

MESSAGE SCAN FOR BRUCE B. HOSTETLER

To r6 entos
To t.eager:r02f04d07a
To r.averill:r02a
To d.johnson:r02a
To d.bennett:r03a
To m.frank:s28102a
To d.hansen:s22102a
To j.weatherby:r04f02a
To j.dewey:r01a
To s.kegley:r01f04a
To j.wenz:r05f16a
To b.schaupp:s28105a
To s.wiley
To s.scrivner:w04a
To r.myhre:w04a
To s.johnson:r02a
To ladd
To peter hall
To a.lynch:s28a
To j.negron:s28a

From: Iral R. Ragenovich:R6/PNW Host: R06C
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Comments:

enclosed are the meeting notes from our douglas-fir tussock moth meeting that was held in denver about a month ago. please share with other folks in you office/region who may be interested - also dave johnson and tom eager - could you make sure copies get to the blm, south platt rd folks, and dave leatherman and anyone else that has a local interest - thanks.

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Douglas-fir Tussock Moth Meeting Notes

February 15-16, 1995
Denver, CO

Representatives from the western regions met in Denver, CO to review the status of the Douglas-fir tussock moth (DFTM). In previous years, representatives had met on an annual basis, usually during the winter, to review the results of the DFTM early warning trapping system. The last meeting was held in 1991, and it was appropriate to review current status and need for and the purpose of the DFTM early warning trapping system. In addition, there is an ongoing outbreak of DFTM in the front range of Colorado, just south of Denver.

Attendees included entomologists from Regions 1, 2, 4, 5, and 6, Rocky Mountain Station, and the states of Colorado, Idaho, and Washington; other representatives were from the Methods Application Group, BLM, South Platte Ranger District, and Jefferson County. A list of those attending the meeting on February 15 is attached. In addition, the South Platte District Ranger, plus a number of interested private landowners joined us for the field trip the following day.

The objectives of this meeting were:

- 1) review the purpose, objectives, current needs and design of the DFTM early warning system and the status of the DFTM in the West;
- 2) discuss the effects and management of DFTM;
- 3) meet with R2 and State of Colorado entomologists and South Platte Ranger District personnel to discuss the management strategies and options for the current DFTM outbreak south of Denver.

Status of DFTM in the West:

Each of the regions/states reported on the status of the DFTM outbreaks and the results of the early warning system trapping.

- Region 1 (Montana and northern Idaho) has experienced a DFTM outbreak every decade since the 1940's. Almost all outbreaks were preceded by defoliation on ornamental trees. The last outbreak occurred in 1985-86 when approximately 3,400 acres were defoliated before populations collapsed from natural causes. They have been trapping since 1977 and trap catches provided an early warning for the 1985-86 outbreak. Based on history, another outbreak is expected to occur in the next couple of years; however, trap catches have recently been very low.

- Region 4 (southern Idaho and Utah) experienced an outbreak in the early '90's; the populations collapsed naturally prior to any treatment action being taken. Parasites play a large role in the collapse of some DFTM outbreaks.

Impact plots were established and have been monitored since 1991. Julie Weatherby present a 2-phase hazard rating system that they have developed for land managers to use to predict the likelihood of a DFTM outbreak in a particular stand (probability of occurrence) and the anticipated damage which may occur. Classification accuracy for this system is about 65-70%. Discrimination analysis shows that aspect, position on the slope, and proportion of basal area in host are determinate factors in hazard rating. Contact Julie for a copy of the hazard rating system report.

Utah has experienced one outbreak in subalpine fir prior to putting traps out in that area.

- Region 5 continues to experience low DFTM activity since the 1987-89 outbreak in northeastern California. Over 130 pheromone plots were monitored in California in 1994. Of these plots, 93% averaged less than 10 males per trap and no plots averaged more than 25 males per plot.

