

**Field Reconnaissance for Suitable Sites to Test MCH Flakes Against
Douglas-fir Beetle (*Dendroctonus pseudotsugae*) in the States of
Chihuahua and Durango, Mexico**

June 9 – 13, 2008



Dr. Guillermo Sánchez Martínez excavating Douglas-fir beetle galleries from a recently killed Douglas-fir, Chihuahua, Mexico

Field Reconnaissance for Suitable Sites to Test MCH Flakes Against Douglas-fir Beetle (*Dendroctonus pseudotsugae*) in the States of Chihuahua and Durango, Mexico

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Objective: Seek suitable forest sites for an experimental evaluation of the anti-aggregation pheromone MCH (3-methyl-2-ciclohex-en-0-1) in flake form to protect vulnerable Douglas-firs (*Pseudotsuga menziesii*) from the Douglas-fir beetle (*Dendroctonus pseudotsugae*).

Cooperators:

Instituto Nacional de Investigaciones Agropecuarias y Forestales (INIFAP) (National Institute of Agricultural and Forestry Research), Mexico

Comision Nacional Forestal (CONAFOR) (National Forestry Commission), Mexico

Secretaría del Medio Ambiente y Recursos Naturales (SEMARNAT) (Secretariat of Environment and Natural Resources), México

United States Department of Agriculture, Forest Service

Participants:

Dr. Guillermo Sánchez Martínez, Principal Investigator, INIFAP, Aguascalientes, MX

Connie Mehmel, Forest Entomologist, USDA Forest Service, Wenatchee, WA, USA

Ing. Antonio Olivo Martínez, CONAFOR, Chihuahua, MX

Ing. Sergio Quiñones Barraza, CONAFOR, Durango, MX

MS Abraham de Alba Avila, INIFAP, Aguascalientes, MX

Debra Allen-Reid, Forest Entomologist, USDA Forest Service, Albuquerque, NM, USA

Summary of Activities

Monday, June 9:

Debra Allen-Reid and Connie Mehmel arrived in Chihuahua City, Mexico in the afternoon, allowing some free time for changing currency and visiting the area around the hotel. Connie met with Guillermo Sánchez Martínez and Abraham de Alba for a late dinner at the Hotel Sicomoro, where the itinerary for the week and the situation with Douglas-fir in Mexico were discussed. Douglas-fir is a protected species in Mexico, found primarily on north-facing slopes. Cutting of live trees is not allowed. An outbreak of the Douglas-fir beetle has been observed in the mountains (La Sierra) of the states of Chihuahua and Durango since 2002. Many large trees have been killed, and damage is ongoing. The primary method of control has been monitoring and prompt salvage, while the trees are still green and larvae and adults are in the cambium. After cutting, the logs and stumps are debarked and treated with insecticide. Where properly implemented, this has been an effective treatment.

Some changes in itinerary were required because luggage for one of the US visitors was delayed by American Airlines. To avoid this inconvenience, future travelers should avoid checking luggage if at all possible.

Tuesday, June 10:

At a breakfast meeting, Guillermo, Abraham, Connie and Debra discussed the project; the roles of the various government agencies involved in forest management, regulation, and research; and the revised itinerary. A visit to the State of Chihuahua Folk Art Store that had been planned for Friday afternoon was moved to Tuesday morning. After picking up Antonio Olivio Martinez, a CONAFOR forester from Chihuahua who would be accompanying us, we proceeded to the airport, picked up the delayed luggage, and departed Chihuahua at around 3:00 pm. We proceeded in an INIFAP 6-passenger pickup truck to Hidalgo del Parral with Guillermo, Abraham and Antonio. We met Sergio Quiñones, a CONAFOR forester from Durango, in Parral, then continued in two pickup trucks to Valle de Allende. We arrived in Allende at 19:00. We had dinner and checked into our rooms at the Hotel Mesón de San Bartolomé. Over dinner we discussed details of forest conditions in the areas we planned to visit on Wednesday. Sergio and Antonio have done extensive field work in these areas, and are familiar with the terrain and the local forest workers. The majority of forest land in Mexico is in large community forests called *ejidos*. The proposed project areas are within *ejidos*. After dinner, we embarked on an evening excursion to a supermarket in Hidalgo de Parral to purchase provisions for the next two days as there are no restaurants in the back country. We arrived back at our lodging at 10:30 pm. Today we covered a distance of approximately 285 kilometers.

Wednesday, June 11:

We met at 7 a.m. for breakfast and departed Allende around 8 a.m. We visited potential treatment sites in Faldeo de Cebollas and Puerto Blanco. One site at Cebollas (elevation 2719 m or 8920 ft), is 25 hectares in size, with numerous Douglas-fir group kills from an outbreak that began about 2002. Trees as young as 90 years of age have been successfully attacked. Local foresters report no incidence of blowdown, and little evidence of root disease based on the absence of armillaria fruiting bodies. We did see a number of Douglas-firs with thin crowns. INIFAP considers Douglas-fir beetle an aggressive bark beetle that does not require disturbance to initiate an outbreak. We extracted adult beetles and eggs from a catfaced Douglas-fir about 60 centimeters (approx. 23.6 inches) at breast height.

