Appalachian elktoe - Potential Habitat, June 2022 - NC Department of Transportation

File Geodatabase Feature Class

Tags

Appalachian Elktoe, Alasmidonta raveneliana, Alas_rave, French Broad Basin, Little Tennessee Basin, Freshwater Bivalve, Aquatic, endangered, mussel, critical habitat, random forest model, machine learning, Transportation, NRTR, NCDOT, Environment, Location, North Carolina, ATLAS

Summary

This dataset was originally created in February 2022 as part of the Project ATLAS initiative at NCDOT to support the Environmental Analysis Unit (EAU) Mitigation and Modeling Unit with project delivery in the development phase.

The Appalachian Elktoe model is a Random Forest (machine-learning) model. Random Forest models were used to predict the probability of habitat at the scale of USGS National Hydrography Data (NHD Plus V2) catchments and their associated stream segments (median area: 272 acres; 5th and 95th percentile area: 4 acres and 1541 acres).

This dataset supports the production of the Natural Resources Technical Report (NRTR). This dataset also contains information that may assist biologists in preparing background information for field surveys, in order to address protected species for Threatened & Endangered Species Survey Reports, and/or Biological Assessments. The model is intended to be used in project management tools to: 1. flag areas of higher versus lower risk of "May Affect" biological conclusions within a species range to improve project planning and management, and 2. add a landscape-scale perspective to improve biologists' field planning and site assessment

Description

The Appalachian Elktoe Potential Habitat dataset is a polygon layer depicting high, moderate and low potential habitat locations for Appalachian Elktoe in NC counties.

Appalachian Elktoe*(Alasmidonta raveneliana)* is known only from the mountain streams of western North Carolina and eastern Tennessee. Although the complete historical range of the Appalachian elktoe is unknown, available information suggests that the species once lived in the majority of the rivers and larger creeks of the upper Tennessee River system in North Carolina. In Tennessee, the species is known only from its present range in the main stem of the Nolichucky River. The elktoe has been reported from relatively shallow, mediumsized creeks and rivers with cool, clean, well-oxygenated, moderate- to fast-flowing water. The species is most often found in riffles, runs, and shallow flowing pools with stable, relatively silt-free, coarse sand and gravel substrate associated with cobble, boulders, and/or bedrock. Stability of the substrate appears to be critical to the Appalachian elktoe, and the species is seldom found in stream reaches with accumulations of silt or shifting sand, gravel, or cobble. Individuals that have been encountered in these areas are believed to have been scoured out of upstream areas during periods of heavy rain, and have not been found on subsequent surveys.

The three levels are: Low, Moderate, and High Probability of Potential Habitat (based on similarity of environmental conditions to those found at known occurrence locations). The category thresholds were set based on the distribution of predicted values for known habitat. The High-Moderate threshold is set at the level where 90% of the observed potential habitat (species presence and reviewer judgments) falls within the High category (Presence Percent Correctly Classified). The Moderate-Low threshold were set at the level where 8% of

the observed potential habitat (species presence and reviewer judgments) falls within the Moderate category and 2% within the Low category. The final thresholds for this species are 0.271 and 0.583 for the Low-Moderate and Moderate-High thresholds, respectively. Lower thresholds result in more of the range labelled as High probability of habitat and greater misclassification of known non-habitat locations. Higher thresholds result in more of the range labelled as Low probability of habitat and greater misclassification of known habitat locations.

Given the larger spatial unit of ecological models and ecological characteristics of aquatic species, the landscape scale environmental attributes of potential habitat varied greatly among sites and could closely resembled non-habitat sites. It is important to remember that potential habitat (and non-habitat) can occur at any classification level within a catchment and must be verified by a qualified biologist.

For more information please click here https://xfer.services.ncdot.gov/gisdot/Metadata/Atlas/TechDocs/

Datasets developed under Project ATLAS do not replace any NRTR work for future projects and may not be used as a replacement for site visits / field surveys by qualified professionals and hence should be used only as a supporting platform for decision making. Use of this dataset for project scoping or screening is merely pre-decisional.

Credits
The Environmental Analysis Unit (EAU) Mitigation and Modeling Unit within NCDOT was tasked to create this dataset. This dataset supports the production of the Natural Resources Technical Report (NRTR). Maintenance of this dataset is handled by the EAU.

