



Tennessee

Virginia

South Carolina

SOUTH CAROLINA

Lake Norman

Charlotte Area

Badin Lake

Flat River

Pamlico River

Neuse River

Lake Waccamaw

Laurel Lee Lake

Total 2014 Fish Kills: 18

Total 2014 Fish Mortality: 659,210

2014 Fish Kill Events (by County)

Date	Kill Number	Waterbody	Location	Mortality	Comments
Beaufort					
10/9/2014	WA14004	Pamlico River	near Bath and Goose Creeks	100,000	DWR Estuarine Monitoring Team staff recorded phone calls related to dead menhaden, catfish, and crabs on Pungo Creek, Bath Creek, Goose Creek, and the Pamlico River nears Mauls Point during the week of October 6th-10th, 2014. These creeks are located on the north side of the Pamlico River. Over 100,000 dead and dying fish- mainly menhaden (4-7 in) were estimated along the Pamlico River and the adjacent tributaries mentioned. All menhaden exhibited red sores along the dorsal, pectoral, and anal regions and were in various stages of decay. Staff also observed fish actively dying. Physical parameters recorded on October 8th during routine ambient monitoring indicated stratified hypoxic bottom waters and bloom-like conditions within the surface waters. Surface water temperatures are cooling down, which typically promotes the growth of the slime mold, Aphanomyces invadans. This mold can create secondary stress on migrating fish during the fall months and may have been a contributing factor in the observed fish kills.
10/15/2014	WA14005	Jacks Creek	Washington	250,000	DWR Estuarine Monitoring staff were contacted originally for a foam complaint on Jack's Creek. This tributary of the Pamlico River drains a large portion of the City of Washington's stormwater. It reaches the Pamlico River just downstream of the City. Staff observed dead menhaden fish being actively blown across the surface from the Pamlico River upstream towards the mouth of Jack's Creek. Foam build up was observed along the surface of Jack's Creek throughout the week as the south easterly winds were consistent and strong. Ambient physical data recorded dissolved oxygen levels from 6 - 8 mg/L. Salinities ranged from 1 - 3.3 ppt. All decaying fish exhibited red sores. The sores were suspected as being the result of infection from the slime mold Aphanomyces invadans. EMT staff estimated the Pamlico River fish kill to be approximately 250,000. No samples were collected as there was no indication of an active algal bloom.
		Total Kills for County: 2		Total Mortality for County: 350,000	
Catawba					
9/15/2014	MO14008	Lake Norman	Marshall Steam Station	500	An estimated 300-500 dead shad (mostly threadfin) were collected on Marshall Steam Station's (MSS) intake screens during the week of 9/15-9/17. There were also 10 dead catfish, 5 striped bass, and 1 carp. No unusual conditions/operations at MSS appeared to contribute to the mortalities. The deeper water at MSS's submerged intake wall was hypoxic at the time of the investigation. As seen in prior years, it is possible that the fish succumbed to the hypoxic conditions and were drawn via flow to MSS.
		Total Kills for County: 1		Total Mortality for County: 500	

