

# Seabeach Amaranth - Potential Habitat, March 2021 - NC Department of Transportation

## Geodatabase Feature Class



**Tags** Seabeach amaranth, *Amaranthus pumilus*, Amar\_pumi, Vascular Plant, Terrestrial, threatened, GIS-based model, expert model, Transportation, NRTR, NCDOT, Environment, Location, North Carolina, ATLAS

### Summary

This dataset was originally created in August 2019 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. Model output is binary, and includes the USFWS species range, excluding historic counties. The species model range is split between “High” and “Low” potential habitat. “High potential habitat” represents GIS based layer areas deemed suitable habitat, and “Low potential habitat” representing areas identified as areas deemed low quality or non-habitat. The Optimal survey window for Seabeach Amaranth is July-October

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.

### Description

The Seabeach Amaranth Potential Habitat dataset is a polygon layer depicting high and low potential habitat locations for Seabeach Amaranth in NC counties that have a USFWS "current" status listing. This model identifies all year-round potential suitable habitat for the species.

Seabeach amaranth (*Amaranthus pumilus*) occurs on barrier island beaches where its primary habitat consists of overwash flats at accreting ends of islands, lower foredunes, and upper strands of noneroding beaches (landward of the wrack line). In rare situations, this annual is found on sand spits 160 feet or more from the base of the nearest foredune. It occasionally establishes small temporary populations in other habitats, including sound-side beaches, blowouts in foredunes, interdunal areas, and on sand and shell material deposited for beach replenishment or as dredge spoil. The plant's habitat is sparsely vegetated with annual herbs (forbs) and, less commonly, perennial herbs (mostly grasses) and scattered shrubs. It is, however, intolerant of vegetative competition and does not occur on well-vegetated sites. The species usually is found growing on a nearly pure silica sand substrate, occasionally with shell fragments mixed in. Seabeach amaranth appears to require extensive areas of barrier island beaches and inlets that function in a relatively natural and dynamic manner. These characteristics allow it to move around in the landscape, occupying suitable habitat as it becomes available.

NHP Tier 2 data from July 2018 indicate 34 EOs for seabeach amaranth in North Carolina. Eight of the 34 records are historic. Seabeach amaranth records from NHP listed counties are in Brunswick, Carteret, Currituck, Dare, Hyde, New Hanover, Onslow, and Pender counties. NHP records used at the time of model were from July 2018.

County Information:

- NHP eight listed counties: Brunswick, Carteret, Currituck, Dare, Hyde, New Hanover, Onslow, Pender

- FWS eight current listed counties: Brunswick, Carteret, Currituck, Dare, Hyde, New Hanover, Onslow, Pender

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). Annual 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** -78.652304

**East** -75.057062

**North** 36.589758

**South** 33.546056

## Scale Range

**Maximum (zoomed in)** 1:5,000

**Minimum (zoomed out)** 1:625,000

## Topics and Keywords

**Themes or categories of the resource** Biota, Geoscientific, Location, Transportation, Environment

**Content type** Downloadable Data

**Export to FGDC CSDGM XML format as Resource Description** No

**Theme keywords** Seabeach amaranth, Amaranthus pumilus, Amar\_pumi, Vascular Plant, Terrestrial, threatened, GIS-based model, expert model, Transportation, NRTR, NCDOT, Environment, Location, North Carolina, ATLAS

## Thesaurus

**Title** User

**Creation date** 2019-08-30 00:00:00

**Publication date** 2021-03-15 00:00:00

**Place keywords** North Carolina

## Thesaurus

**Title** User  
**Creation date** 2019-08-30 00:00:00  
**Publication date** 2021-03-15 00:00:00

## Citation

**Title** Seabeach Amaranth - Potential Habitat, March 2021 - NC Department of Transportation  
**Creation date** 2019-08-30 00:00:00  
**Publication date** 2021-03-15 00:00:00

**Presentation formats** digital map  
**FGDC geospatial presentation format** vector digital data

## Citation Contacts

### Responsible party - resource provider

**Organization's name** North Carolina Department of Transportation - EAU Mitigation and Modeling Unit  
**Contact's position** Environmental Program Consultant  
**Contact information**

#### Phone

**Voice** 919-707-6136

#### Address

**Type** physical  
**Delivery point** 4101 Capital Boulevard  
**City** Raleigh  
**Administrative area** NC  
**Postal code** 27604  
**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.