Support and maintenance of the enterprise spatial database where this data resides is handled by NCDIT's Transportation GIS Unit.
Use limitations
The North Carolina Department of Transportation shall not be held liable for any errors in this data. This includes errors of omission, commission, errors concerning the content of the data, and relative and positional accuracy of the data. This data cannot be construed to be a legal document. Primary sources from which this data was compiled must be consulted for verification of information contained in this data.

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Extent

West	-84.017454	**East**	-81.839144
North	36.167407	**South**	35.022011

Scale Range

Maximum (zoomed in)	1:5,000
Minimum (zoomed out)	1:625,000

ArcGIS Metadata ▶

Topics and Keywords ▶

THEMES OR CATEGORIES OF THE RESOURCE   biota, geoscientificInformation, inlandWaters, location, transportation, environment

CONTENT TYPE   Downloadable Data
   EXPORT TO FGDC CSDGM XML FORMAT AS RESOURCE DESCRIPTION   No

PLACE KEYWORDS   North Carolina

THESAURUS   ▶

TITLE   User
CREATION DATE   2022-02-25   00:00:00
PUBLICATION DATE   2022-06-01   00:00:00

Hide Thesaurus ▲

THEME KEYWORDS   Appalachian Elktoe, Alasmidonta raveneliana, Alas_rave, Freshwater Bivalve, Aquatic, endangered, mussel, critical habitat, random forest model, machine learning,Transportation, NRTR, NCDOT, Environment, Location, North Carolina, ATLAS

THESAURUS   ▶
TITLE   User
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PUBLICATION DATE   2022-06-01   00:00:00

Hide Thesaurus ▲

Hide Topics and Keywords ▲

Citation ▶

TITLE   Appalachian elktoe - Potential Habitat, June 2022 - NC Department of Transportation
CREATION DATE   2022-02-25   00:00:00
PUBLICATION DATE   2022-06-01   00:00:00

PRESENTATION FORMATS   digital map

Hide Citation ▲

Citation Contacts ▶

RESPONSIBLE PARTY
ORGANIZATION'S NAME   North Carolina Department of Transportation - EAU Mitigation and Modeling Unit
CONTACT'S POSITION   Environmental Program Consultant
CONTACT'S ROLE   point of contact

CONTACT INFORMATION   ▶
PHONE
VOICE   919-707-6136

ADDRESS
DELIVERY POINT   Century Center Building B, 1020 Birch Ridge Drive
CITY   Raleigh
ADMINISTRATIVE AREA   NC
POSTAL CODE   27610
COUNTRY   US
E-MAIL ADDRESS   ATLAS@ncdot.gov

HOURS OF SERVICE
9:00am – 5:00pm Monday - Friday

CONTACT INSTRUCTIONS
Please send an email with any issues, questions or comments regarding the ATLAS Data Search Tool, ATLAS Screening Tool or ATLAS Workbench. If it is an immediate need, please call the contact number or indicate as such in the subject line in an email.

Hide Contact information ▲

RESPONSIBLE PARTY
  ORGANIZATION'S NAME   North Carolina Department of Transportation - EAU Mitigation and Modeling Unit
  CONTACT'S POSITION   Environmental Program Consultant
  CONTACT'S ROLE   originator

  CONTACT INFORMATION   ▶
    PHONE
      VOICE   919-707-6136

    ADDRESS
      DELIVERY POINT   Century Center Building B, 1020 Birch Ridge Drive
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RESPONSIBLE PARTY
  ORGANIZATION'S NAME   North Carolina Department of Transportation - EAU Mitigation and Modeling Unit
  CONTACT'S POSITION   Environmental Program Consultant
  CONTACT'S ROLE   resource provider

  CONTACT INFORMATION   ▶
    PHONE
      VOICE   919-707-6136

    ADDRESS
      DELIVERY POINT   Century Center Building B, 1020 Birch Ridge Drive
      CITY   Raleigh
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Hide Citation Contacts ▲

Resource Details   ▶

DATASET LANGUAGES   English (UNITED STATES)
DATASET CHARACTER SET   utf8 - 8 bit UCS Transfer Format

STATUS   completed
SPATIAL REPRESENTATION TYPE   vector

PROCESSING ENVIRONMENT   Version 6.2 (Build 9200) ; Esri ArcGIS 10.5.1.7333

CREDITS
The Environmental Analysis Unit (EAU) Mitigation and Modeling Unit within NCDOT was tasked to create this dataset. This dataset supports the production of the Natural Resources Technical Report (NRTR). Maintenance of this dataset is handled by the EAU.

