The BioSIM Solution

Pest Control Software
that Works

The Pest Threat

Insects and other plant pests can be a threat to the world's forests.

When trees are destroyed due to infestation, the consequences can be devastating – from harming the surrounding ecosystem to affecting a country's economy.

What is BioSIM?

BioSIM is a computer-based tool used to determine when spraying for a particular insect would be most effective.

It can also be used to predict which geographical areas are most susceptible to future pest infestations.

BioSIM was created in Canada by Dr. Jacques Régnière and his team at the Laurentien Forestry Centre, Canadian Forest Service, in Sainte-Foy, Quebec.

How it Works

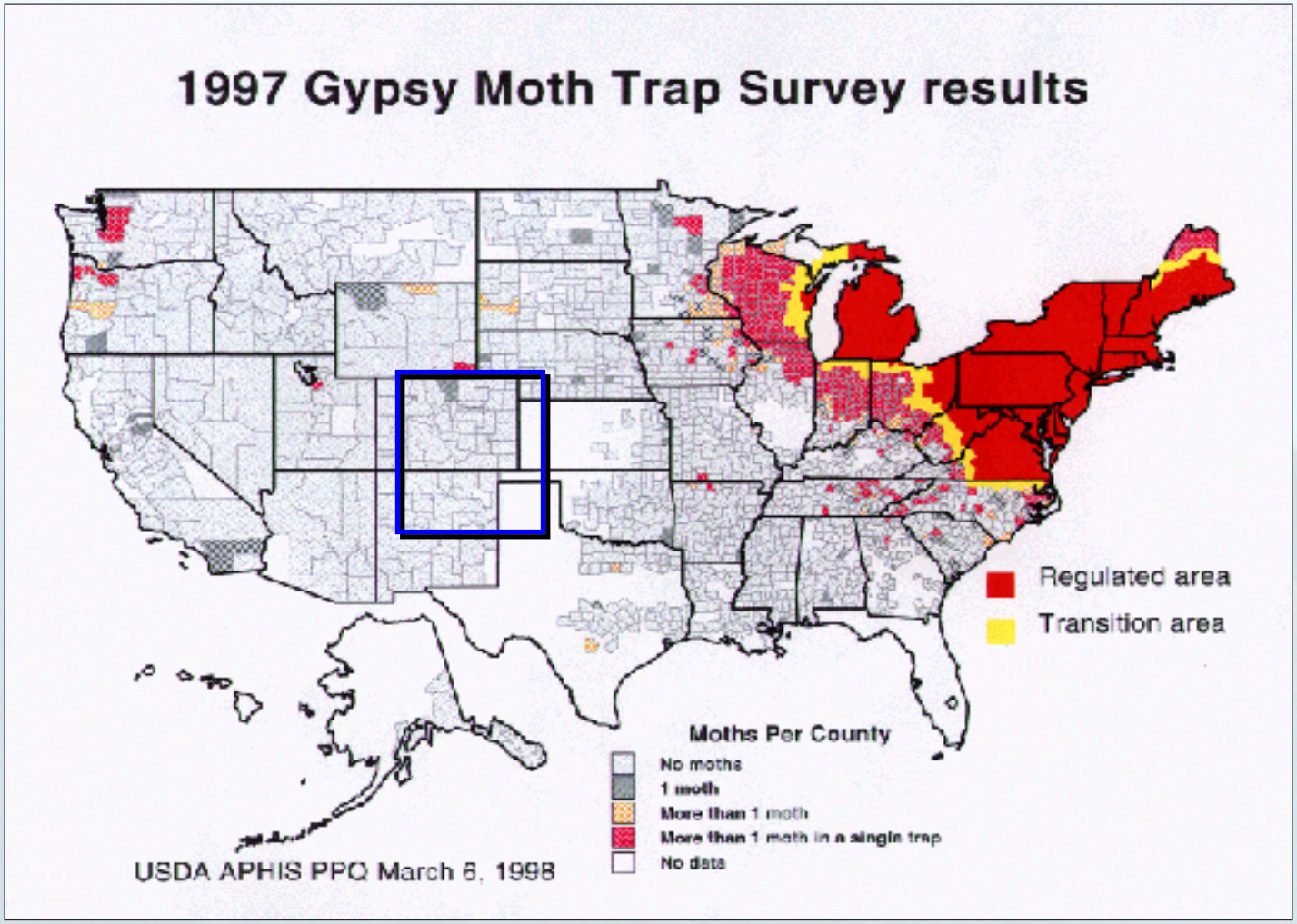
BioSIM mixes data on the offensive pest (its life cycle, how it reacts to temperature, etc.) with weather information for a particular region to arrive at a "best time" for launching a spray program.

