

The extent of headwater streams in North Carolina: Examples from across the state
NC Division of Water Quality
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North Carolina Division of Water Quality assembled existing field identified and mapped stream data to demonstrate the extent of 1st, 2nd and 3rd order streams in the state. Seven areas were selected based on their geographic location within the state and the fact that all the streams within each area have been identified and mapped in the field by staff trained to use the DWQ Stream Identification Methodology (DWQ 2005). The DWQ methodology was designed to identify the intermittent and perennial status and origin of streams. Since the location of the stream origin is known, the length of streams measured from field-surveyed data is more accurate than lengths measured from USGS or other maps.

Stream order and length were determined using ARC Map tools for all areas except Hendersonville. Hendersonville data is not in digital form, so stream lengths were measured directly from the stream survey map using a map wheel. The results of these stream length estimates represent a small, non-statistical sample of all North Carolina streams. However, field observations suggest these data are fairly typical for the state.

The data indicate over 50% of piedmont stream and 70% of coastal stream lengths are 1st order. In 193.18 stream miles mapped in the seven areas, over 75% are 1st or 2nd order stream. Therefore, 1st and 2nd order streams represent the vast majority of streams in the state.

Table 1: Stream Length Percentages by Stream Order and Geographic Area

Region	Watershed	Stream Order (% of total stream length)			Total Stream Miles	Total Watershed Area (sq miles)
		1 st (% of total)	2 nd (% of total)	3 rd (% of total)		
Piedmont	Greensboro	61.82	30.07	8.10	83.69	38.35
	Eno River	52.47	45.57	1.96	5.79	2.67
	Northwest Durham	48.23	32.52	19.25	4.38	1.65
	Total	58.41	30.01	7.94	97.41	42.67
Coast	Wayne	59.54	22.80	17.66	4.47	2.94
	South Creek	77.73	22.27	N/A	7.63	16.17
	Total	71.02	22.47	6.52	12.10	19.11
Mountains	White Mountain	50.53	37.82	8.91	6.97	1.11
	Hendersonville	35.98	20.34	13.82	76.70	40.43
	Total	37.20	21.80	13.41	83.67	1.11
ALL TOTAL		50.01	25.98	10.22	193.18	103.32

Reference: NC Division of Water Quality. 2005. Identification Methods for the Origins of Intermittent and Perennial streams, Version 3.1. North Carolina Department of Environment and Natural Resources, Division of Water Quality. Raleigh, NC.