Support and maintenance of the enterprise spatial database where this data resides is handled by NCDIT's Transportation GIS Unit.

Hide Resource Details ▲

Extents ▶

EXTENT
DESCRIPTION
Data collection is complete.

GEOGRAPHIC EXTENT
BOUNDING RECTANGLE
WEST LONGITUDE   -84.422111
EAST LONGITUDE   -75.416034
SOUTH LATITUDE   33.730557
NORTH LATITUDE   36.617257
EXTENT CONTAINS THE RESOURCE   Yes

TEMPORAL EXTENT
BEGINNING DATE   2022-06-01   00:00:00
ENDING DATE   2022-06-01   00:00:00

EXTENT
GEOGRAPHIC EXTENT
BOUNDING RECTANGLE
EXTENT TYPE   Extent used for searching
* WEST LONGITUDE   -84.017454
* EAST LONGITUDE   -81.839144
* NORTH LATITUDE   36.167407
* SOUTH LATITUDE   35.022011
* EXTENT CONTAINS THE RESOURCE   Yes

EXTENT IN THE ITEM'S COORDINATE SYSTEM
* WEST LONGITUDE   518279.805398
* EAST LONGITUDE   1150827.580982
* SOUTH LATITUDE   499898.969555
* NORTH LATITUDE   892146.906842
* EXTENT CONTAINS THE RESOURCE   Yes

Hide Extents ▲

Resource Points of Contact ▶

POINT OF CONTACT
ORGANIZATION'S NAME   North Carolina Department of Transportation - EAU Mitigation and Modeling Unit
CONTACT'S POSITION   Environmental Program Consultant

CONTACT'S ROLE   point of contact

CONTACT INFORMATION   ▶
PHONE
  VOICE   919-707-6136

ADDRESS
  TYPE
  DELIVERY POINT   Century Center Building B, 1020 Birch Ridge Drive
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Hide Contact information ▲

Hide Resource Points of Contact ▲

Resource Maintenance ▶

RESOURCE MAINTENANCE
  UPDATE FREQUENCY   as needed

  SCOPE OF THE UPDATES   dataset

  OTHER MAINTENANCE REQUIREMENTS
    Maintenance of this dataset is handled by the Environmental Analysis Unit (EAU) Mitigation and Modeling Unit. Currently updating this dataset has not been planned. Support and maintenance of the enterprise spatial database where this data resides is handled by NCDIT's Transportation GIS Unit.

MAINTENANCE CONTACT
  ORGANIZATION'S NAME   North Carolina Department of Transportation - EAU Mitigation and Modeling Unit
  CONTACT'S POSITION   Environmental Program Consultant
  CONTACT'S ROLE   originator

  CONTACT INFORMATION   ▶
  PHONE
    VOICE   919-707-6136

  ADDRESS
    TYPE
    DELIVERY POINT   Century Center Building B, 1020 Birch Ridge Drive
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Hide Contact information ▲

Hide Resource Maintenance ▲

Resource Constraints ▶

LEGAL CONSTRAINTS
LIMITATIONS OF USE
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SECURITY CONSTRAINTS
CLASSIFICATION   unclassified
CLASSIFICATION SYSTEM   None

LIMITATIONS OF USE
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CONSTRAINTS
LIMITATIONS OF USE

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Hide Resource Constraints ▲

Spatial Reference ▶

ArcGIS COORDINATE SYSTEM
 * TYPE   Projected
 * GEOGRAPHIC COORDINATE REFERENCE   GCS_North_American_1983
 * PROJECTION   NAD_1983_StatePlane_North_Carolina_FIPS_3200_Feet
 * COORDINATE REFERENCE DETAILS
   PROJECTED COORDINATE SYSTEM
     WELL-KNOWN IDENTIFIER   102719
     X ORIGIN   -121841900

