Biodiversity and Energy Online Mapping

About the layers

Layer: Predicted EPT Richness
Date of this document: 3 June 2013
Layer developed by: The New York Natural Heritage Program

Short Description: This layer depicts the predicted number of species of mayflies (Ephemeroptera), stoneflies (Plecoptera), and caddisflies (Trichoptera) for streams in New York, based on the NYS DEC Stream Biomonitoring Unit's database of aquatic macroinvertebrate samples.

Why this layer matters: Macroinvertebrates respond rapidly to changes in stream condition and thus are known to be good indicators of water quality.

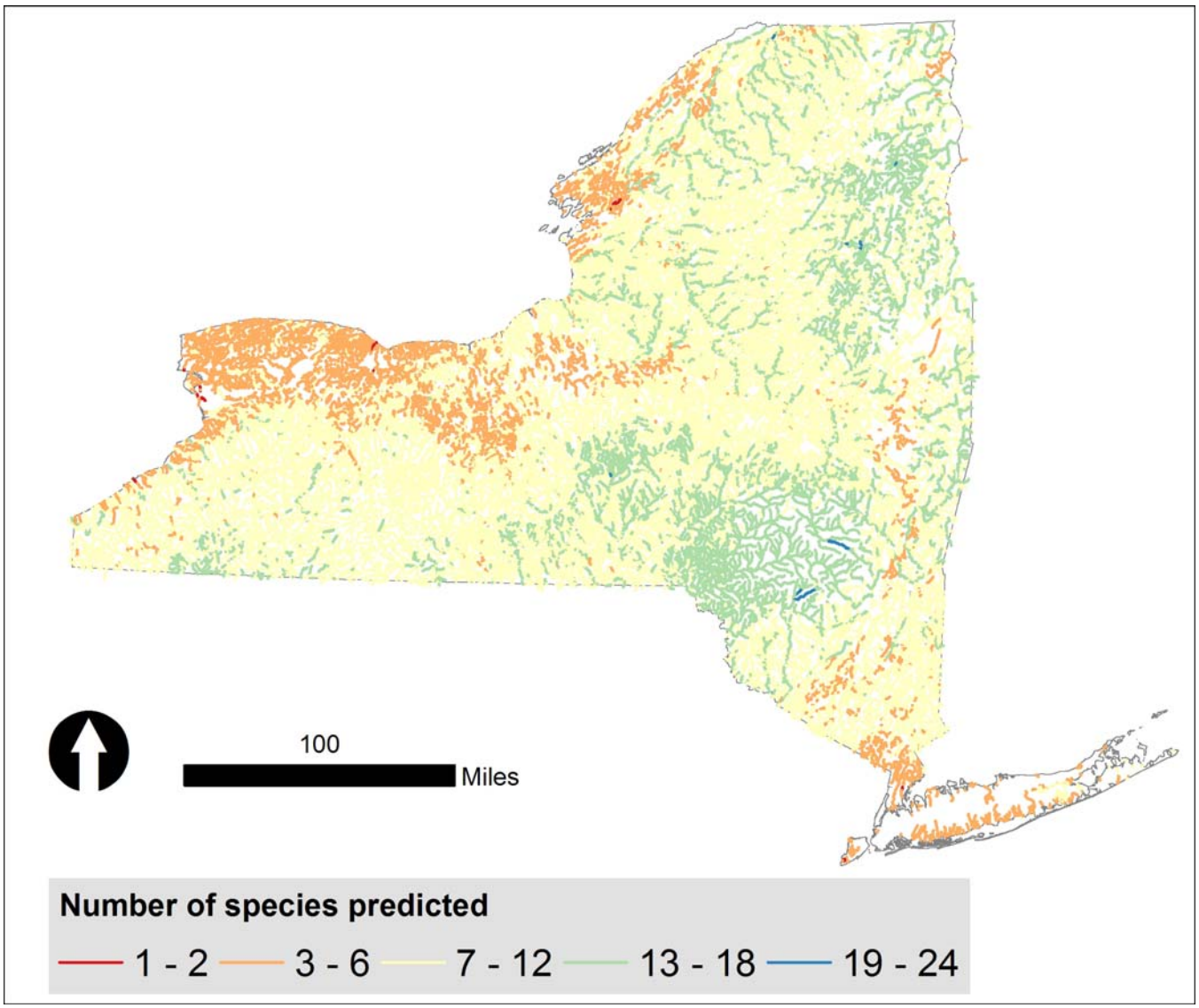
Source: The New York Natural Heritage Program developed this layer in collaboration with The Nature Conservancy as part of their Freshwater Blueprint project for New York (White *et al.* 2011).

Processing Overview:

1. We obtained a database from NYSDEC Stream Biomonitoring Unit (SBU) with data up to and including the 2010 field season, a total of 7,132 samples. We used data from 2000 on with locations marked as within the state, which left 1,728 kicknet sites. When we had data for multiple samples at a site, we took the maximum value of the response variable in an effort to best represent the biological potential of the site.
2. All locations were attributed to the stream reaches in which they occur, using the National Hydrography Dataset medium-scale (1:100,000) stream data (nhd.usgs.gov). We used a version of this dataset already attributed with many environmental variables developed for The Northeast Associated of Fish and Wildlife Agencies (http://rcngrants.org/spatialData).
3. We used regression modeling in random forests to model the relationship between environmental variables and observed measures. We used 146 environmental variables. The resulting model explained 47% of the variance, with mean annual velocity, percent forest and shrub cover in the upstream catchments, and mean annual temperature as the most important variables in the model.
4. This model was then used to predict the value for EPT richness throughout the rest of the state, excluding large rivers and medium mainstem rivers as they were not a part of the original sample pool.
5. For additional details, see (White *et al.* 2011).

This project was conducted by The Nature Conservancy of New York in close collaboration with The New York Natural Heritage Program, a program of the State University of New York School of Environmental Science and Forestry. This project is made possible with funding from the New York State Energy Research and Development Authority.

http://www.ebd.mapny.info



Literature Cited:

White, E. L., J. J. Schmid, T. G. Howard, M. D. Schlesinger, and A. L. Feldmann. 2011. New York State Freshwater Conservation Blueprint Project, Phases I and II: Freshwater Systems, Species, and Viability Metrics. The New York Natural Heritage Program, Albany, NY. 85 pages. Available at: http://nynhp.org/FBP.

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