It can also use data to anticipate the effect of climate change on a particular insect – **where** an infestation is likely to occur and **when** – again allowing for timely and targeted pest management planning.

BioSIM in Action

The following slides provide an example of how BioSIM can be used to track and predict the spread of an offensive pest.

To begin, a map shows where gypsy moths are currently found across the United States. The state of Utah, which is highlighted in blue, has one small red dot indicating an insignificant number of gypsy moths found within its borders.


1997 Gypsy Moth Trap Survey results
Regulated area
Transition area
Moths Per County
No moths
1 moth
More than 1 moth
More than 1 moth in a single trap
No data
USDA APHIS PPQ March 6, 1998

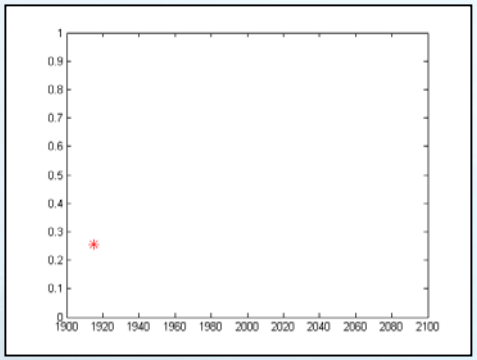
Tracking the Gypsy Moth

BioSIM used data from several sources and combined it to track the potential impact of the gypsy moth on the state of Utah covering a period from 1915 to 2075.

Step 1: Data (estimated change in climate for the area)
+ Data (life cycle of the gypsy moth)
= estimated spread of gypsy moth population

Step 2: Results of Step 1
+ Map of Utah showing location of aspen
= number of trees impacted (shown in red)

1915

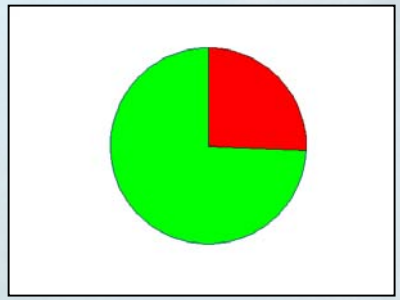


Proportion of aspen at risk

Map of Utah showing the current distribution of aspen trees.

Red = area where aspen are growing and gypsy moth establishment is quite probable

Green = area where aspen are growing and gypsy moth establishment is less probable



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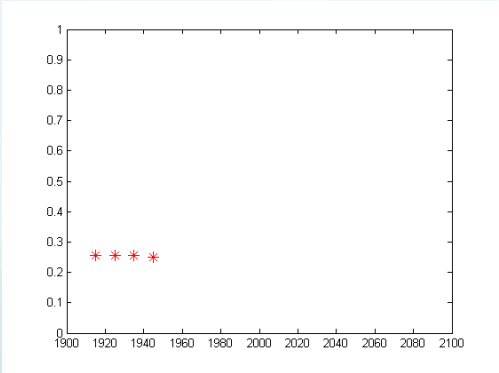
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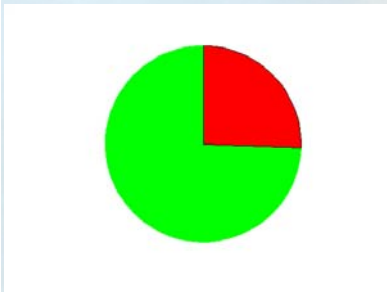

