

Tracking Shifts in Disturbance Regimes

An online tool created by FEMC to track changes, explore trends, and look for shifts in disturbance regimes across northeastern forests.

Four types of disturbance were analyzed for trend changes in frequency, extent, and severity.



Extreme weather includes wind and flood events



Pests and Pathogens include native and non-native insects and disease.



Fire



Drought

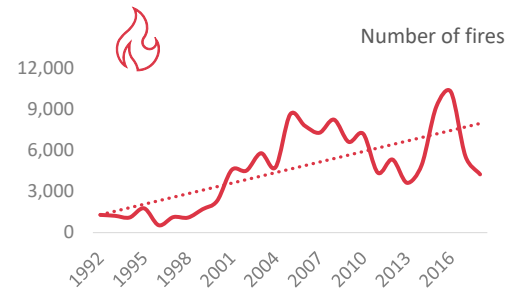


FEMC
Forest Ecosystem Monitoring Cooperative

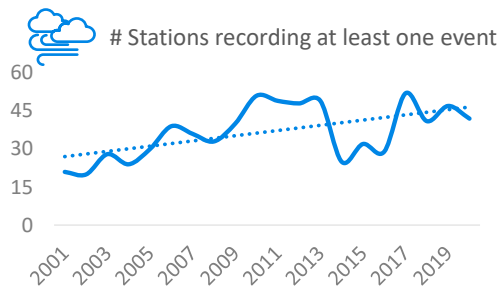
Significant Trends

Frequency

The data show a **significant increase** in the **number of fires** occurring annually. However, a significant decrease in the average acres burned indicates that this change in fire frequency is driven by **smaller, localized fires**.



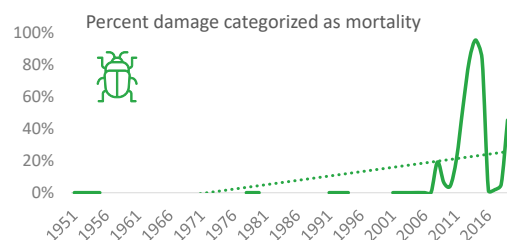
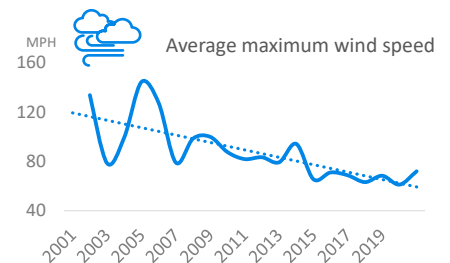
Extent



The **total number** of high wind events reported across the region, as well as the **number of stations** reporting at least one high wind event is increasing. This indicates that high wind events are increasing in some, but not all locations.

Severity

Both the **average maximum wind speed** and the **number of extreme high wind events** (>95 percentile) has **decreased significantly**, indicating that while high wind events are becoming more widespread and frequent, extreme wind events are not.



Forest tent caterpillar (FTC) is a pest native to the northeast, with outbreaks happening every ~10-15 years and lasting ~2-4 years. FTC is a defoliator that places trees under stress, making them more susceptible to other stressors.

While the total acres damaged by FTC is decreasing over time the percent of those **total acres categorized as mortality** is increasing significantly.

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This project uses **historical data to analyze trends** in disturbance drivers. Additionally, resources are provided to **explore the current state of monitoring** being conducted for responses to abiotic disturbance.

Two types of abiotic, non-human-caused disturbance are driving most of the change in forest structure or condition in northeastern forests - **small-scale wind events** and **pests and pathogens**.



Trees down from wind event



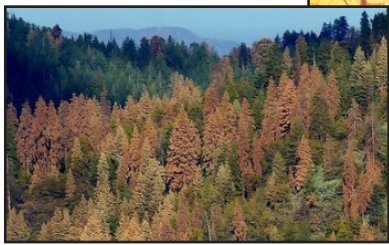
Invasive *Lymantria dispar*



Flood event



Fire



Drought

The **frequency, extent, and severity** of these drivers, along with **flood, fire, and drought** as additional disturbance drivers may change as a result of impacts due to climate change.



Monitoring of responses to disturbance drivers provides information about how ecological communities, including **stream macroinvertebrates, coldwater fisheries, and invasive plant species**, are changing.



Invasive honeysuckle



Stream macroinvertebrates



Brook trout

To learn more, visit: <https://www.uvm.edu/femc/disturbance>