2014 Fish Kill Events (by County)

Date	Kill Number	Waterbody	Location	Mortality	Comments
Columbus					
2/27/2014	WL14002	Lake Waccamaw		150	The fish kill involved shad that appeared dead for 2-3 days so actual number of dead fish uncertain. Prevailing winds blew scattered fish along ~4 miles of shoreline. No fish were observed in the main body of the lake. Investigators saw a few fish struggling near the dam. North Carolina usually experiences one or two kills involving shad every year during the winter (winter kill). Waccamaw is a relatively shallow waterbody and would make shad populations susceptible to cold temperatures.
Total Kills for County: 1 Total Mortality for County: 150					
Craven					
9/1/2014	WA14001	Neuse River	Flanners Beach, Carolina Pines	100,000	DWR Estuarine Monitoring staff recorded anoxic conditions below the area photic zone for several weeks prior to this report. Staff received reports about dead menhaden (200-500 mm) from Flanner's Beach towards Carolina Pines and also in Slocum Creek near Havelock during the first week of September. Travis Graves, Neuse Riverkeeper indicated mortality counts could be in the six digits if the event continued over the following week. Water quality data indicated similar conclusions regarding hypoxic conditions. Analysis of algal samples did not find any toxin producing species during the event timeframe.
9/11/2014	WA14002	Neuse River	Cherry Branch Ferry Terminal	5,000	Staff investigated a fish kill complaint within the cherry branch ferry terminal mid morning. Only a few remaining decaying fish were observed in the terminal area. A majority of which were most likely picked off by birds. Ferry staff observed struggling (gulping air from the surface) activity within the past 72 hours. Dead and dying fish species included all sizes of flounder, striped bass, trout, mullet, and menhaden. It was noted that staff only saw this kill localized within the terminal area. Physical data within the terminal area indicated high salinity levels (near 11 parts per thousand). Oxygen levels were recorded to be less than 2 mg/L at 2 meters from the surface. Upstream reference sites indicated slightly lower salinity levels. Oxygen levels remained low near Carolina Pines and Flanner's Beach area at 2 meters from the surface. No dead fish were observed within that area during this investigation. Investigators also observed the impacts of recent fresh pulses of stormwater entering the system near New Bern within the watershed. These pulses may have affected dissolved oxygen levels and created localized hypoxic areas. No samples were collected, as there was no indication of algal bloom activity at the time.
10/9/2014	WA14003	Neuse River	near Beard Creek	200,000	DWR EMT staff investigated a fishkill on Beards Creek October 9th, 2014. The creek is located on the north side of the Neuse River. Over 200,000 dead and dying menhaden (4-7 in) were estimated along an 8.8 square mile stretch from Beards Creek into the Neuse proper and upstream into Upper Goose Creek. All menhaden exhibited red sores along the dorsal, pectoral, and anal regions and were in various stages of decay. Staff also observed fish actively dying. Physical parameters indicated algal bloom conditions in Beard Creek. Phytoplankton samples were taken and will be sent to WSS's Laboratory Section for further analysis.
Total Kills for County: 3 Total Mortality for County: 305,000					

2014 Fish Kill Events (by County)

Date	Kill Number	Waterbody	Location	Mortality	Comments
Durham					
10/14/2014	RA14001	Flat River	below Lake Michie	75	Fish mortality was confined to tailrace channel below Lake Michie Dam. Multiple species and sizes of fish at various rates of decay. Smaller fish, especially catfishes, predated upon and only skeletal structures/parts remained. Instantaneous field test of Ammonia (as Nitrogen) < 1 mg/L, Soluble Copper 3-4 mg/L. Small pockets of potential copper precipitate on and around decaying flesh. Laboratory results yielded less than 1 mg/L of ammonia, and 0.26 mg/L of copper.
Total Kills for County: 1 Total Mortality for County: 75					
Lincoln					
8/4/2014	MO14007	Lake Norman	near Govenors Island, Markers 6&7	60	On August 4, 2014, Duke Energy-Environmental Services collected approximately 60 dead catfish on Lake Norman around markers 6 & 7 near Governor's Island. Markers 6 & 7 are approximately 3 - 4 miles up lake from Cowans Ford Dam. The fish exhibited characteristics associated with oxygen deprivation. Summer fish die-offs occur as oxygen is depleted in the middle and lower levels of lakes due to stratification. On Lake Norman, predatory fish are often trapped in deep, low oxygen water while feeding on forage fish (i.e., alewife).
Total Kills for County: 1 Total Mortality for County: 60					
Mecklenburg					
3/3/2014	MO14001	Stewart Creek	Charlotte	250	A field test for ammonia indicated a discharge between 3 and 4 ppm still occurring from an outfall located at 4180 Pompano Road. A worker at the facility informed investigators that a contractor working on the refrigeration system on Saturday, March 1, 2014 had a discharge or spill occur of an unknown product and was adding water to it. The discharge occurred into an area that is always saturated due to the condensate discharge from rooftop chillers and leads directly to a storm drain pipe. When the rain event occurred on Monday, March 3 the illicit discharge was pushed into the tributary, the same day that the kill occurred.
5/30/2014	MO14002	Briar Creek	Charlotte	1,400	The creek was extremely hypoxic and was caused by a Charlotte-Mecklenburg Utilities (CMU) sanitary sewer overflow into Briar Creek that was quickly identified.
6/26/2014	MO14003	Private Pond	River Run Golf Course	40	Fish kill located on River Run Golf Course after Solitude Lake Management sprayed Captain XTR (an algaecide) on 1/3 of the lake at the lowest recommended concentration. Spraying occurred on Monday, June 23 and the fish kill occurred on Wednesday, June 25. Contractor contacted NCDENR per requirements of permit. The shallow pond did not allow a refuge for fish and high temperatures mixed with the loss of respiration from the dying algae created hypoxic conditions.
8/27/2014	MO14004	Briar Creek	Edwards Branch	100	Two personnel from Mecklenburg County's Water Quality Program (MCWQP) observed a fish kill in Briar Creek and tracked it 3.3 miles to an outfall that was discharging sewage. The personnel contacted Charlotte-Mecklenburg Utilities (CMU) immediately and they quickly responded. CMU employees retrieved the dead fish from the creek near the outfall, but did not cover the entire 3.3 mile reach of affected water. A total of 96 redbreast sunfish were identified.