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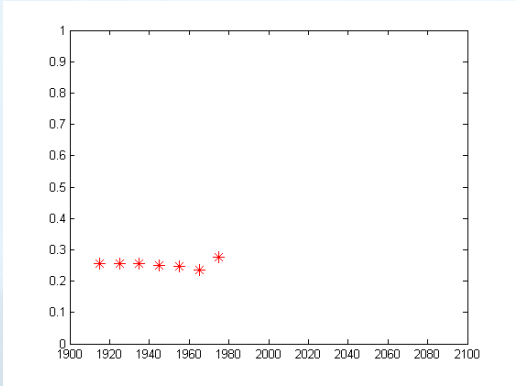
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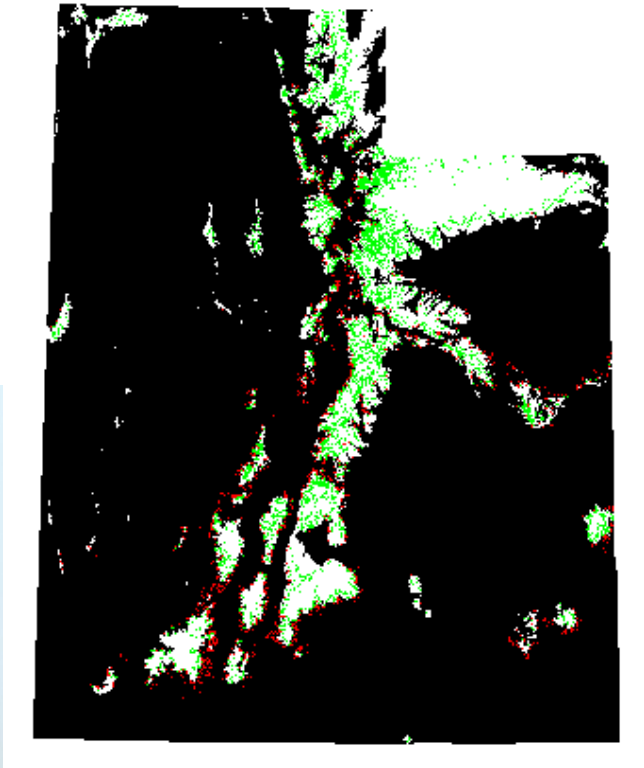
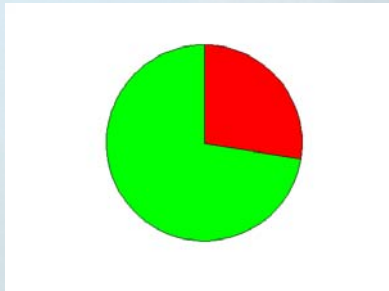
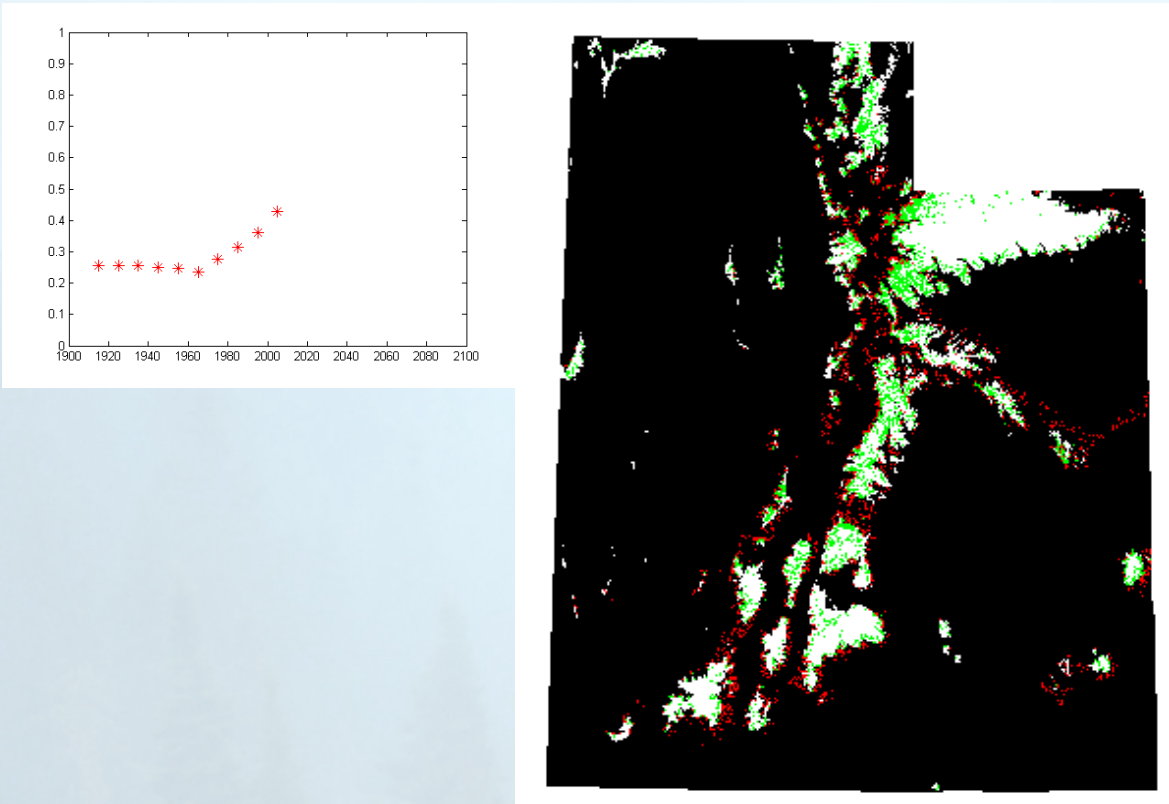