### Responsible party - point of contact

**Organization's name** North Carolina Department of Transportation - EAU Mitigation and Modeling Unit  
**Contact's position** Environmental Program Consultant  
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**Responsible party - originator**

**Organization's name** North Carolina Department of Transportation - EAU Mitigation and Modeling Unit

**Contact's position** Environmental Program Consultant

**Contact information**

**Phone**

**Voice** 919-707-6136

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**Resource Details**

**Dataset languages** English (UNITED STATES)

**Dataset character set** utf8 - 8 bit UCS Transfer Format

**Status** completed

**Spatial representation type** vector

## 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). Annual 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.

## 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**    2019-08-30    00:00:00

**Ending date**    2019-08-30    00:00:00

### Extent

#### Geographic extent

##### Bounding rectangle

**Extent type**    Extent used for searching

**West longitude**    -78.652304

**East longitude**    -75.057062

**North latitude**    36.589758

**South latitude**    33.546056

**Extent contains the resource**    Yes

### Extent in the item's coordinate system

**westBL**    2105899.336189

**eastBL**    3158392.508101

**southBL**    -52051.541699

**northBL**    1033804.766243

**exTypeCode**    Yes

## Resource Points of Contact

## Point of contact - originator

**Organization's name** North Carolina Department of Transportation - EAU Mitigation and Modeling Unit

**Contact's position** Environmental Program Consultant

### Contact information

#### Phone

**Voice** 919-707-6136

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## 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 - originator

**Organization's name** North Carolina Department of Transportation - EAU Mitigation and Modeling Unit

**Contact's position** Environmental Program Consultant

### Contact information

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**Voice** 919-707-6136

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## 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

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## 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**

ProjectedCoordinateSystem

WKID 102719  
XOrigin -121841900  
YOrigin -93659000  
XYScale 3048.0060960121918  
ZOrigin 0  
ZScale 1  
MOrigin 0  
MScale 1  
XYTolerance 0.0032808333333333331  
ZTolerance 0.001  
MTolerance 0.001  
HighPrecision true  
LatestWKID 2264  
WKT  
PROJCS["NAD\_1983\_StatePlane\_North\_Carolina\_FIPS\_3200\_Feet",GEOGCS["GCS\_North\_American\_1983",DATUM["79.0"],PARAMETER["Standard\_Parallel\_1",34.33333333333334],PARAMETER["Standard\_Parallel\_2",36.16666666666667],

Reference system identifier

Value 2264  
Codespace EPSG  
Version 6.12(9.0.0)

Spatial Data Properties

Vector

Level of topology for this dataset geometry only  
Geometric objects  
Feature class name GdbGisuPubC.ATLAS.SeabeachAmaranthPotentialHabitat  
Object type composite  
Object count 12474

ArcGIS Feature Class Properties

Feature class name GdbGisuPubC.ATLAS.SeabeachAmaranthPotentialHabitat  
Feature type Simple  
Geometry type Polygon  
Has topology FALSE  
Feature count 12474  
Spatial index TRUE  
Linear referencing FALSE

Data Quality

Scope of quality information

Resource level dataset

## Data quality report - Completeness omission

### Data quality measure reference

#### 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** 2019-08-30 00:00:00

**Publication date** 2021-03-15 00:00:00

## Data quality report - Conceptual consistency

### Data quality measure reference

#### 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** 2019-08-30 00:00:00

**Publication date** 2021-03-15 00:00:00

## Data quality report - Quantitative attribute accuracy

### Data quality measure reference

#### Measure description

- ArcGIS Online (AGOL) Review:

A model prediction field was shared with select reviewers on AGOL. Points were placed within the USFWS potential habitat as well as the model potential habitat in order to solicit feedback. Reviewers could place additional comments for consideration by modeler.

AGOL review was completed in May 2019 on a draft version of this model

- Independent Data Review:

Describe data sources – Natural Heritage Program element occurrences, county boundaries, DCM oceanfront shorelines, NLCD 2016

Describe methods – Current aerial imagery was used to determine likelihood of potential habitat for the species.

## Conformance test results

**Test passed** Yes

### Result explanation

Pass

## Product specification

**Title** NCDOT Geospatial Data Specifications

**Creation date** 2019-08-30 00:00:00

**Publication date** 2021-03-15 00:00:00

## Lineage

### Lineage statement

ArcGIS Model Builder version 10.4.1 was used to build a model

Input Environmental data layers for model:

1) DCM Coastal Shorelines (Buffered 1 Mile)

DCM Shoreline layer provided by NC Division of Coastal Management. Layer provides shoreline polylines from years 1849-2016.

- Layer selection justification: 2016 and 2009 shorelines were selected for use in the models to have the most complete and most recent shoreline for North Carolina. The shoreline was buffered 1 mile in the model to capture all shoreline/beach areas for the entire NC coast.

- “Habitat” versus “Non-habitat” designations: Shoreline within the eight listed counties is considered potential habitat.

2) nheo\_tier2

July 2018 Tier 2 data acquired from NC Natural Heritage Program

- Layer selection justification: Data layer was incorporated into model with any seabeach amaranth records selected and included in final merged output file.

- “Habitat” versus “Non-habitat” designations: Potential habitat are polygon areas delineated in the July 2018 NC NHP Tier 2 dataset.

3) NLCD Landcover Data 2016

NLCD 2016 landcover data

- Layer selection justification: NLCD 2016 data was used to erase units of the map that were classified as a variety of forested habitat types, medium-density development, high-density development, and areas designated as water.

- “Habitat” versus “Non-habitat” designations: Utilized all forested classes, medium-density development, high-density development, and water classes for reducing or eliminating areas of potential non-habitat.

