

WHITE OAK RIVER BASIN



Tucked between the eastern portions of the Neuse and Cape Fear river basins, the White Oak River Basin abounds with coastal and freshwater wetlands. The basin includes four river systems, or subbasins, that feed into highly productive estuaries of



Back, Core and Bogue sounds. Core Sound produces the most valuable seafood catch in the basin, followed by Bogue Sound and the Newport River.

The New River subbasin (not to be confused with the New River Basin in the northwestern

part of the state) is the largest and most populated of the White Oak River Basin. It contains the city of Jacksonville and the U.S. Marine Corps base at Camp Lejeune. But the basin draws its name from the White Oak River, a remote, scenic, 48-mile river that spills into Bogue Sound past the picturesque town of Swansboro. Still farther east is the basin's Newport River, which begins near Havelock and flows into the eastern end of Bogue Sound. The shortest and easternmost river in the basin is the North River, which empties into Back Sound near Harkers Island.

Forest and wetlands—both privately and publicly owned—cover almost half the basin. More than 80,000 acres of the Croatan National Forest lie within the White Oak River Basin. It hosts the largest population of carnivorous plants of any national forest and is the second largest habitat for the endangered red-cockaded woodpecker. The Croatan is the only coastal forest in the National Forest System. Its saltwater paddle trail circles more than 100 miles of tidal marshes and flats and unique coastal forests. The forest's wetland communities are home to rare and unusual insect-eating plants like the legally protected Venus flytrap, pitcher plants, bladderworts, butterworts and sundews. A stunning array of lilies, orchids and other wildflowers grace the forest edges.

profile:

Total miles of streams and rivers: 320

Total acres of estuary: 140,104

Total miles of coastline: 129

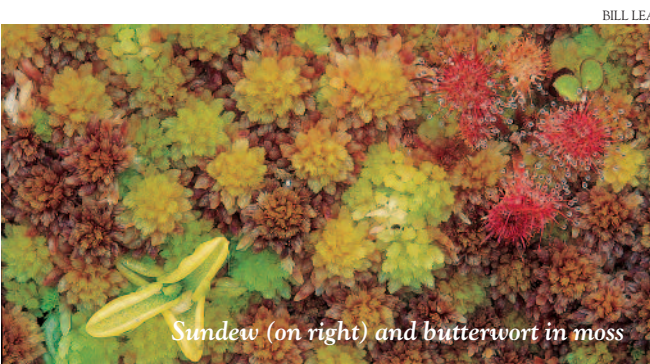
Municipalities within basin: 24

Counties within basin: 6

Size: 1,382 square miles

Population: 336,210 (2010 U.S. Census)

Ward Creek flows through a marsh near Oway in Carteret County.



Sundew (on right) and butterwort in moss



GEORGE HUMPHRIES



Trumpet pitcher plant



Venus flytrap

STURGEON CITY

The city of Jacksonville, with the support of its citizens, city council and grant funding, has turned the New River into an environmental success story. For more than 40 years, the city's outdated wastewater treatment plant discharged inadequately treated sewage into the river and Wilson Bay. The water was depleted of oxygen—essentially devoid of aquatic life—and off-limits to fishing, boating and swimming. In 1998, the city replaced the facility with a state-of-the-art land-application treatment plant at an inland location. Biologists "planted" the riverbed with several million oysters and other shellfish to filter pollutants and installed devices to aerate the water. Water quality in the river is improving, and the bay is once again open to recreation and fishing. The old plant is now a hub for environmental education and a hands-on research institute for secondary school students. The center is named "Sturgeon City" in homage to the imperiled fish species that once populated the river—the federally endangered shortnose sturgeon and



Students examine aquatic animals at Sturgeon City.

the federally threatened Atlantic sturgeon. One day, Sturgeon City may help create a place in which the namesake sturgeon can thrive once again.

BILL LEA



American alligator

BILL LEA



Fragrant white lily

BILL LEA



Green heron

The White Oak River Basin includes an area known as the Onslow Bight that stretches from the lower Northeast Cape Fear River to the Pamlico River. The bight is characterized by its unique landforms of barrier islands, marshes, riverine wetlands, pocosins, longleaf pine savannas and other coastal ecosystems. Camp Lejeune, which is located within the Onslow Bight, harbors some of the highest quality longleaf pine and pocosin habitats remaining in North Carolina. Pocosins are raised bogs with a thick layer of peat. The deep soils absorb rainwater and release it slowly into adjacent estuaries. This filtering function helps to preserve the optimal balance of saltwater and freshwater that estuarine organisms, including fish and shellfish, need to survive.

