Pocosin status and ownership maps for North Carolina

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Description

Pocosins are a unique wetland type in the North Carolina coastal plain that provide valuable wildlife habitat and store large amounts of carbon in their peat soils. Many pocosins in North Carolina have been altered by drainage, land clearing, or plantation forestry. There is increasing interest in pocosin restoration, with some restoration projects on both public and private land already underway. To help identify opportunities for pocosin restoration and as a first step to improving estimates of carbon storage by pocosins, we created updated maps of pocosin status (vegetation and drainage) and owner type, building on the existing wetlands maps developed by the North Carolina Division of Coastal Management in 1999.

Contents

Datasets and attributes

Each dataset is a TIF with its auxiliary files (.tfw, .cpg, .dbf) in the same folder. Download all of the files in the folder to ensure that you will be able to use the data in GIS software.

Pocosin status		
File name: PocosinStatus.tif	**Description**: Pocosin areas by vegetation and drainage status	
Value	**Pocosin class**	**Area, acres**
1	Developed	5,147
2	Cleared, not ditched	1,485
3	Natural forest, low ditch density	221,637
4	Natural forest, high ditch density	59,405
5	Cleared, high ditch density	1,455
6	Plantation forest, high ditch density	20,528
7	Plantation forest, low ditch density	50,859
8	Cleared, low ditch density	2,506
9	Natural forest, not ditched	208,050
10	Plantation forest, not ditched	63,527

Pocosin owner type		
File name: PocosinOwner.tif	**Description**: Pocosin areas by owner type	
Value	**OwnerType**	**Area, acres**
1	Federal	237,137
2	Private	49,873
3	State	127,520
4	Local government	325
5	Easement	18,826
6	Other	200,919

Pocosin vegetation status		
File name: PocosinVegetationStatus.tif	**Description**: Pocosin areas by vegetation status	
Value	**Pocosin class**	**Area, acres**
1	Developed	5,147
2	Cleared	5,446
3	Plantation forest	134,915
4	Natural forest	489,091

Pocosin drainage status (ditch density)		
File name: PocosinDitchDensityStatus.tif	**Description**: Pocosin areas by drainage status, as determined by ditch density	
Value	**Pocosin class**	**Area, acres**
1	No ditches within 5400 feet	276,081
2	Low ditch density, <0.09 feet of ditches/acre within 5400 feet	276,494
3	High ditch density, >0.09 ft of ditches/acre within 5400 feet	82,024

Pocosin drainage status (distance to ditch)		
File name: PocosinDitchDistanceStatus.tif	**Description**: Pocosin areas by distance to nearest ditch	
Value	**Pocosin class**	**Area, acres**
1	< 300 feet from ditch	55,139
2	300 – 900 feet from ditch	79,075
3	> 900 feet from ditch	500,386

Methods

All data analysis was conducted using ArcGIS Pro version 2.6.0. Input datasets are italicized; see references section for details. Final output datasets corresponding with the tables above are in bold.

The total extent of pocosins was defined as all areas identified as pocosins in the *NC Division of Coastal Management wetlands maps* (1999), excluding areas classified as open water (classes 21, 22, and 23) in the 2010 or 2016 *C-CAP land cover* datasets.

The **pocosin vegetation status** map was created by classifying the total pocosin extent by vegetation status using 2016 *C-CAP land cover* and 2018 *Fagan et al. plantation forest* datasets. All pocosin areas identified as developed (classes 2, 3, 4, 5) in C-CAP were classified as developed, and all pocosin areas identified as cleared (classes 6, 7, 8, 19, 20) in C-CAP were classified as cleared. The remaining pocosin areas were divided into plantation forest and natural forest based on the Fagan et al. plantation forest dataset.

The **pocosin drainage status (ditch density)** map was created by classifying the total pocosin extent by the density of ditches within a 5400-foot radius. Ditches were identified from *NHDPlus flowlines* (FTYPE = 336). Ditch density for the state of North Carolina was calculated using the Line Density tool with a search radius of 5400 feet (corresponding to the distance between ditches in the Pungo Lake area, to ensure that the spaces between the ditches there would not have a ditch density of zero), and then clipped to the pocosin extent. Areas with no ditches within 5400 feet (ditch density = 0) were assigned to a "no ditches" class. Geometric classification was used to classify the remaining pocosin areas (with ditch density > 0) into two classes: low ditch density (< 0.09 feet of ditches/acre) and high ditch density (> 0.09 feet of ditches/acre).

The **pocosin status** map was created by overlaying the **pocosin vegetation status** map and the **pocosin drainage status (ditch density)** map using the Combine tool. All pocosin areas classified as developed in the pocosin vegetation status map retained that classification; information from the pocosin drainage status map was not added to the developed pocosin class because developed areas are highly modified and unlikely to be restored to a natural state. For all other areas of pocosins not classified as developed in the pocosin vegetation status map, the vegetation status and drainage status information were combined so that each pocosin class in the final **pocosin status** map has both types of information (e.g., plantation forest, high ditch density).

To provide finer-scale information about artificial drainage in pocosin areas, the **pocosin drainage status (distance to ditch)** map was created by calculating the distance of each pixel within the pocosin extent to the nearest ditch (from *NHDPlus*) using the Euclidean Distance tool. The pocosin area was then classified by distance to the nearest ditch into three classes: less than or equal to 300 feet from a ditch, between 300 and 900 feet from a ditch, and more than 900 feet from a ditch. These classes were based on guidance from the advisory group, taking into account their field observations of burned peat near ditches due to increased drainage and ditch spacing on land drained for plantation forestry.

The **pocosin owner type** map was created by classifying the total pocosin extent by owner type as represented in the *NC NHP Managed Areas* dataset. First, all managed areas in fee-simple ownership (CATEGORY = fee) were classified as federal, state, local government, or private based on the OWNER_TYPE field. Then, all managed areas under easements (CATEGORY = easement) that did not overlap with managed areas in fee-simple ownership were classified as "easement." Finally, all pocosin areas that do not overlap with the managed areas dataset were classified as "other."

Limitations

- The NHDPlus dataset does not capture many small ditches, so ditching is likely to be underestimated.
- The plantation forest map (Fagan et al. 2018) was created from 2011 datasets, so is not fully up-to-date.

- Recently restored pocosin areas may show up as ditched and/or cleared due to the age of input datasets.

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