Known Issues with Model Data Layers:

The seabeach amaranth model includes potential habitat along the NC coast, focusing on beach/dune shoreline areas. The model takes a broad approach, using a 1-mile buffered shoreline to ensure areas of potential habitat are included in the model. Alternate approaches were considered, and when 2016 NLCD landcover data was made available, the layer was used to erase out areas of potential non-habitat based on the landcover class. There appeared to be numerous inconsistencies in the landcover data, which means the model will have a certain level of error when determining habitat

## Process step

### Description

Data was reviewed in ESRI's Data Reviewer tool to verify geometry.

## Process contact - originator

**Organization's name** North Carolina Department of Transportation - EAU Mitigation and Modeling Unit

**Contact's position** Environmental Program Consultant

### Contact information

#### Phone

**Voice** 919-707-6136

#### Address

**Type** physical

**Delivery point** 4101 Capital Boulevard

**City** Raleigh

**Administrative area** NC

**Postal code** 27604

**Country** US

**e-mail address** ATLAS@ncdot.gov

#### Hours of service

9:00am – 5:00pm Monday - Friday

### Contact instructions

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## Process step

### Description

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

## Process contact - originator

**Organization's name** North Carolina Department of Transportation - EAU Mitigation and Modeling Unit

**Contact's position** Environmental Program Consultant

### Contact information

#### Phone

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## Process step

### Description

Summary of model steps:

- Environmental data layers used included NLCD 2016, county boundaries, DCM oceanfront shorelines, and natural heritage data.
- Extracted 2016 and 2009 DCM oceanfront shorelines and buffered 0.75 miles.
- Extracted seabeach amaranth records from the natural heritage data.
- Merged files along with NLCD 2016 data with appropriate non-habitat classes such as forested or developed classes out
- Clipped to county boundaries.

### Process contact - originator

**Organization's name** North Carolina Department of Transportation - EAU Mitigation and Modeling Unit

**Contact's position** Environmental Program Consultant

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## Distribution

### Distributor

## Contact information - distributor

**Organization's name** North Carolina Department of Transportation - EAU Mitigation and Modeling Unit

**Contact's position** Environmental Program Consultant

### Contact information

#### Phone

**Voice** 919-707-6136

#### Address

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**Delivery point** 4101 Capital Boulevard

**City** Raleigh

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**Postal code** 27604

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## Distribution format

**Name** SDE Feature Class

**Version** 10.5

## Fields

## Details for object GdbGisuPubC.ATLAS.SeabeachAmaranthPotentialHabitat

**Type** Feature Class

**Row count** 12474

### Definition

Potential Habitat areas for Seabeach Amaranth in NC.

### Definition source

NCDOT

### Field OBJECTID

**Alias** FID

**Data type** OID

**Width** 4

**Precision** 10

**Scale** 0

**Field description**

Internal feature number.

### Description source

Esri

### Description of values

Sequential unique whole numbers that are automatically generated.

## Field Shape

**Alias** Shape

**Data type** Geometry

**Width** 4

**Precision** 0

**Scale** 0

### Field description

Feature geometry.

### Description source

Esri

### Description of values

Coordinates defining the features.

## Field CommonName

**Alias** CName

**Data type** String

**Width** 50

**Precision** 0

**Scale** 0

### Field description

Common Name of Species

### Description source

NCDOT

## Field SciName

**Alias** SName

**Data type** String

**Width** 50

**Precision** 0

**Scale** 0

### Field description

Scientific Name of Species

## Description source

NCDOT

## Field PotHabitat

**Alias** PotHab

**Data type** String

**Width** 8

**Precision** 0

**Scale** 0

## Field description

Model Output - Low or High potential habitat

## Description source

NCDOT

## List of values

**Value** High

**Description** High potential

**Enumerated domain value definition source** NCDOT

**Value** Low

**Description** Low potential

**Enumerated domain value definition source** NCDOT

## Field Shape.STArea()

**Alias** Shape.STArea()

**Data type** Double

**Width** 0

**Precision** 0

**Scale** 0

## Field Shape.STLength()

**Alias** Shape.STLength()

**Data type** Double

**Width** 0

**Precision** 0

**Scale** 0

## 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** 2023-06-20

## 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** 2026-08-26 13:48:06

**Last modified in ArcGIS for the item** 2023-06-20 15:45:28

### Automatic updates

**Have been performed** Yes

**Last update** 2023-06-20 15:45:28

## Metadata Contacts

### Metadata contact - point of contact

**Organization's name** North Carolina Department of Transportation - EAU Mitigation and Modeling Unit

**Contact's position** Environmental Program Consultant

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## Metadata Maintenance

### Maintenance

**Update frequency** as needed

#### Other maintenance requirements

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### Maintenance contact - originator

**Organization's name** North Carolina Department of Transportation - EAU Mitigation and Modeling Unit

**Contact's position** Environmental Program Consultant

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## **Metadata Constraints**

### **Security constraints**

**Classification** unclassified

**Classification system** None

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## **Thumbnail and Enclosures**

### **Thumbnail**

**Thumbnail type**

Image file