2005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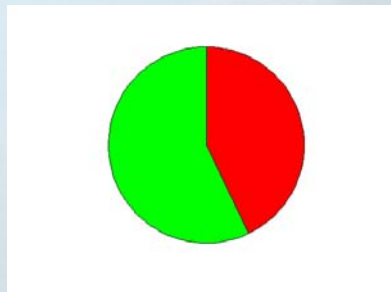

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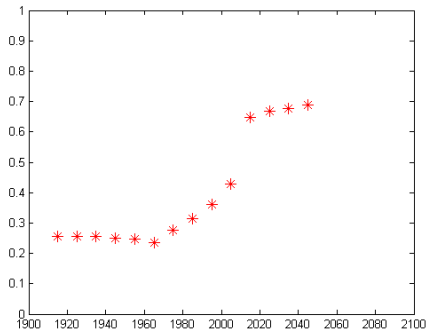
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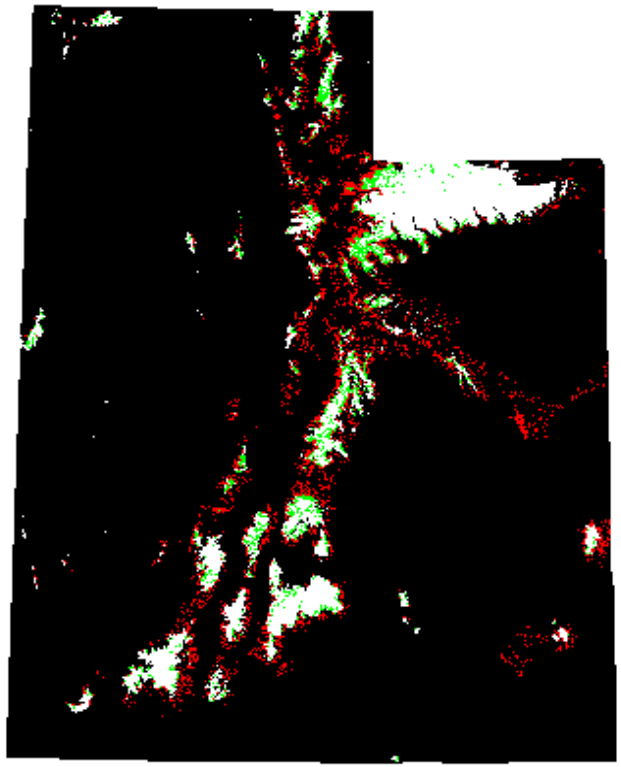