- Region 6 (Oregon and Washington) has experienced increases in populations, some of which reached outbreak status, every decade. There was a large outbreak in the early 70's; a population increase that did not go to outbreak in the 80's; in northeastern Oregon, population increase led to a suppression project on the Wallowa-Whitman NF in 1991; and there is a current outbreak of about 40,000 acres on the Malheur NF near Burns, OR. Traps in the same six plots in this area have exceeded 40 moths per trap for 1988, 1991, 1992, and 1994. 1994 larval beating numbers were down in this area, indicating a collapsing population. There are approximately 360 pheromone plots throughout region 6.

- Region 3 (New Mexico and Arizona) experienced DFTM outbreaks in isolated stringers of Douglas-fir in canyons near Los Alamos and Albuquerque in the mid 1970's. No virus was evident in the populations after several years of repeated defoliation so the populations were treated in the late 1970's.

- Region 2 (Colorado) has very little history of DFTM outbreaks, and historically it has been an urban problem. However, they are currently experiencing 18,000-20,000 acres of defoliation on the Front Range about an hour south of Denver. This outbreak was discovered in 1993 when 200 - 300 acres of defoliation were detected. Signs of virus have been detected in the southern-most area of defoliation. That infestation is also about a year older than the northern areas of defoliation. The area has private summer home sites in the area; it is also a high recreational use area and has some habitat for a threatened and endangered butterfly. Since DFTM had not previously occurred in the area no traps early warning system plots and traps were in place; this area is located on the eastern fringe of the known distribution of the insect.

Trap Orders/Quality:

Sally Scrivner with the Methods Application Group in Ft. Collins, is the contact for ordering DFTM traps and pheromones and coordinates the contract for making the traps. She requested input on the quality and useability of the traps.

- last year there was too much sticky adhesive on the traps, and folks in the field were having to scrape large amounts of it off of the traps before

placing them. Sally will work with the contractor to assure better quality control.

- for the last year or so the baits have come with an additional nylon "wing" to make it easier to suspend the bait in the trap; many felt this addition was more difficult to use than just putting the pin through the bait. Requiring the "wings" also increases the cost of the baits. Another suggestion was to just put a small hole in the bait for the pin, but not put the "wing" in.

- R5 suggested placing a 1-2 sq. cm piece of foam tag board in the bottom of the trap that would provide an adequate anchor for the pin and bait. John Wenz will provide Sally with examples of the tag board and she will look into a modified trap design which would incorporate the suggestion.

Early Warning System (EWS)

Jed Dewey, John Wenz, and Ladd Livingston were the only folks there who had been involved in the initial establishment of the early warning system in the 1970's. Jed gave a summary of the purpose and objectives of the EWS.

Purpose of the DFTM Early Warning System - The DFTM RD&A program was a result of the large DFTM outbreak in the early 70's. By the end of the program in 1976 and 1977, the Pacific Northwest Station had developed a pheromone for field testing. One of the biggest criticisms was that we were always too late for treatment for the DFTM. By the time we discovered a problem and did the analysis we were treating a declining population. A system was needed that would help trigger the process earlier. The purpose of the DFTM Early Warning System is: to predict the general locations of increasing populations in order to more efficiently implement additional sampling and pre-treatment activities. The pheromone was reduced to a very low dose so that it would attract moths only from the vicinity immediately surrounding the trap; the EWS is intended as a coarse filter to provide an alert of increasing population density trends that warrant additional population density sampling - a finer filter; it was not intended to be a tool for monitoring population levels.

Data Storage and Analysis - At one time it was intended that MAG should be a central storage point for all of the DFTM data and that it should be as uniform in collection across regions as possible. A standardized data form was developed, however, very few of the regions sent their data to MAG. Each region has their individual data sets in some database - i.e. paradox, d-base, etc.

At the 1991 meeting it was decided a committee was going to talk to a statistician and look at the trapping design. Mike Marsden looked at the data and determined that about all we could do with the data is to show very broad, general trends. Initial trap sites were based on the historical occurrence of DFTM and were generally not selected on the bases of potential management activity.