Y ᴏʀɪɢɪɴ   -93659000
XY ꜱᴄᴀʟᴇ   3048.0060960121918
Z ᴏʀɪɢɪɴ   -100000
Z ꜱᴄᴀʟᴇ   10000
M ᴏʀɪɢɪɴ   -100000
M ꜱᴄᴀʟᴇ   10000
XY ᴛᴏʟᴇʀᴀɴᴄᴇ   0.0032808333333333331
Z ᴛᴏʟᴇʀᴀɴᴄᴇ   0.001
M ᴛᴏʟᴇʀᴀɴᴄᴇ   0.001
ʜɪɢʜ ᴘʀᴇᴄɪꜱɪᴏɴ   true
ʟᴀᴛᴇꜱᴛ ᴡᴇʟʟ-ᴋɴᴏᴡɴ ɪᴅᴇɴᴛɪꜰɪᴇʀ   2264
ᴡᴇʟʟ-ᴋɴᴏᴡɴ ᴛᴇxᴛ
PROJCS["NAD_1983_StatePlane_North_Carolina_FIPS_3200_Feet",GEOGCS["GCS_North_American_19
83",DATUM["D_North_American_1983",SPHEROID["GRS_1980",6378137.0,298.257222101]],PRIMEM[
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79.0],PARAMETER["Standard_Parallel_1",34.33333333333334],PARAMETER["Standard_Parallel_2",36.
16666666666666],PARAMETER["Latitude_Of_Origin",33.75],UNIT["Foot_US",0.3048006096012192],A
UTHORITY["EPSG",2264]]

ʀᴇꜰᴇʀᴇɴᴄᴇ ꜱʏꜱᴛᴇᴍ ɪᴅᴇɴᴛɪꜰɪᴇʀ
ᴠᴀʟᴜᴇ   2264
ᴄᴏᴅᴇꜱᴘᴀᴄᴇ   EPSG
ᴠᴇʀꜱɪᴏɴ   6.12(9.0.0)

Hide Spatial Reference ▲

Spatial Data Properties ▶

ᴠᴇᴄᴛᴏʀ   ▶
* ʟᴇᴠᴇʟ ᴏꜰ ᴛᴏᴘᴏʟᴏɢʏ ꜰᴏʀ ᴛʜɪꜱ ᴅᴀᴛᴀꜱᴇᴛ   geometry only

ɢᴇᴏᴍᴇᴛʀɪᴄ ᴏʙᴊᴇᴄᴛꜱ
ꜰᴇᴀᴛᴜʀᴇ ᴄʟᴀꜱꜱ ɴᴀᴍᴇ   AppalachianElktoePotentialHabitat___
* ᴏʙᴊᴇᴄᴛ ᴛʏᴘᴇ   composite
* ᴏʙᴊᴇᴄᴛ ᴄᴏᴜɴᴛ   12863

Hide Vector ▲

ᴀʀᴄɢɪꜱ ꜰᴇᴀᴛᴜʀᴇ ᴄʟᴀꜱꜱ ᴘʀᴏᴘᴇʀᴛɪᴇꜱ   ▶
ꜰᴇᴀᴛᴜʀᴇ ᴄʟᴀꜱꜱ ɴᴀᴍᴇ   AppalachianElktoePotentialHabitat___
* ꜰᴇᴀᴛᴜʀᴇ ᴛʏᴘᴇ   Simple
* ɢᴇᴏᴍᴇᴛʀʏ ᴛʏᴘᴇ   Polygon
* ʜᴀꜱ ᴛᴏᴘᴏʟᴏɢʏ   FALSE
* ꜰᴇᴀᴛᴜʀᴇ ᴄᴏᴜɴᴛ   12863
* ꜱᴘᴀᴛɪᴀʟ ɪɴᴅᴇx   TRUE
* ʟɪɴᴇᴀʀ ʀᴇꜰᴇʀᴇɴᴄɪɴɢ   FALSE

Hide ArcGIS Feature Class Properties ▲

Hide Spatial Data Properties ▲

Data Quality ▶

ꜱᴄᴏᴘᴇ ᴏꜰ ǫᴜᴀʟɪᴛʏ ɪɴꜰᴏʀᴍᴀᴛɪᴏɴ   ▶

RESOURCE LEVEL   dataset

Hide Scope of quality information ▲

DATA QUALITY REPORT - COMPLETENESS OMISSION   ▶
MEASURE DESCRIPTION
   After processing, the dataset is checked for drawing display and number of records and file sizes compared with source materials.

