PLANNING FOR FUTURE NORTH DAKOTA FRESHWATER MUSSEL SURVEYS

Matthew Burton-Kelly
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UND GEOG 474
CVANCARA (1983)

“Aquatic Mollusks of North Dakota”

Purpose: to characterize the molluscan fauna of North Dakota

- Habitat
- Population
- Ecology
- Spatial arrangement
IMPORTANCE

- Pollution effects
  - High sensitivity to water quality
- Biodiversity
- A popular topic, especially relating to climate change
- Paleodrainages
- Post-glacial landscape evolution
WHY GIS?

- Easy to make new maps
- Easy to add data from new surveys
- Easy to add new data layers
- Querying
- PLAYING WITH THE DATA!
THIS PROJECT

- Planning future freshwater mussel surveys
- Filling in gaps in existing record
- Revisiting previous sites to evaluate changes in population and biodiversity
- Based on particular species (threatened or endangered)
DATA

- 297 unique sites, 36 revisited by Cvancara after 2-10 years
  - Location to QQQ
  - Unionoid freshwater mussel abundance data (13 species in 9 genera)
- ND GIS Hub
  - State outline, counties
TOOLS

- AllTopo

- Converted TRS positions to latitude/longitude and UTM

- Quantum GIS (QGIS) 1.0.1 ‘Kore’

- Open-source alternative to ArcGIS

- Table Editor and fTools plugins
HYPOTHESES

- Change in biodiversity between visits
  - Introduction or extirpation
- Change in population (overall/species) between visits
  - Introduction of extirpation
- Presence/absence in each watershed of a subbasin
- Presence/absence over area of a political unit
- Local control over conservation
CHANGE IN POPULATION
Overall population
CHANGE IN POPULATION
*Lasmigona complanata*
SITE PRESENCE/ABSENCE
Counties
SITE PRESENCE/ABSENCE

Example: Watersheds in Nelson County
TO DO

- More accurate positioning of survey sites
  - Current dataset places sites in center of QQQ
  - Actual location on water body is available from Accession catalog (UND Geology)
- Rethinking of data structure
  - Should be able to easily add faunal data from new sites and revisited sites
- More comprehensive literature search
QUESTIONS?