## Dominant Species & Imitations

Lepidostoma (Little Brown Sedge)


Chironimidae (Midge)


Optioservus (Riffle Beetle)


Naididae (Aquatic Worm)


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# MACROINVERTEBRATE TREND MONITORING

An Assessment of Some Important Ecological Metrics Indicative of Water Quality:

**2022-2024**

**The Wood River Land Trust** has been collecting macroinvertebrate samples from six sites in the Wood River Basin since spring 2022. The goal is to track changes in these sites over time.

Why sample macroinvertebrates? To manage a watershed effectively, we need clear data to understand how it's changing. Macroinvertebrates reflect the health of the ecosystem, showing how water quality, habitat, and other factors are interacting.

Invertebrates are essential for life on Earth. They help with pollination, breaking down dead matter, and recycling nutrients. Without them, plants, animals, and even humans wouldn't survive long. However, if humans disappeared, most other species would continue to thrive.

## Site Specific Findings

| | | |
|---|---|---|
| BLWMAG | Declines in Total Taxa Richness and EPT Richness in 2023 and 2024. | Negative |
| BWSTANT | The HBI described a marked and statistically significant improvement in 2024 compared to prior years. | Positive |
| BWHAILEY | There was a reduction in Total Taxa Richness in 2023, but it rebounded in 2024 | Positive |
| EFORK | HBI generally improved due to an increase in sensitive species, primarily EPTs. | Positive |
| WARMSP | Increased Total Taxa Richness and EPT Richness suggested improving conditions over time. | Positive |
| BWNSRA | Average values of all metrics were consistently reflective of good water quality and habitat quality. | Excellent |

| SITE | SITE CODE | DRAINAGE ($KM^2$) | ELEVATION (m) |
|---|---|---|---|
| Below Magic | BLWMAG | 3901 | 1424 |
| Stanton's Crossing | BWSTANT | 1937 | 1472 |
| Hailey | BWHAILEY | 1590 | 1614 |
| East Fork | EFORK | 223 | 1701 |
| Warm Springs | WARMSP | 166 | 1777 |
| Big Wood River SNRA | BWNSRA | 355 | 1902 |

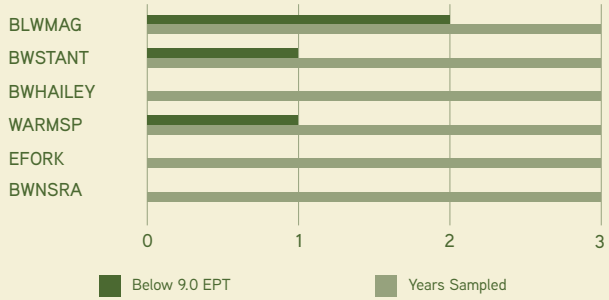
# Insects' Role in Stream Ecosystems

Insects play an important role in supporting fish populations in streams, a fact that is well-known today. It takes many insects to feed the fish. Biologists have known for years that the number of insects in a stream at any given time isn't enough to support all the fish living there. This is called the Allen Paradox. However, this mystery was solved when scientists realized that insect populations quickly replace themselves because many species reproduce fast. This means the total amount of insect production over the year is much higher than what's seen at any one time. So, it's not just the insect "hatches" that anglers love, but the variety, number, and production of all aquatic insects that provide food for streams to support large fish populations.

Insects in streams do more than just feed fish—they also help with the health of the ecosystem. Because of this, aquatic insects are often used to measure the health and function of the ecosystem (e.g., Patrick 1949). Over time, scientists have used aquatic insects to track changes in aquatic environments with special methods designed to answer specific questions.

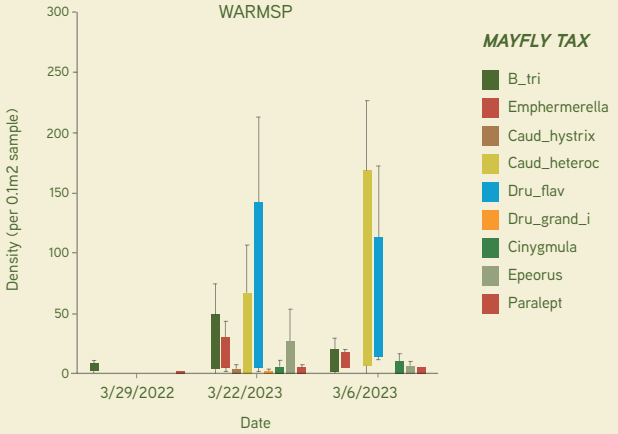
# Supplementary Figures

## Number of Years with Low Average EPT Richness




*EPT = EPHEMEROPTERA, PLECOPTERA, TRICHOPTERA (Mayfly, Stonefly, Caddisfly)*

## Mayfly Density by Species




## Number of Years with Low Average EPT Richness