CONFORMANCE TEST RESULTS
TEST PASSED   Yes
RESULT EXPLANATION
   Pass

PRODUCT SPECIFICATION   ▶
TITLE   NCDOT Geospatial Data Specifications
CREATION DATE   2019-10-01   00:00:00
PUBLICATION DATE   2021-06-17   00:00:00

Hide Product specification ▲

Hide Data quality report - Completeness omission ▲

DATA QUALITY REPORT - CONCEPTUAL CONSISTENCY   ▶
MEASURE DESCRIPTION
   The dataset is converted to file geodatabase (FGDB) format using tools in ArcGIS. The geometry is checked, and if needed repaired

CONFORMANCE TEST RESULTS
TEST PASSED   Yes
RESULT EXPLANATION
   Pass

PRODUCT SPECIFICATION   ▶
TITLE   NCDOT Geospatial Data Specifications
CREATION DATE   2019-10-01   00:00:00
PUBLICATION DATE   2021-06-17   00:00:00

Hide Product specification ▲

Hide Data quality report - Conceptual consistency ▲

DATA QUALITY REPORT - QUANTITATIVE ATTRIBUTE ACCURACY   ▶
MEASURE DESCRIPTION

In addition to direct species observations, expert judgments of habitat conditions (Potential Habitat versus Non-Habitat) were gathered through desktop and field rapid site assessments.

Species experts provided feedback at two stages of model development. An early draft model was reviewed in ArcGIS Online. Completed via a desktop application, experts could scan and zoom to provide feedback on model performance based on their regional knowledge and any data layers they chose to add and view. Experts entered desktop assessments as high precision points (e.g., "this location is habitat or non-habitat") and/or low precision polygons (e.g., "this region generally provides good habitat or nonhabitat). After further development, an improved model received field validation. Field validation consisted of a rapid visual site assessment to judge a stream segment as Potential Habitat versus Non-Habitat based on evidence of stream condition and, in some cases, observation of associated species. All field validation reviews were entered as highprecision line features denoting the stream section observed.

In both reviews, time, knowledge, and/or access limitations prevented a true randomized design, but experts attempted to maximize the distribution of feedback spatially and across performance categories (True and False Positives, True and False Negatives) and to target areas with high uncertainty (high variance among models). Judgments vary in their spatial precision, including both polygons (low precision) and points and lines (high precision). Experts' judgments identify some non-habitat locations, but these are in the minority.

To ensure a balanced sample, additional catchments were randomly drawn as needed from the background (No Data catchments) to serve as pseudoabsence. Pseudoabsence catchments are unsurveyed catchments modeled treated as absence sites for the purposes of defining absence (versus presence) habitat characteristics.

CONFORMANCE TEST RESULTS
TEST PASSED   Yes
RESULT EXPLANATION
Pass

PRODUCT SPECIFICATION   ►
TITLE   NCDOT Geospatial Data Specifications
CREATION DATE   2020-10-01   00:00:00
PUBLICATION DATE   2021-06-17   00:00:00

Hide Product specification ▲

Hide Data quality report - Quantitative attribute accuracy ▲

Hide Data Quality ▲

Lineage ►

LINEAGE STATEMENT
All species' models use occurrence data from the Natural Heritage Program (NHP Tier 2 data) and the NC Wildlife Resource Commission (NCPAWS data). Species occurrence observations identified as historic (extirpated) or older than 2000 are excluded from models, as are data with low spatial accuracy (e.g., NHP Accuracy "4-Low" or "5-Very Low"). NHP "3-Medium" accuracy observations were retained and labelled as Low precision and NHP 2-High and 1-Very High accuracy observations as High precision data. The occurrence data are presence-only and are not a randomized or representative sample from the species' range. Models score any catchment with a current, moderate to high precision occurrence as "Potential Habitat".

Often multiple data records fell within a single catchment. For the purposes of modeling, to avoid pseudo-replication, duplicates were removed; each catchment was scored as potential habitat or non-habitat. Where a single catchment contained records of both potential habitat and non-habitat (OBSERVATION SET = "Conflict"), it was scored as habitat. Based on these decisions, the final model predicts the probability of any habitat within the catchment rather than the abundance of habitat within the catchment. With the available observation data (including pseudoabsence) we were able to classify 956 of the 3799 catchments within the species expert delineated model range.

The environmental data attributes included variables drawn from the US EPA StreamCat and the NHD Plus V2 data. From the available StreamCat data, 87 raw data variables plus 12 indices were extracted. The raw data variables primarily described local catchment characteristics across a spectrum of land cover, climatic, physiographic, hydrologic, chemical, geological, and disturbance metrics. A few of these variables provided data at finer (riparian only) and coarser (all upstream watershed area) scales. The 12 indices (six for the local catchment and six for the entire upstream watershed area) were calculated values summarizing multiple raw variables to represent the quality of aquatic habitat conditions.

