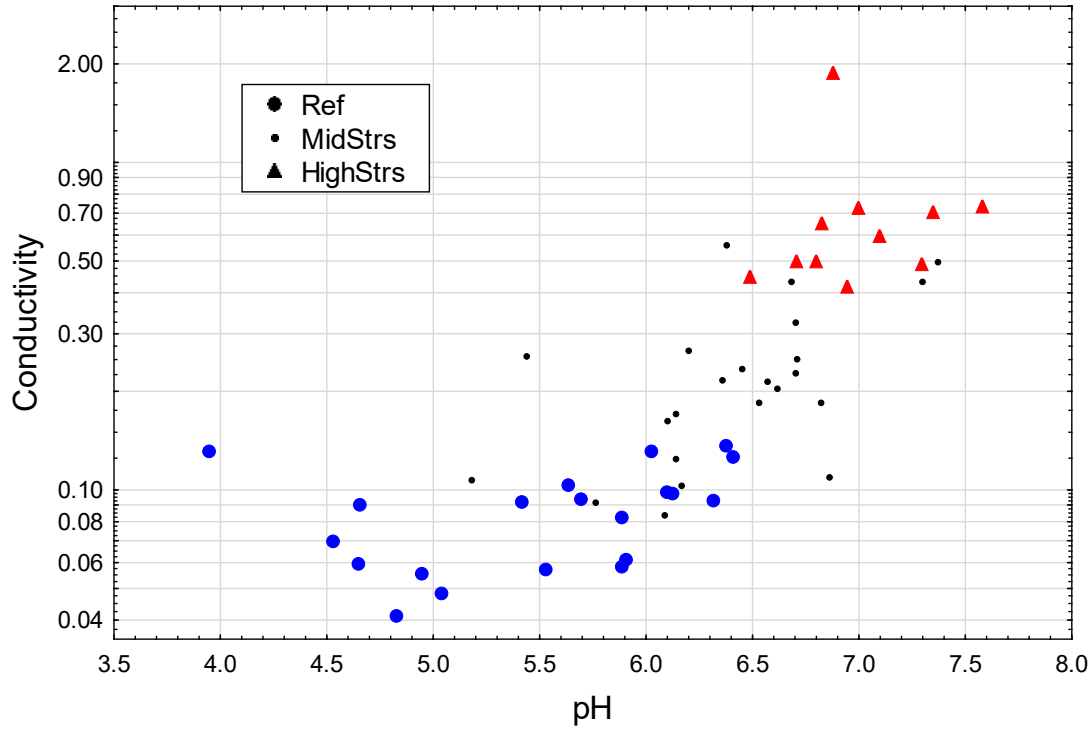

Figure 19. Conductivity (on a log-transformed axis) at sites with conductivity data in relation to pH, marked by disturbance category.

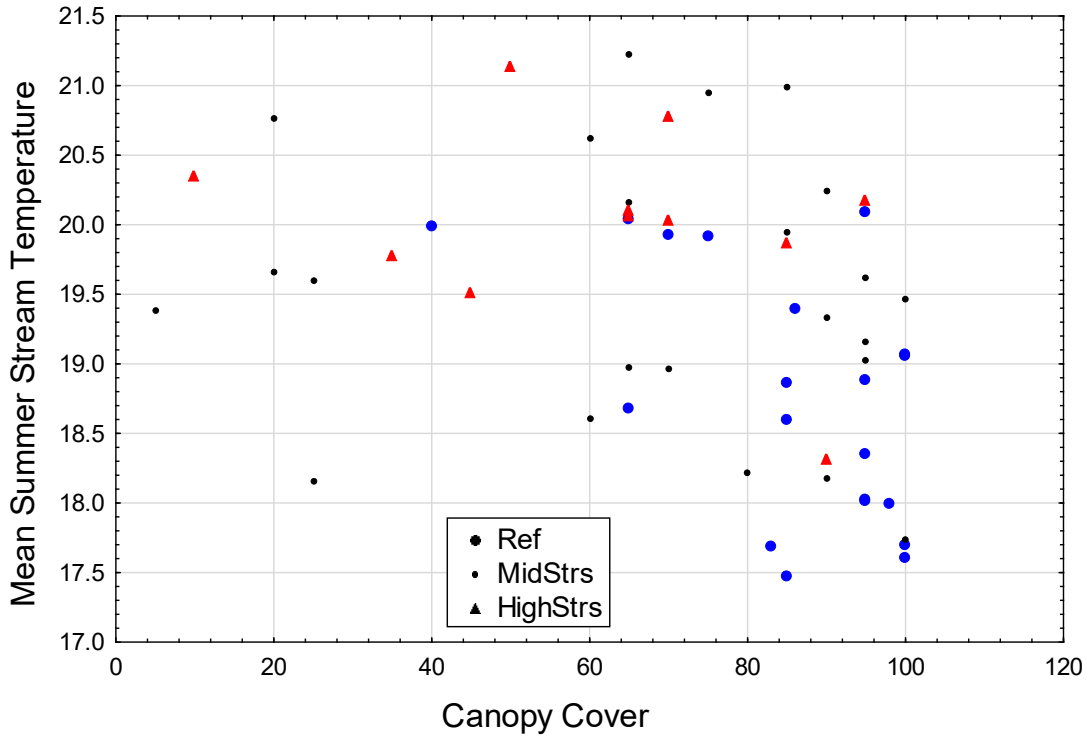

Figure 20. Modeled mean summer stream temperature (MSST; Hill et al. 2013) in relation to percent canopy cover, marked by disturbance category.