Over the past few years, John Wenz, Lonnie Sower and Julie Weatherby looked at different trap deployment designs, including the use of single traps versus the standard 5-trap plots to determine if it would be possible to cover the same

area with fewer traps or a larger area with the same number of traps. The limited results indicate that changes in the system will likely be possible to increase the efficiency but more hard field data are needed before specific recommendations can be made.

There were a number of questions regarding whether fewer sites could be trapped and still give the same information (ie could 20 trap sites give the same information as 100 trap sites), or can we change the frequency of trapping and trap less that every year until we get above a certain threshold.

It was determined that:

1. There is no need for the data to be maintained in a central location or analyzed at a west-wide level. The data is of most value to the individual regions.
2. For the near future, we should continue to trap in order to be able to do our job in alerting the public so they can help decide on management options, and to provide probability of outbreak information to the decision maker in a timely manner.
3. Each Region should evaluate their own needs in numbers of plots, frequency, and high risk. Region 6 will do an evaluation of the DFTM EWS in Washington and Oregon that will look at the continued need for trapping, and determine if similar information can be obtained with fewer traps or trap sites, and provide a process for other regions to use in evaluating their processes. The evaluation will also compare the pheromone trap information to the population information collected from Dick Mason's permanent plots.

Ecosystem Considerations

John Wenz and Bruce Hostetler led a discussion on ecosystem considerations when conducting an analysis.

- Due to the nature of DFTM, mortality tends to be concentrated in fairly small areas that usually affect about 10% to 14% of the outbreak area;
- Trees have to be defoliated 80+ percent before incurring a high probability fo mortality.
- In order to judge effects of DFTM, the desired condition must be clearly defined.
- Need to take the spatial and temporal aspects into consideration, as well as the fact that DFTM is a native defoliator and plays a number of roles in ecosystem dynamics.
- Once the outbreak starts it is in fairly distinct phases that should be considered in evaluating potential management actions.
- It is imperative that field information be collected by all specialists (eg. wildlife biologists, fish biologists, landscape architects, entomologists, etc.) to help estimate the differences in effects between all proposed management scenarios, and what influences these effects may have on achieving the desired condition.

Permanent Plots

Dick Mason has a set of permanent plots that have been in place that have monitored the DFTM population trends for at least 20 years. It was felt that with the current concern for ecosystem management this data set ought to be continued. The Western Defoliator Steering Committee also wrote a letter in support of continuing to maintain the permanent plots. It is not realistic to expect that the westwide Pest Trend Impact Plot System (PTIPS) should pick up the responsibility for these plots because Dick's plots were designed for monitoring DFTM population densities, not for measuring effects on trees and stands (although some of these effects are being evaluated for some plots using dendrochronology information).

There was consensus that the permanent plots ought to be maintained. Because of their location the responsibility may fall on R6 to maintain. R6 will contact Dick Mason to find out how much time and money is involved in collecting the data, and what kinds of information are currently collected, and what additional data or changes in data collection are needed..

Douglas-fir tussock moth virus

R6 has closed the DFTM virus facility in Corvallis, OR, and the virus is no longer being produced. The virus is formulated as TM-Biocontrol-1 and is available only through the Forest Service. R6 has several hundred thousand acre doses of virus processed and in storage. The Goose Lake lab colony has been transferred to Canada for maintenance.

Julie Weatherby reported on the virus study they did in conjunction with PNW Research Station. There was no significant difference between the treatment and the control, and results were not encouraging. It is believed that there is a difference in the susceptibility of wild populations and the lab colony to the labeled rate. We should look for opportunities to test various rates on wild populations as they occur.

The virus is one option for DFTM management. It is not recommended if immediate results are desired. Since it is host specific, it would be a management option in those areas which contain threatened, endangered, or sensitive lepidopteran species.

Pheromone and mating disruption

John and Lonnie used the female pheromone in hollow fibers for mating disruption. The project consisted of three 200 acre blocks. Results show that there were 72.3% reproduction in the control, compared to 16% in the treatment area, with an 81% larval reduction the following year. Higher reductions in mating success may be realized by treating lower density DFTM populations. The fibres worked well because there was still quite a lot of pheromone left in the fibres at the end of the moth flight.