2014 Fish Kill Events (by County)

Date	Kill Number	Waterbody	Location	Mortality	Comments
9/2/2014	MO14005	McCullen Creek	near Charlotte	125	Personnel from Mecklenburg County's Water Quality Program (MCWQP) responded to a citizen call about the smell of sewage and a gray creek. MCWQP staff tracked the sewage discharge to a manhole parallel to McMullen Creek in Sharon Memorial Park. Charlotte-Mecklenburg Utilities were notified and personnel promptly arrived and removed the blockage. No water quality parameters in McMullen Creek were obtained at the time of the spill.
9/4/2014	MO14006	Dream Lake	Charlotte	700	Results of an algae analyses done in-house by MCWQP showed an estimated algal density of 26,000 units/ml. The phytoplankton density was dominated by small cells of green algae (83.8%) followed by diatoms (14.4%), blue-greens (1.3%) and Euglenophytes (0.5%). The diatoms consisted mainly of a fairly large centric taxa (Cyclotella spp.) which may have dominated the phytoplankton biovolume. A combination of late summer time water temperatures, recent rainfall, and a large algal bloom likely contributed to this fish kill event. No evidence of other pollutants was observed.
10/7/2014	MO14009	Lake Norman	Near Cornelius	160	Mecklenburg County Water Quality Program (MCWQP) responded to a citizen request for dead bass in Lake Norman at 16800 Lake Shore Drive in Cornelius. MCWQP surveyed 2.5 miles of shoreline in the area and collected 166 bass. All bass collected were >14" and no other species were observed dead. MCWQP contacted NCWRC, NCDENR, and B.A.S.S. (officials for a tournament that was held the weekend prior to the tournament) to inform them of the fish kill. BASS officials responded that given the timing and location of the dead fish there is little doubt that the kill was related to the tournament, however, they could not point to a particular breach in protocol, inadequate equipment, or any other controllable action on the part of tournament staff and participants that could cause the fish mortality. Reports documented a mortality figure of 166 which is 9.8% of the total number of bass weighed in the tournament.

Total Kills for County: 7 Total Mortality for County: 2,775

Montgomery

7/3/2014	FA14001	Badin Lake	near Dam	150	Kill is similar to kills that have occurred in previous years. Striped Bass tend to congregate in the lower end of the reservoir by mid-summer and some of these fish become trapped in an area with decreasing dissolved oxygen and ultimately perish. These kills almost always occur during the first half of July and typically last about one week.
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Total Kills for County: 1 Total Mortality for County: 150

New Hanover

6/30/2014	WL14001	Laurel Lee Lake	near Wilmington	500	Water Quality measurements were taken on 06/30/2014 and elevated DO and pH were observed. Investigators suspected an algal bloom played a role.
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Total Kills for County: 1 Total Mortality for County: 500