The IBI responds negatively to percent sand, silt, and clay in the stream substrate (Figure 21). Reference sites have the full range of fine sediments. IBI scores in the reference sites decline slightly as fines increase, as do values in non-reference sites. Fine sediments were not identified as a classification factor when calibrating the IBI. However, the response is slight and no accounting for substrate is needed for index assessments.

The IBI is relatively unresponsive to stream size (as measured by drainage area) (Figure 22) and water temperature, as measured by modeled summer stream temperature (Figure 23) and *in situ* water temperature from the SNEP sites (Figure 28). These variables were explored and discounted as classification variables in the site classification analysis. Stressed sites have warmer predicted summer temperatures and have lower IBI scores than the cooler reference sites (Figure 23). Within reference sites, the IBI was unresponsive to modeled summer and *in situ* water temperatures (Figures 23 and 24).

Though classification analysis indicated possible differences in reference sample composition across ecoregions and with varying percentage of water and wetland in the watershed, the index does not show a strong relationship with these variables within reference sites (Figures 25 and 26). The reference site with a low IBI score is in the Narragansett-Bristol Lowlands and has relatively high percent water and wetland, but does not indicate a strong pattern or bias of the index. Index values in sites with >20% water and wetland did not have the highest IBI scores, but the scores were aligned with the range of other reference scores, except for the one outlier.

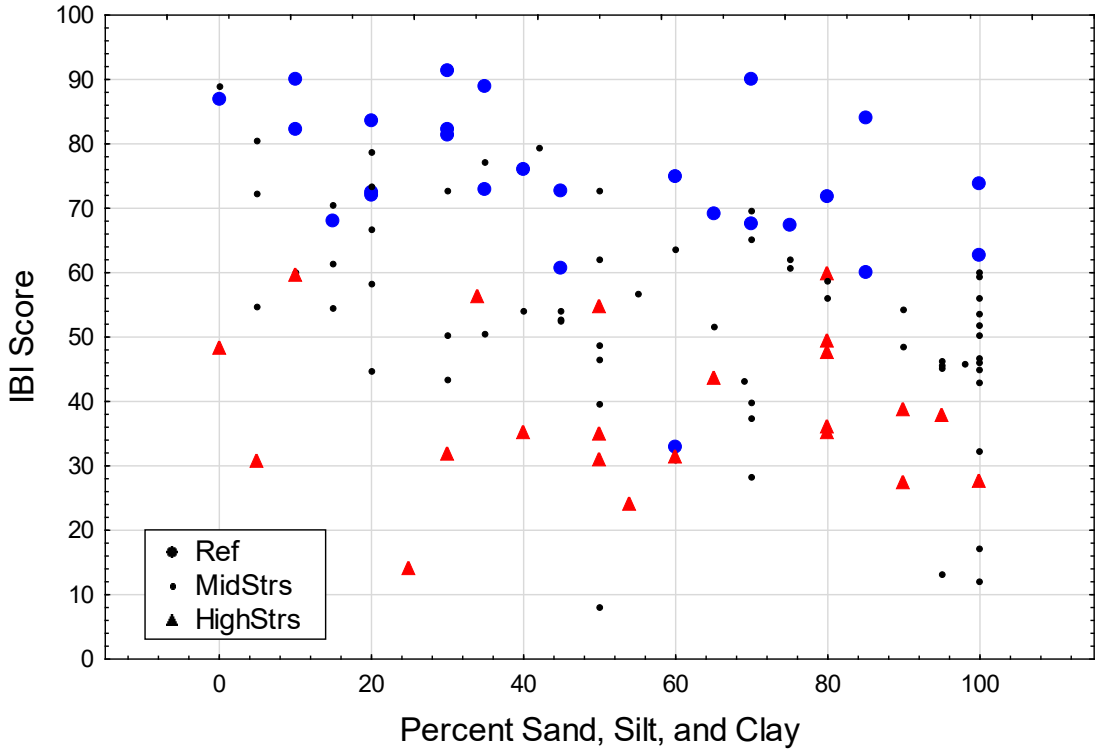

Figure 21. Percent sand, silt, and clay substrates in relation to IBI scores, marked by disturbance category.