The major drawback for the application is that it seems to work well, but it is not registered.

Field Trip

On Feb. 16 the group visited one of the DFTM infestation areas south of Denver. The group was joined by several folks from the South Platte District, including the District Ranger, and a number of private landowners who live in the vicinity. There are a number of issues associated with the outbreak area. District personnel mailed out a questionnaire to identify issues and concerns of the public. Issues identified were: 1) how to stop the outbreak; 2) concern over fuels buildup and fire potential; and 3) salvage of dead material. Much of the infested area originally occupied by pine stands is now occupied by multistoried stands of fir. The desired objective would be to return the sites to appropriately stocked pine stands. Considerations for management included: the presence of a threatened species of butterfly - the Pawnee skipper, fuels and fire potential, granitic soils and erosion, high recreation use, a premier fly fishing stream, and intermingled ownerships/residential interface. Actions for managing the DFTM would need to take the skipper into consideration.

This coming year is apparently the 3rd year for at least parts of the outbreak, and it is unlikely that any additional treatment, either with chemical insecticide or virus, would result in significantly more DFTM mortality than will likely occur due to natural causes next year. Nor is it likely that it will result in significant reduction in resource effects. It was recommended that no action be taken directly against the DFTM (except perhaps in heavily used areas that have had low to moderate defoliation to date and which have high egg mass counts and little evidence of virus), and that the District focus on minimizing the potential fire risk through fuels management and restoring the area to a more desired condition.

Cocoon/egg mass and larval sampling should be conducted in the undefoliated areas adjacent to the outbreak area to estimate population levels and defoliation levels expected in 1995, and to better delineate the area of infestation.

Next summer EWS pheromone traps should be placed in additional areas that may be of concern that have a similar stand composition and hazard as those currently infested.

Public information is a key activity. Other regions have DFTM brochures and displays that can be made available to the folks in region 2 for public information. The district, along with the State of Colorado, also plans to work with individual groups such as the motorcycle groups to raise awareness of potential fire danger. Also, alert hospitals to the potential for allergic reactions to DFTM hairs.

People who live near or within the outbreak area are very interested in the management issues the District managers face for the area. They also expressed an interest in helping with tree planting and efforts needed to restore the area to the pine type.

DFTM Meeting Attendees

Iral Ragenovich	Pacific Northwest Region
Karen Ripley	Wash. Dept. of Natural Resources
Randal S. Frank	Jefferson County, Colorado
Bob Backman	Wash. Dept. of Natural Resources
Mark Murrell	USFS South Platte Ranger District
Dave Johnson	Rocky Mountain Region, Lakewood Service Center
Bill Schaupp	Rocky Mountain Region, Rapid City Service Center
John Wenz	Pacific Southwest Region, Sonora, CA
Bruce Hostetler	Pacific Northwest Region, Westside Technical Center
Dawn Hansen	Intermountain Region, Ogden Field Office
Beth Willhite	Pacific Northwest Region, Westside Technical Center
Julie Weatherby	Intermountain Region, Boise Field Office
Jose Negron	USFS Rocky Mountain Station, Fort Collins, CO
Ann Lynch	USFS Rocky Mountain Station, Fort Collins, CO
Suzanne Wiley	Pacific Northwest Region
Jed Dewey	Northern Region, Missoula Office
Sandy Kegley	Northern Region, Coeur d' Alene Office
Ladd Livingston	Idaho Dept. of Lands, Coeur d' Alene, ID
Susan Johnson	Rocky Mountain Region
Dave Leatherman	Colorado State Forest Service
Scott Davis	BLM, Colorado State Office
Kevin Snyder	consultant - Arvada
Jim Cunio	BLM, Canon City District
Dick Myhre	Methods Application Group, Fort Collins
Sally Scrivner	Methods Application Group, Fort Collins
Tom Eager	Rocky Mountain Region, Gunnison Service Center