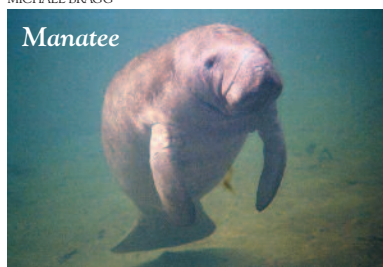
The White Oak River has aesthetic, cultural, biological and recreational attributes that qualify it for designation as a National Wild and Scenic River. Some community groups are lobbying for this label, which would ensure preservation of the river's natural qualities. The river draws canoeists and other recreational boaters, anglers and shellfishermen. Birdwatchers flock to see osprey, wading birds and other waterfowl. The river wetlands include the rare tidal red cedar forest and 70 important historical and archaeological sites lie along its banks.

Several rare and endangered animals are found in the White Oak River Basin, including the leatherback sea turtle, West Indian manatee, shortnose sturgeon, red-cockaded woodpecker and roseate tern, which are on the endangered species list. The loggerhead sea turtle

and green sea turtle are federally listed as threatened species, meaning they are likely to become endangered. The American alligator is state-listed as a threatened species, and coastal North Carolina, including portions of the White Oak River Basin, is the northernmost part of its range. The diamond back terrapin is a state-listed species of special concern and two snake species found in the basin, the eastern diamondback rattlesnake and eastern coral snake, are listed as state endangered.

Increasing population density in the basin is putting new pressure on water quality in streams, rivers and estuaries. Between 1970 and 2000, the population grew by about 50 percent. Another 25,818 people will live in the basin by 2020. Beach communities, particularly Atlantic Beach and Emerald Isle, are growing rapidly.

MICHAEL BRAGG



Many of the basin's shellfish beds are closed to harvest due to contaminated runoff from construction sites, developed areas, streets and yards, farmland and forestry operations. After heavy rains, fecal coliform levels are often elevated in the estuaries. This type of bacteria is associated with the wastes of warm-blooded animals, including humans, and is an indicator of harmful pathogens in shellfish.

Polluted runoff includes nutrients like nitrogen and phosphorus (from fertilizers, detergents and animal waste) that can trigger overgrowth of algae and cause fish kills. Runoff also contains oil, grease and chemicals from nonporous surfaces such as paved roads, parking lots, sidewalks and driveways. More techniques are now available or in place to reduce runoff by slowing water so it can be cleansed by plants and soil. New state rules require cities of a certain size to develop strategies to manage and treat stormwater runoff.

Due to persistent overgrowth of algae in the New River in 1991, the state classified the headwaters of the New River, Southwest Creek and Northeast Creek as nutrient sensitive waters and placed restrictions on nutrients in wastewater treatment plant discharges. Since that time, dramatic changes in wastewater treatment have occurred (see Sturgeon City sidebar). The city of Jacksonville stopped discharging waste into the river, and Camp Lejeune consolidated its seven separate facilities into one large, modern treatment plant. These changes have greatly improved the water quality of the New River.

Individuals in the basin can help prevent polluted runoff and eroded soil from entering streams and estuaries by preserving buffers of trees and shrubs along the edges of waterfront property. Such vegetation can help filter harmful substances from runoff. If landowners use paving alternatives that allow rainwater to soak into the ground (crushed stones or permeable pavers, for example), they can limit runoff from their property along with the contaminants it carries. People can also help by limiting their use of fertilizers and pesticides on landscapes and making sure septic systems are maintained and working properly. Citizens wishing to get involved can help conservation groups in the basin that are working to preserve wetlands and vegetated buffers along waterways. See the list on the back of this brochure.

BILL LEA



Red-cockaded woodpecker.

HIKING & BIKING



in the White Oak River Basin

The White Oak River Basin offers many opportunities to enjoy and explore nature through walking, hiking and biking. This list includes places with easy to moderate activity. Many sites include views of streams, rivers, creeks, lakes, wetlands and estuaries.