PROCESS STEP ▶
  DESCRIPTION

Random Forest models were used to predict the probability of habitat at the scale of USGS National Hydrography Data (NHD Plus V2) catchments and their associated stream segments (median area: 272 acres; 5th and 95th percentile area: 4 acres and
1541 acres). Random Forest models generate predictions through repeated construction of decisiontree style models. At multiple points during model construction and assessment, the random forest process draws a random subset of habitat and non-habitat data and
selects a random subset of the environmental variables by which to compare them.

This randomization is beneficial to reduce overfitting of the models. The model procedure tracks
(1) how frequently sites are predicted to be habitat vs non-habitat,
(2) which variables contributed most to accurate classification of habitat vs non-habitat sites, and
(3) overall statistics about model performance.

The models were run in R primarily using functions from the randomForest and rfUtilities (Evans and Murphy 2018) packages.Multiple random forest models were run, each initiated with a different suite of environmental (predictor) and habitat/non-habitat (response) data. Models meeting minimum performance criteria were averaged to produce a single predicted probability of habitat per catchment. These model suites included six core models, plus two additional models if associate species had been defined. "Full Set" refers to models initiated with the 87 raw environmental variables from StreamCat plus the NHD Plus environmental variables, while the "Index Set" refers to models initiated with StreamCat's 12 calculated condition indices plus NHD Plus environmental variables. For
the response variable, models were run with all species observations and expert judgments ("All Habitat Data"), run with only the verified target species observations ("No Reviewer Habitat Data"), run with only the high precision observations (excluding
large generalized polygons from reviewer and observation sets) ("No Low Precision Data"), and run with all habitat data for the target species plus the current, high precision observations of associate species ("Plus Associates" for species with expert identified associates).
• Full Set, All Habitat Data
• Index Set, All Habitat Data
• Full Set, No Reviewer Habitat Data
• Index Set, No Reviewer Habitat Data
• Full Set, No Low Precision Habitat Data
• Index Set, No Low Precision Habitat Data
• Full Set, Plus Associate Species Data
• Index Set, Plus Associate Species Data

The inclusion of reviewer data, low precision data, and/or associate species data did not always improve the models. Model statistical scores could be high, indicating good fit to available data, but fail to match experts' expectations based on knowledge of regional habitat variability. Also, low precision comments (large polygons) often included mixed habitat, introducing more noise than signal

to the training data. Throughout the analysis, aattemp was made to balance consideration of both statistical and expert assessment.

Statistics to evaluate model performance:
• Sensitivity (SENS): The proportion of known habitat correctly identified as Potential Habitat (true positive rate).
• Specificity (SPEC): The proportion of known non-habitat (including pseudoabsence) correctly identified as Non-Habitat (true negative rate).
• Area Under the Curve (AUC): A summary of overall model performance based on both sensitivity and specificity.
• Cohen's Kappa (KAPPA): A summary of overall model performance based on performance relative to a random classification.

Individual models were accepted and carried forward if they achieved values of 0.6 or greater for sensitivity, specificity, and area under the curve. For this species, the models accepted and averaged to produce the final map and statistics were:
FullSet,
FullSetNoLow,
FullSetNoRev,
FullSetWithAssoc,
Indices,
IndicesNoRev,
IndicesWithAssoc.

All statistical values are to be interpreted with caution as each has unique limitations. The most informative statistic depends on the intended application and the nature of the underlying data.

PROCESS CONTACT
  ORGANIZATION'S NAME   North Carolina Department of Transportation - EAU Mitigation and Modeling Unit
  CONTACT'S POSITION   Environmental Program Consultant
  CONTACT'S ROLE   point of contact

    CONTACT INFORMATION   ▶
    PHONE
      VOICE   919-707-6136

    ADDRESS
      TYPE
      DELIVERY POINT   Century Center Building B, 1020 Birch Ridge Drive
      CITY   Raleigh
      ADMINISTRATIVE AREA   NC
      POSTAL CODE   27610
      COUNTRY   US
      E-MAIL ADDRESS   ATLAS@ncdot.gov

    HOURS OF SERVICE
    9:00am – 5:00pm Monday - Friday

    CONTACT INSTRUCTIONS
    Please send an email with any issues, questions or comments regarding the ATLAS Data Search Tool, ATLAS Screening Tool or ATLAS Workbench. If it is an immediate need, please call the contact number or indicate as such in the subject line in an email.

    Hide Contact information ▲

Hide Process step ▲

PROCESS STEP ▶
  DESCRIPTION
    Data was reviewed in ESRI's Data Reviewer tool to verify geometry.

