The Pest Trend Impact Plots Network: Putting the data to work

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Project Objectives

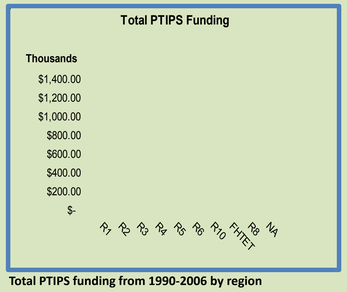
The purpose of this project is to collect, organize, make available, analyze and publish Pest Trend and Impact Plot data in order to communicate pest trends in the USA to all interested parties.

Background

Between 1990 and 2006, Forest Health Protection (FHP) invested $6.19 million in the Pest Trend Impact Plots Project (PTIPS). A series of 135 permanent plot sets were established nationwide to provide data for validation, calibration and development of pest models, improvement of pest damage estimates, and provide information for forest health monitoring.

Plots were successfully established and data collected, but only in a few instances were data analyzed and published.

The data are currently scattered across the country under the management of various pathologists and entomologists, many of which are nearing retirement.



Total PTIPS funding from 1990-2006 by region

Justification

Data on forest insect and disease development, impacts, and spread is needed to serve as the basis for future forest health management and policy recommendations. This project is building upon Forest Health Protection's substantial investment to deliver clear, concise pest trend information. Quantitative data on forest pests is limited and pest trend data is needed to provide a science-base to forest health management and to determine appropriate programmatic funding levels and priorities. The compilation of detailed past pest detections is also essential to provide an understanding of pre-climate change forest pest conditions, which will be necessary for understanding the severity of forest insect and disease damage in response to a changing climate.

Progress and Products in the Works

Data Collection

In 2009 and 2010, raw data, study design descriptions, project summaries, and reports were collected from twenty-eight PTIPS funded projects. Project materials were obtained both directly from cooperating data stewards and through an extraction of PTIPS projects from the Field Sampled Vegetation (FSVeg) database. The projects come from many regions throughout the United States and monitor a variety of pests and pathogens.

Collection of data from additional plot networks is ongoing, and we are currently working in collaboration with various data stewards to compile more data and project descriptions for inclusion in this project.

Data Organization

A master database is currently being developed for the organization and management of all project data, descriptions, and reports collected thus far. This database will serve as a long-term repository for all project materials.

Making Data and Project Results Available

Forest Health Protection's California Insect and Disease Atlas Webportal

All PTIPS projects collected from the Pacific Southwest Region have been incorporated into the California Insect and Disease Atlas (CAIDA) database, which is being used to develop a searchable, GIS-based webportal that provides access to all present and historical Forest Service data regarding pests and pathogens in California.

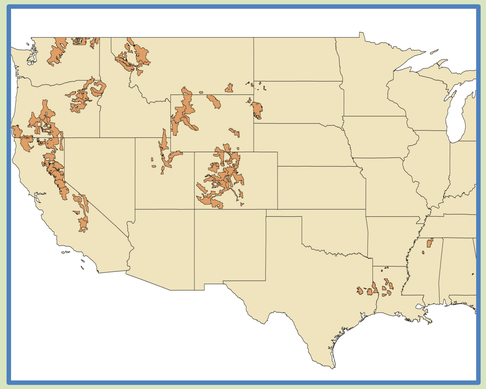
Pest Trend Impact Plots Network (PTIPS) Website

A website is being developed to provide public access to project summaries, descriptions, and reports from PTIPS projects collected to date. Within this website, users will be able to search for projects based on various criteria, including pathogen type, species, host, region and National Forest location, and dates when data were collected. When completed, this website will be incorporated in the USDA Forest Service, Forest Health Monitoring website.

Analysis and Publication of Pest Trend Data

The first detailed analysis of a PTIPS dataset recovered through this project has been completed for a set of plots examining dwarf mistletoe on red and white firs in the Sierra Nevada, California. This work represents a pilot study in the analysis of old, sometimes partially incomplete datasets to produce useful information regarding pest trends. (See "True Fir Dwarf Mistletoe in the Sierras: Long-Term Growth and Mortality Trends").

Additional data analyses are in progress through collaboration with FHP project leads and USFS statisticians, while other FHP personnel are independently analyzing data and will provide results as they become available.

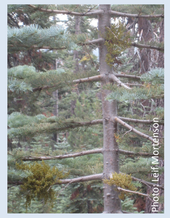


National Forest locations of the plot networks for which data have been received.

Pathogen Type	Number of Datasets
Blister Rust	3
Dwarf Mistletoe	11
Ozone	1
Pine Decline	1
Subalpine Fir Decline	1
Western Spruce Budworm	1
Pitch Canker	1
Southern Pine Beetle	1
Root Disease	8
Total	**28**

Plot networks for which data have been received , by pathogen type

True Fir Dwarf Mistletoe in the Sierras: Long-Term Growth and Mortality Trends



This study was initiated in the late 1970's by the USDA Forest Service, Pacific Southwest Region, Forest Pest Management, and USDA Forest Service, Pacific Southwest Forest and Range Experiment Station, Forest Disease Research.

The intention of the study was to examine the impact of dwarf-mistletoe infection on survival and growth of young red and white fir in several Sierra Nevada Forests, and determine the efficacy of thinning treatments for reducing dwarf mistletoe caused losses.

Plots were established on the Klamath, Lassen, Stanislaus, Sequoia, and Tahoe National Forests, and the LaTour Demonstration Forest. Data were collected between 1981 and 2006.

The analyses indicate that dwarf mistletoe infection significantly increased mortality risk and reduced radial growth rates, while thinning was found to have no effect on either the survival or radial growth rates of young firs in these stands.

Future Work

We are still actively seeking data from pest trend plots and welcome continued contributions to this project. All future materials will be incorporated into the project database and website to both preserve and make accessible the findings of this extensive research. If you have materials to contribute, please contact Heather Mehl (hkmehl@ucdavis.edu) or Susan Frankel (skfrankel@fs.fed.us).

Publications

Mehl, H.; Mori, S.; and Frankel, S.J. 2010. True Fir Dwarf Mistletoe in the Sierras: 20-Year Growth and Mortality Trends. Abstract. In, 2010 California Forest Pest Council 59th Annual Meeting, Nov. 16-17, Sacramento. *In press.*

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