● HIKING ●

1 Bear Island/Hammocks Beach State Park

www.ncparks.gov ● 1,138 acres (33 on mainland, remainder on Bear Island). Access by ferry or boat to walk the beaches on the undeveloped, 3.5-mile-long Bear Island.

2 Cape Lookout National Seashore

www.nps.gov/cal/ ● 56-mile long section of the Outer Banks, including three undeveloped barrier islands (North Core Banks, South Core Banks and Shackleford Banks). Access by ferries or boat.

3 Cedar Point Tideland Trail (Croatan National Forest)

www.fs.usda.gov/recarea/nfsnc/recreation/recarea/?recid=48466 ● .6-mile loop crosses salt marsh (level and wide enough for wheelchairs) and includes boardwalks; a 1.3-mile loop skirts White Oak River.

4 Core Sound Waterfowl Museum

www.coresound.com/ ● .25-mile nature trail to waterfowl observation blind; wheelchair-accessible.

5 Emerald Isle Woods Park

www.emeraldisle-nc.org/EIPRD/wateraccess.htm ● 41 acres ● 2 miles of nature trails, including .5-mile wheelchair-accessible nature trail with views of Bogue Sound.

6 Fort Fisher State Recreation Area

www.ncparks.gov/Visit/parks/fofi/main.php ● 287 acres ● 1.1 mile trail.

7 Fort Macon State Park

www.ncparks.gov/Visit/parks/foma/main.php ● 389 acres ● .4-mile loop trail through dense shrub thicker and over low sand dunes to the edge of Beaufort Inlet.



8 Hofmann Forest

www.cnr.ncsu.edu/fer/dept/hofmann.html ● 80,000 acres

9 Hoop Pole Creek Preserve

www.nccoast.org/restoration-education/pdfs/HPTrail.pdf ● 31 acres ● .5-mile nature trail through maritime forest.

10 Hubert Bypass Park

<http://www.onslowcountync.gov/Parks/> ● 41 acres ● .5-mile nature trail; wheelchair-accessible.

11 Masonboro Island Coastal Reserve

www.nccoastalreserve.net ● 5,046 acres ● Island only reached by boat.

12 Neusiok Trail

(shown with red dashed line above)
www.fs.usda.gov/recarea/nfsnc/recreation/recarea/?recid=48466 ● 21-mile hiking trail through Croatan National Forest (traverses both the White Oak and Neuse river basins).

13 Oakhurst Nature Park

<http://www.onslowcountync.gov/Parks/> ● 253 acres ● Two short nature trails within park.

14 OWLS Nature Trail

www.owlsonline.org/ ● .5-mile trail passing a duck pond and enclosures for rehabilitated raptors.

15 Patsy Pond Nature Trail (Croatan National Forest)

www.fs.usda.gov/recarea/nfsnc/recreation/recarea/?recid=48466 ● 2.5 miles of trails through open woods with longleaf pines.

16 Rachel Carson National Estuarine Research Reserve

www.nccoastalreserve.net ● .5-mile interpretive trail on the west side of the reserve highlights the area's native species and special features. The trail meanders through mudflats, uplands and salt marshes, illustrating the various unique environments found in estuarine systems. Access is by boat.

17 Theodore Roosevelt Natural Area

www.ncaaquariums.com/pine-knoll-shores/ ● .5-mile loop trail through maritime forest (accessible from the N.C. Aquarium at Pine Knoll Shores) and 1.25-mile trail traversing high dune ridges and expansive marsh; wheelchair-accessible boardwalk/ overlook has scopes for viewing waterfowl.

18 Weetock Trail

www.clis.com/canoe2/Weetock.html ● 11-mile trail through Croatan National Forest.

19 Wrightsville Beach Trails

www.visitwrightsville.com ● 3.2 miles of trails; wheelchair accessible.

● HIKING and BIKING ●

20 Jacksonville Parks and Greenways

www.ci.jacksonville.nc.us/Residents.aspx ● 2 miles of wheelchair-accessible greenways; 24 additional miles under development. Northeast Creek Park (22 acres) .25-mile waterfront boardwalk; .75-mile nature trail. Woodlands Park (12 acres) .75-mile wooded path.