PROCESS CONTACT
  ORGANIZATION'S NAME   North Carolina Department of Transportation - EAU Mitigation and Modeling Unit
  CONTACT'S POSITION   Environmental Program Consultant
  CONTACT'S ROLE   point of contact

    CONTACT INFORMATION   ▶
      PHONE
        VOICE   919-707-6136

      ADDRESS
        TYPE
        DELIVERY POINT   Century Center Building B, 1020 Birch Ridge Drive
        CITY   Raleigh
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      Hide Contact information ▲

  Hide Process step ▲

PROCESS STEP   ▶
  DESCRIPTION
    Geodatabase was forwarded on to the GIS Unit for publishing as part of data for project ATLAS.

PROCESS CONTACT
  ORGANIZATION'S NAME   North Carolina Department of Transportation - EAU Mitigation and Modeling Unit
  CONTACT'S POSITION   Environmental Program Consultant
  CONTACT'S ROLE   point of contact

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Hide Contact information ▲

Hide Process step ▲

Hide Lineage ▲

Distribution ►

DISTRIBUTOR   ►
CONTACT INFORMATION
ORGANIZATION'S NAME   North Carolina Department of Transportation - EAU Mitigation and Modeling Unit
CONTACT'S POSITION   Environmental Program Consultant
CONTACT'S ROLE   distributor

CONTACT INFORMATION   ►
PHONE
VOICE   919-707-6136

ADDRESS
DELIVERY POINT   Century Center Building B, 1020 Birch Ridge Drive
CITY   Raleigh
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Hide Contact information ▲

Hide Distributor ▲

DISTRIBUTION FORMAT
NAME   File Geodatabase Feature Class
VERSION   10.5

Hide Distribution ▲

Fields ▶

DETAILS FOR OBJECT AppalachianElktoePotentialHabitat__ ▶
* TYPE   Feature Class
* ROW COUNT   12863
DEFINITION
    High, moderate and low potential habitat locations for Appalachian Elktoe in NC counties.

DEFINITION SOURCE
    NCDOT

FIELD OBJECTID ▶
ALIAS   OBJECTID
* DATA TYPE   OID
* WIDTH   4
* PRECISION   0
* SCALE   0
* FIELD DESCRIPTION
    Internal feature number.

* DESCRIPTION SOURCE
    Esri

* DESCRIPTION OF VALUES
    Sequential unique whole numbers that are automatically generated.

Hide Field OBJECTID ▲

FIELD Shape ▶
* ALIAS   Shape
* DATA TYPE   Geometry
* WIDTH   0
* PRECISION   0
* SCALE   0
* FIELD DESCRIPTION
    Feature geometry.

* DESCRIPTION SOURCE
    Esri

* DESCRIPTION OF VALUES
    Coordinates defining the features.

Hide Field Shape ▲

FIELD Mean ▶
* ALIAS   Mean
* DATA TYPE   Double
* WIDTH   8
* PRECISION   0

* SCALE   0
FIELD DESCRIPTION

Multiple random forest models were created using different data selection criteria (eg include or exclude low precision points, include or exclude reviewer desktop judgments, use raw environmental variables or composite indices, etc). Each model outputs a probability of suitable habitat value. Using all models passing statistical tests (>.6 for sensitivity, specificity, and Area under ROC Curve) Mean and Standard Deviation were calculated.

Based on the mean, the thresholds for the bins (Low, Moderate, High probability) were calculated.

DESCRIPTION SOURCE
NCDOT

Hide Field Mean ▲

FIELD SD ▶

ALIAS   StandardDeviation
* DATA TYPE   Double
* WIDTH   8
* PRECISION   0
* SCALE   0
FIELD DESCRIPTION

Multiple random forest models were created using different data selection criteria (eg include or exclude low precision points, include or exclude reviewer desktop judgments, use raw environmental variables or composite indices, etc). Each model outputs a probability of suitable habitat value. Using all models passing statistical tests (>.6 for sensitivity, specificity, and Area under ROC Curve) Mean and Standard Deviation were calculated.

DESCRIPTION SOURCE
NCDOT

Hide Field SD ▲

FIELD Shape_Length ▶

* ALIAS   Shape_Length
* DATA TYPE   Double
* WIDTH   8
* PRECISION   0
* SCALE   0
* FIELD DESCRIPTION
Length of feature in internal units.

* DESCRIPTION SOURCE
Esri

* DESCRIPTION OF VALUES
Positive real numbers that are automatically generated.

