koning
Completed on November 28, 2001

*Best viewed at 1024x728
resolution

Project Goal:

- Determine several habitat characteristics of pine mushrooms.

- Acquire spatial data for some of these characteristics in an area familiar to us.

- Assemble and perform analysis on the data using ArcInfo.

- Display the results of this analysis on a map.

About Pine Mushrooms:

- Latin name: *Tricholoma magnivelare*

- They are a commercially important species in BC and other areas of the world.
    - $10-20 million generated annually in BC harvesting alone.
    - Highly valued as a luxury food source in Japan.
    - Harvesting prices can range from $5 per pound to $160 per pound for top quality pine mushrooms.

- There is interest in developing sustainable harvesting plans for pine mushrooms.
    - Harvesting of pine mushrooms in productive areas can provide up to 3 times more profitability than timber harvesting.
    - Commercial harvesting is ever increasing in this industry.

- Photos at a buyers shack and of the Pine Mushrooms themselves.

Nass Valley/ Cranberry River Area

- The Nass Valley/ Cranberry River is located in North West BC and can be reached by traveling North up Highway 37 starting at Kitwanga (west of Smithers).

- A known pine mushroom harvesting area, thousands of prospective pickers, buyers and researchers

- flock to the area every year in hopes of finding the best quality pine mushrooms and fullest patches.

- Studies are available for this area summarizing the characteristics of the habitat in which pine mushrooms can be found.

- It is an area familiar to us through work and recreation related activities, including pine mushroom harvesting.

- Map showing location of classification area.

Data Involved in the Project:

- Ministry of Forests - Forest Cover Inventory:
  - 1 : 20,000 scale
  - Layers used:
    - Forest Cover Polygons: tree species composition, age, stand volumes, stand age, etc.
    - Biogeoclimatic zones and subzones
    - Transportation features
  - Website for additional info: http://www.for.gov.bc.ca/resinv/products/DigData/brochure.htm

- Base Mapping and Geomatic Services Branch Ministry of Sustainable Resource Management - Terrain Resource Information Management Program (TRIM) :
  - 1 : 20,000 scale
  - Layers used:
    - Water Features
    - Contours
  - Website for additional info: http://home.gdbc.gov.bc.ca/TRIM/trim/trim_overview/default.htm

- National Topographic System:
  - 1 : 250,000 scale
  - Layers used:
    - Text
  - Website for additional info: http://maps.nrcan.gc.ca/topographic.html

- Former Ministry of Environment, Land and Parks Topographic:
  - 1 : 6,000,000 scale
  - Water and Transportation features
  - FTP site to download free coverages: ftp://ftp.elp.gov.bc.ca/dist/arcwhse/6million/

Data Processing and Assembly

- Forest Cover Inventory Data:
  - Received ArcInfo coverages in 1 : 20,000 tiled directories
  - Forest Cover Polygon coverages and BEC zone/subzone coverages in the separate directories were appended using an AML script (involving arc command: mapjoin)
  - Transportation coverages were appended using another AML script (involving arc command: append)
  - The comprehensive Forest Cover Polygon and BEC zone/subzone coverages were then joined together to make one coverage (using arc command: union) so that analysis could be performed on a single coverage

- TRIM:
    - Received ArcInfo interchange files in zipped files
    - Unzipped ArcInfo interchange files into 1 : 20,000 tiled directories
    - The water, contour, transportation and text interchange files were imported to coverages for each directory using an AML script (involving arc command: import)
    - The water coverages, contour coverages and transportation coverages in the separate directories were appended using another AML script (involving arc command: append)
    - A copy of the water coverage was made and then edited and cleaned to create topology so that lakes could be shaded on the final output

- NTS:
    - Received an ArcInfo interchange file in a zip file
    - Unzipped and imported interchange file into a coverage

- MELP 6mil:
    - Received an ArcInfo interchange file in a zip file
    - Unzipped and imported interchange file into a coverage

Habitat Selection/Analysis:

- First a list of preferred habitat characteristics was compiled primarily from two sources with links below:
    - Ecological Description and Classification of Some Pine Mushroom (Tricholoma magnivelare) Habitat in British Columbia, 2001 (PDF file)
    - Pine Mushrooms and Timber Production in the Cranberry Timber Supply Area, 1999 (PDF file)

- Then characteristics were selected for which spatial data was available for:
    - Stand age
    - Species composition and standing volume
    - Canopy closure
    - BEC zone and sub zone
    - Site Index

- Habitat characteristics were successively broadened to achieve three habitat classes

- An AML script was created that reselected polygons containing suitable characteristics for three separate classes from our unioned coverage; gave each polygon a value of 1, 2 or 3 depending on its class; and put the selected polygons in each class to a new coverage

Map Output

- Program Choice: ArcPlot using an AML script

- Data to include:
    - Pine Mushroom Habitat classes
    - TRIM Water Features and Contours
    - Forest Cover Inventory roads
    - NTS Text

- Size and Scale:
  - 34" x 34" to show appropriate detail
  - 1 : 87,000 as dictated by the size of the area and the size of the paper

- Map elements:
  - Use of Boxes to enclose other elements
  - Legend, Title, UTM tics
  - Scalebar created using a separate AML script (outside source)
  - North arrow, angle of the north arrow was determined using a separate AML script (outside source)
  - Color/symbolsets from MELP - better selection than ArcInfo provides
  - Inset map to show location of study area in BC

- AML script used to produce the map.

- Portion of map and map elements produced through ArcPlot and then modified for this website using MS Paint

Problems and Errors

- Upper case letters in the names of the 1 : 20,000 tiled TRIM directories
  - ArcInfo would not import the interchange files in these directories so the names of the directories had to be modified to contain only lower case letters

- Spaghetti TRIM data does not allow shading of water features
  - Also lakes, glaciers, etc. that continued past the boundaries of our classification area were not closed
  - Therefore, lines had to be manually added to close those features
  - Clean was then used to create topology

- NTS text was of poor quality.
  - Some of the text had letters rotated at various angles
  - An example being the text for Derrick Lake shown in the map provided for this website

Useful Sites Used During the Project:

- GIS at UNBC
- Links to sources of land related information from BC Government Ministries (other than TRIM)
- MOF Forest Cover Inventory coverage and item definitions

Comments? Questions? Connect us via e-mail:

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