 = some trails designated as wheelchair accessible



PADDLING



in the White Oak River Basin

The White Oak River Basin offers many opportunities for paddling creeks, ponds, streams, rivers, lakes and estuaries. The places included here offer public access areas maintained by state, federal or local governments. Privately operated marinas and boat docks may also be available. These trails and lakes are suitable for easy to moderate paddling.

1 Cape Lookout National Seashore

www.nps.gov/caloc/ ● 56-mile long section of the Outer Banks, including three undeveloped barrier islands (North Core Banks, South Core Banks and Shackleford Banks). Access by ferries.

2 Catfish Lake (Croatan National Forest)

www.fs.usda.gov/recarea/nfsnc/recreation/recarea/?recid=48466 ● 962 acres

3 Croatan National Forest Saltwater Adventure Trail

(shown with black dashed line above)
www.fs.usda.gov/recarea/nfsnc/recreation/recarea/?recid=48466 ● 100-mile trail circumnavigating the forest via the White Oak and Neuse rivers and Bogue Sound.

4 Great Lake (Croatan National Forest)*

www.fs.usda.gov/recarea/nfsnc/recreation/recarea/?recid=48466 ● 2,809 acres

5 Hammocks Beach State Park Canoe Trail

(shown with blue dashed line above) www.ncparks.gov ● 3-mile trail from the park's mainland boat ramp through salt marsh and estuary to north end of 892-acre Bear Island.

6 Huggins Island Trail

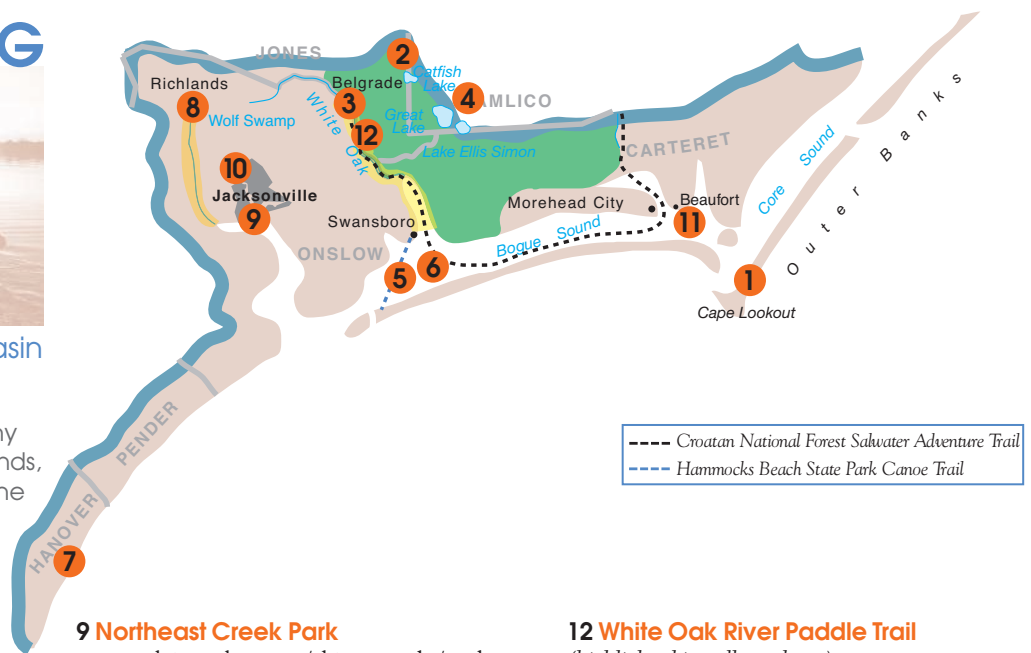
www.ncsu.edu/paddletails/southerncoast/sc12.html ● 6-mile trail begins at the mainland boat ramp at Hammocks Beach State Park, passing several small shoal islands and ending at the 200-acre Huggins Island.

7 Masonboro Island Coastal Reserve

www.nccoastalreserve.net ● 5,046 acres
● Island only reached by boat.

8 New River Paddle Trail

(highlighted in yellow above)
www.onslowcountync.gov/department7030.aspx?pageid=21502 ● A 16.85-mile paddle trail begins near the community of Richlands and ends at New River Waterfront Park in Jacksonville.