Hide Field Shape_Length ▲

FIELD Shape_Area ▶

* ALIAS   Shape_Area
* DATA TYPE   Double
* WIDTH   8

* PRECISION   0
* SCALE   0
* FIELD DESCRIPTION
Area of feature in internal units squared.

* DESCRIPTION SOURCE
Esri

* DESCRIPTION OF VALUES
Positive real numbers that are automatically generated.

Hide Field Shape_Area ▲

FIELD PotHabitat ▶
* ALIAS   PotHabitat
* DATA TYPE   String
* WIDTH   25
* PRECISION   0
* SCALE   0
FIELD DESCRIPTION
Model Output - Low, Moderate or High potential habitat

DESCRIPTION SOURCE
NCDOT

LIST OF VALUES
VALUE   Low
DESCRIPTION   Low probability of Habitat
ENUMERATED DOMAIN VALUE DEFINITION SOURCE   NCDOT

VALUE   Mod
DESCRIPTION   Moderate probability of Habitat
ENUMERATED DOMAIN VALUE DEFINITION SOURCE   NCDOT

VALUE   High
DESCRIPTION   High probability of Habitat
ENUMERATED DOMAIN VALUE DEFINITION SOURCE   NCDOT

VALUE   No data
DESCRIPTION   No data available within USFWS area for species
ENUMERATED DOMAIN VALUE DEFINITION SOURCE   NCDOT

Hide Field PotHabitat ▲

Hide Details for object AppalachianElktoePotentialHabitat__ ▲

Hide Fields ▲

Metadata Details ▶

METADATA LANGUAGE   English (UNITED STATES)
METADATA CHARACTER SET   utf8 - 8 bit UCS Transfer Format

SCOPE OF THE DATA DESCRIBED BY THE METADATA   dataset
SCOPE NAME   dataset

LAST UPDATE   2022-05-09

ARcGIS METADATA PROPERTIES
  METADATA FORMAT   ArcGIS 1.0
  STANDARD OR PROFILE USED TO EDIT METADATA   ISO19139
  METADATA STYLE   ISO 19139 Metadata Implementation Specification

  CREATED IN ARcGIS FOR THE ITEM   2024-02-01   14:59:11
  LAST MODIFIED IN ARcGIS FOR THE ITEM   2023-12-01   13:09:25

  AUTOMATIC UPDATES
    HAVE BEEN PERFORMED   Yes
    LAST UPDATE   2023-12-01   13:09:25

  ITEM LOCATION HISTORY
    ITEM COPIED OR MOVED   2022-03-30   11:24:17
      TO
      \\cltsmain\GIS_DATA\GIS\Projects\3322_NCDOT\10077103_ModelingAssistance\7.2_Work_In_Progres
      s\spatial\AquaticsV2_Development\Final_ATLAS_clipped_shapefiles\Alasmidonta_raveneliana_2022032
      9
      FROM
      \\cltsmain\GIS_DATA\GIS\Projects\3322_NCDOT\10077103_ModelingAssistance\7.2_Work_In_Progres
      s\spatial\AquaticsV2_Development\2022_archived\Alasmidonta_raveneliana_20220329

Hide Metadata Details ▲

Metadata Contacts ▶

METADATA CONTACT
  ORGANIZATION'S NAME   North Carolina Department of Transportation - EAU Mitigation and Modeling Unit
  CONTACT'S POSITION   Environmental Program Consultant
  CONTACT'S ROLE   point of contact

    CONTACT INFORMATION   ▶
    PHONE
      VOICE   919-707-6136

    ADDRESS
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    Hide Contact information ▲

Hide Metadata Contacts ▲

Metadata Maintenance ▶

OTHER MAINTENANCE REQUIREMENTS
Maintenance of this dataset is handled by the Environmental Analysis Unit (EAU) Mitigation and Modeling Unit. Support and maintenance of the enterprise spatial database where this data resides is handled by NCDIT's Transportation GIS Unit.

MAINTENANCE CONTACT
ORGANIZATION'S NAME   North Carolina Department of Transportation - EAU Mitigation and Modeling Unit
CONTACT'S POSITION   Environmental Program Consultant
CONTACT'S ROLE   originator

CONTACT INFORMATION   ▶
PHONE
VOICE   919-707-6136

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Hide Metadata Maintenance ▲

Metadata Constraints ▶

SECURITY CONSTRAINTS
CLASSIFICATION   unclassified
CLASSIFICATION SYSTEM   None

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Hide Metadata Constraints ▲