We met with two local forest workers at Puerto Blanco (elevation 2856 m or 9367 ft) in northern Durango to inspect some Douglas-fir beetle group kills. We saw two parrots (sp?) which are considered at risk of extinction. We exposed old Douglas-fir beetle galleries in a dead Douglas-fir that was 70 cm (27.5 inches) dbh and 170 years old.

Natural regeneration of Douglas-fir was good in most areas we visited, but the species is not planted. Methods of Douglas-fir artificial regeneration have not been studied in Mexico.

We encountered a brief rain shower in the mid-afternoon while having lunch at the ejido's community kitchen which serves the local workers. This time of the year marks the start of the rainy season and showers occur almost every afternoon around 4 pm.

We covered a total distance of about 290 km today, primarily on dirt roads. Logging is an important industry in Durango and Chihuahua, which rank #1 and #2 respectively for wood production in Mexico. We encountered considerable log truck traffic. We spent the night at a guest house maintained at the El Coyote Nursery in the Municipality of Guanaceví, Durango, arriving as darkness fell, around 9:00 pm..

Thursday, June 12:

We visited several more Douglas-fir sites. At Ejido Laguna Seca, Municipality of Guanaceví, we viewed one hillside of about 50 hectares. We walked through this site and found group kills as recent as 2007, but located none from this year. We visited another site at Chiquero where a salvage/insecticide treatment was implemented in 2003-2004, and now appears to be free of Douglas-fir beetle.

We visited Arroyo de Medalla, Ejido Ojelas, Municipality of Guanaceví, which is a site that supports the endangered *Picea chihuahuana*, or Chihuahua spruce. We saw mature trees with significant infection of chrysomyxa broom rust, which appears to be causing mortality. Reproduction of the spruce is a problem throughout its limited range. Arroyo de Medalla is heavily grazed.

We arrived in Allende around midnight after covering a distance of about 230 km, mainly on dirt roads. We spent the night at Hotel Mesón de San Bartolomé.

Friday, June 13:

Following breakfast at the hotel, we drove 4 hours to Chihuahua City where we met with Juan Ramón Quintana, head of CONAFOR's Department of Conservation and Forest Restoration at his office. Also present were Hector Alanís Morales, INIFAP research forester, and Raul Novarez Flores, recently retired from INIFAP. Guillermo thanked Juan Ramón for the excellent assistance provided by Sergio and Antonio in planning the field activities and accommodations for all of us. Juan and Guillermo discussed the importance of conserving Douglas-fir. Juan mentioned the importance of controlling the Douglas-fir beetle to prevent further losses since they have been losing trees year after year. He also spoke of the importance of working with the U.S. and expressed support for the proposed pheromone test, agreeing to allow Sergio and Antonio to provide local assistance.

Our final discussion with Guillermo concerned the method of pheromone application. The flakes produced by Hercon have been successfully tested with helicopter application of 600 g of Active Ingredient per hectare. This year in Washington we are testing rates of 600, 300 and 24 g AI/ha. Guillermo plans to test at similar rates in Mexico in 2009, but the cost of a helicopter is likely to be prohibitive. We discussed the possibilities of using a fixed wing, or of using people on the ground with seeders. In the next week Connie will investigate the costs of aerial application, and the techniques of application with seeders. Connie will also provide Guillermo with photographs of the helicopter and equipment that we used this year for MCH application.

June 14:

Connie and Debra departed Chihuahua for the U.S.

Outcomes/Next Steps

Guillermo plans to draft a project proposal for funding in the next few weeks. At this time, it appears he will propose ground application of the flakes. This is less cost-prohibitive and takes advantage of the economic benefits of providing local employment in a rural area where labor is plentiful, unemployment is high, and manual application is cost-effective. The comparative cost of aircraft is such that a good wage can be paid to many field laborers before a figure approaching aircraft use is attained. By starting with the less expensive ground method, the optimum dosage can be determined so that future

plans for testing air application will benefit from the dose refinement afforded by the ground trials. If he is successful in his bid for competitive project funding, Guillermo foresees an additional need for technical support from the Forest Service in the coming months to further plan the implementation. Travel support to provide this technical assistance will be required.

Debra will be sending copies of the Region 3 FHP publication, “Field Guide to Insects and Disease of Arizona and New Mexico Forests” to Sergio and Antonio.



Back (left to right):
Dr. Guillermo Sánchez Martínez,
Ing. Antonio Olivo Martínez, Ing.
Sergio Quiñones Barraza.

Front (left to right):
Connie Mehmel, Deb Allen-Reid,
MS. Abraham de Alba Avila.



Antonio, Guillermo and Sergio
discussing potential sites for
testing MCH flakes