9 Northeast Creek Park

www.onlyinonslow.com/things-to-do/parks-recreation/outdoor-activities/northeast-creek-park/events/ ● Boat ramp on New River tributary.

10 Oakhurst Nature Park

www.onslowcountync.gov/Parks/ ● Canoe access on Blue Creek.

11 Rachel Carson National Estuarine Research Reserve

www.nccoastalreserve.net ● This string of small islands is located across Taylor's Creek from historic Beaufort and on the sound side of Shackleford Banks. A small herd of feral horses roams the islands, and more than 200 bird species have been recorded here. The N.C. Maritime Museum (www.ncmaritime.org) provides tours, or you can reach the islands by canoe or kayak. It is only about 100 yards across the narrow channel to the reserve. Paddlers often land on the sandy beach at the west end of Town Marsh and cross over to Bird Shoal on foot. Marsh communities, like those of Horse Island, are vulnerable to foot traffic and should be avoided.

12 White Oak River Paddle Trail

(highlighted in yellow above)
www.onlyinonslow.com/things-to-do/outdoor-activities/parks-recreation/white-oak-river-paddle-trail/ ● The headwaters of the White Oak River originate in Hofmann Forest as a wooded, narrow, blackwater stream. The paddle trail begins near Belgrade. A short distance below Belgrade, the river flows through several lakes created by quarry operations before becoming a river again. It passes through Croatan National Forest, becoming swampy before widening and flowing through forests of bald cypress, water oak and other wetland trees. It becomes freshwater marsh and finally saltwater marsh as it empties in Bogue Sound below Swansboro.

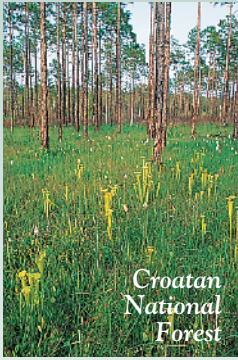
**Denotes site with public access points maintained by the N.C. Wildlife Resources Commission. For directions to boat ramps, visit www.ncwildlife.org and click on Boating/Waterways, then Maps/Location.*

▶ Stay abreast of new paddle trail development at www.ncpaddletails.info.

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WHERE SHOULD I GO ?



What makes the White Oak River Basin so special? See for yourself. Visit these Environmental Education Centers to discover more about your ecological address:

- Cape Lookout National Seashore
- Fort Fisher State Recreation Area
- Fort Macon State Park
- Hammocks Beach State Park
- North Carolina Aquarium at Pine Knoll Shores
- North Carolina Coastal Federation
- North Carolina Maritime Museum
- Outer Banks Wildlife Shelter (OWLS)
- Riverworks at Sturgeon City
- Trinity Center Sound to Sea Environmental Education Program

For more information about Environmental Education Centers in North Carolina, check out the Office of Environmental Education and Public Affairs' website at www.eenorthcarolina.org.

HOW CAN I HELP ?

You can gain a sense of community pride by learning more and helping to protect streams, rivers and lakes in the White Oak River Basin. The contacts listed below can help you do just that. To find out about local river organizations and conservation groups, contact your local soil and water conservation district. To find out about how you can get involved in local waterway and other litter cleanups, contact North Carolina Big Sweep.

Clean Water Management Trust Fund

www.cwmtf.net/

Division of Water Quality, Stormwater and Runoff Pollution

www.ncstormwater.org/

North Carolina Big Sweep

www.ncbigssweep.org/

North Carolina Coastal Reserve

www.nccoastalreserve.net/

North Carolina Association of Soil & Water Conservation Districts

www.ncaswcd.org

North Carolina Stream Watch

www.ncwater.org/Education_and_Technical_Assistance/Stream_Watch/

North Carolina Water Science Center

<http://nc.water.usgs.gov/>

White Oak River Basinwide Plan*

<http://portal.ncdenr.org/web/wq/ps/bpu/basin/whiteoak>

**Basinwide water quality planning is a nonregulatory, watershed-based approach to restoring and protecting the quality of North Carolina's surface waters. The N.C. Division of Water Quality welcomes community input.*

▶ To order additional brochures on any of North Carolina's 17 river basins, a general river basin booklet or a poster, fill out the online order form at www.eenorthcarolina.org.

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