

---

Subject: : Conservation

Topic: : All central PA streams doomed?

Re: All central PA streams doomed?

Author: : k-bob

Date: : 2014/3/24 9:50:25

URL:

right, very local effects of acid rain w/ geology. (I believe unimpaired streams have about 6.5 ph):

Sci Total Environ. 2008 Apr 15;393(2-3):249-61. doi: 10.1016/j.scitotenv.2007.12.026. Epub 2008 Feb 6.

"Groundtruthing and potential for predicting acid deposition impacts in headwater streams using bedrock geology, GIS, angling, and stream chemistry.

Kirby CS1, McInerney B, Turner MD.

Abstract


*Atmospheric acid deposition is of environmental concern worldwide, and the determination of impacts in remote areas can be problematic. Rainwater in central Pennsylvania, USA, has a mean pH of approximately 4.4. Bedrock varies dramatically in its ability to neutralize acidity. A GIS database simplified reconnaissance of non-carbonate bedrock streams in the Valley and Ridge Province and identified potentially chronically impacted headwater streams, which were sampled for chemistry and brook trout. Stream sites (n=26) that originate in and flow through the Tuscarora had a median pH of 5.0 that was significantly different from other formations. Shawangunk streams (n=6) and non-Tuscarora streams (n=20) had a median pH of 6.0 and 6.3, respectively. Mean alkalinity for non-Tuscarora streams (2.6 mg/L CaCO<sub>3</sub>) was higher than the mean for Tuscarora streams (0.5 mg/L). Lower pH and alkalinity suggest that the buffering capability of the Tuscarora is inferior to that of adjacent sandstones. Dissolved aluminum concentrations were much higher for Tuscarora streams (0.2 mg/L; approximately the lethal limit for brook trout) than for non-Tuscarora streams (0.03 mg/L) or Shawangunk streams (0.02 mg/L). Hook-and-line methods determined the presence/absence of brook trout in 47 stream reaches with suitable habitat. Brook trout were observed in 21 of 22 non-Tuscarora streams, all 6 Shawangunk streams, and only 9 of 28 Tuscarora stream sites. Carefully-designed hook-and-line sampling can determine the presence or absence of brook trout and help confirm biological impacts of acid deposition. 15% of 334 km of Tuscarora stream lengths are listed as "impaired" due to atmospheric deposition by the Pennsylvania Department of Environmental Protection. 65% of the 101 km of Tuscarora stream lengths examined in this study were impaired."*

so streams in Tuscarora bedrock may be hit harder by acid rain... so where's the Tuscarora bedrock? see the map here, for ex parts of NW Union county:

<http://www.facstaff.bucknell.edu/kirby/BUHWStreamStudy.pdf>

fiwi, I tried to eyeball a nat repro map of a tuscarora geology area. not as many small streams with blue lines

Attach file:

 13381116675\_959a4dbd0e\_z.jpg (137.23 KB)