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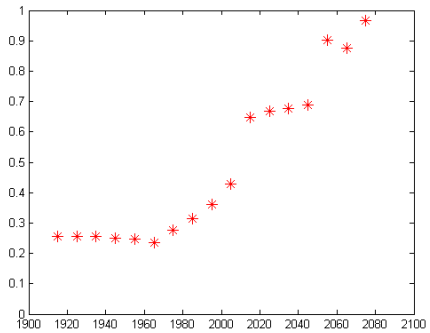
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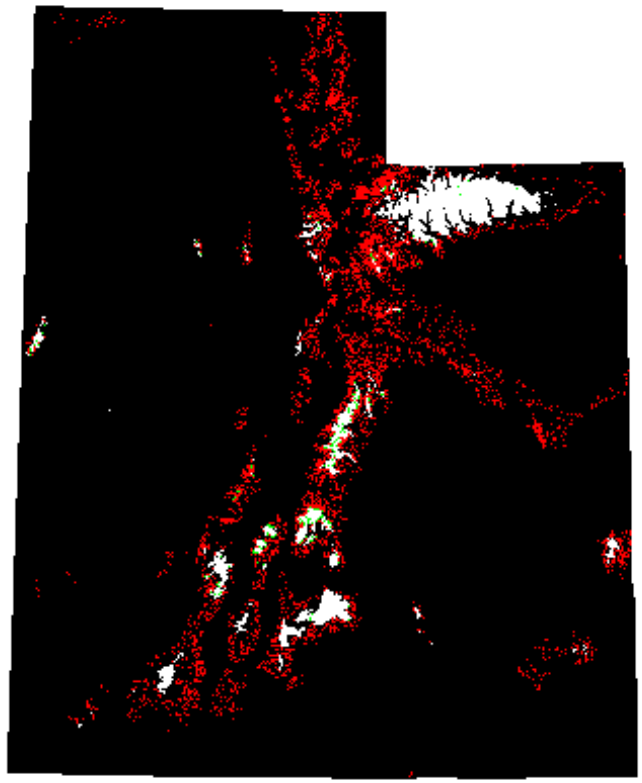

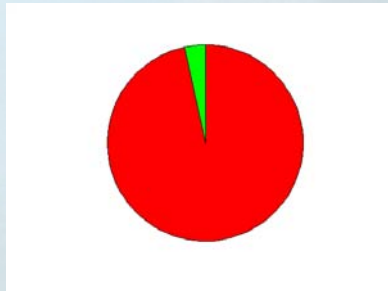

Current Uses

BioSIM is currently used in Canada and the United States to help control invasions of:

- Eastern hemlock looper
- Gypsy moth
- Jack pine budworm
- Spruce budworm
- Spruce budmoth
- Yellow-headed spruce sawfly

Future Uses

While BioSIM is predominantly used in North America, other countries are now exploring how BioSIM can help them with their pest management efforts.

Given the proper data, BioSIM can be used to control insect or plant pest problems anywhere in the world. It can also be used to predict future infestations or show areas most likely to experience expansion of an existing problem.

BioSIM Success Stories

The B.C. Ministry of Forests used BioSIM to send gypsy moths packing in the Vancouver region. Their multi-million dollar spray program was a huge success thanks to BioSIM's accurate timing predictions!

> *"Our traditional method of determining spray time said "spray". If we had gone ahead, we would likely have sprayed too soon and missed many of the feeding caterpillars. BioSIM said to wait and the wait paid off!"*
>
> *Russ Cozens, Forest Health Officer, B.C. Ministry of Forests*

BioSIM Success Stories

A mountain pine beetle epidemic is devastating areas of British Columbia and Alberta, but BioSIM is on the case helping to prevent further destruction due to this insidious pest.

The BioSIM model predicts the beetle will move north and possibly shift to the east, so pest management planners are acting accordingly.

Contact Information

To learn more about how BioSIM can help with your pest management planning, contact:

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