



# Ensuring a future for forestry

Pest risk analysis carried out by **TEAGASC** researchers is helping to ensure the future of forestry in Ireland and further afield.

The introduction of pests and diseases (collectively referred to as pests) to new regions globally is on the increase. This is directly linked to the globalisation of trade. Plants and plant products are now moving further and faster than ever before, and they are bringing their pests with them. The consequences of outbreaks can be devastating. The arrival of the bacterial pathogen *Xylella fastidiosa* to Europe is one such example. This pest, which attacks a wide variety of plant species including grapevines, olive trees and ornamental shrubs, is estimated to have caused €1.2 billion of damage since its arrival in 2013. In Ireland, the arrival of the ash dieback pathogen *Hymenoscyphus fraxineus* led to the destruction of over 2.1 million trees. Sitka spruce (*Picea sitchensis*) is a highly productive forest tree, and the most commonly grown commercial forest tree in Ireland, making up over 50% of the Irish forest estate. One reason Sitka spruce thrives in Ireland is that it has been established here in the absence of the most important pests found in its native range of the Pacific Northwest of North America. Despite its great quality wood and fast growth rate, Sitka spruce is not grown extensively for commercial production in North America. Pests such as the Sitka spruce weevil (*Pissodes strobi*) attack trees so extensively in its native range that they develop multiple forks and become commercially unviable. With forestry contributing an estimated €2.3 billion to the economy each year, it is imperative that Irish Sitka spruce production is protected from such damaging pests.

Recognising this, the Department of Agriculture, Food and the Marine (DAFM) funded the FORM (FORest Management) project, with a specific work package to address potential risks to Sitka spruce. The first step to protecting Sitka spruce was to identify those pest risks. An in-depth literature search was undertaken to identify pests of all species of the genus *Picea* globally. Over 1,300 known and potential pests of Sitka spruce were identified.

## Prioritising risks and the role of pest risk analysis

In order to protect the country from the introduction of new pests, regulations exist around the importation of plants and plant products. International trade laws require that such regulations are “technically justified”. The internationally recognised way to technically justify such regulations is via the use of pest risk analysis (PRA). This is a technical document that analyses the likelihood of pests entering and establishing in a defined area, e.g., the island of Ireland. It then estimates the potential magnitude of economic, environmental and social impacts to that area. Finally, PRA will identify measures that can be taken to reduce the risk of the pest via regulation. PRA may analyse the risk of an individual pest, or it can analyse the risk that trade in a particular commodity poses, analysing all pest risks associated with that commodity – also known as “pathway” PRA.

Ireland had no PRA scheme, and as part of the FORM project a scheme was developed and the first Irish PRAs produced. A pathway PRA analysed the pest threats to Sitka spruce that could



Top left: The hemlock looper moth (photo: Jerald E. Dewey, USDA Forest Service, Bugwood.org).

Top right: Hemlock looper caterpillar (photo: Connecticut Agricultural Experiment Station, Connecticut Agricultural Experiment Station, Bugwood.org).

Above left: Hemlock looper damage to a forest in the US (photo: USDA Forest Service – Northeastern Area, USDA Forest Service, Bugwood.org).

Above right: Imported moss that may harbour undesirable pests.

enter on the “plants for planting” pathway, and over 220 pests were analysed for their likelihood of entry and potential impacts. This exercise was invaluable as it helped to identify which pests posed the greatest threat to Ireland. It also identified a number of trades that could be subject to further regulations in order to provide protection against a range of pests.

### Hemlock looper: the hidden threat in our hanging baskets?

The hemlock looper (*Lambdina fiscellaria*) is a North American moth, the caterpillar of which is a forest pest that can cause extensive defoliation and mortality of coniferous trees. A PRA carried out for this species identified a previously unknown pathway of entry. This moth species likes to lay its eggs in the mosses and lichens that cover trees in the lush North American forests. It was discovered that such mosses and lichens are harvested directly from the forest and are being exported to the EU for use in ornamental displays and hanging baskets. When this occurs, the eggs of the hemlock looper may be inadvertently gathered up with the mosses and introduced into new regions. The PRA for hemlock looper has been sent to the European and Mediterranean Plant Protection Organisation (EPPO) for consideration, as part of the process to regulate this pest and protect not only Ireland but the whole of the EU from this potentially highly damaging species.

### Ensuring a healthy future for our forests

The Sitka spruce pest list will be an invaluable tool for protecting our forestry. This pest list has now been shared with other organisations in Europe working to protect forest health, including a collaborative project among the Nordic countries, which are investigating risks to

coniferous forestry in Northern Europe. The establishment of a PRA scheme for Ireland is an essential step, not only to ensuring a healthy future for our forests, but also for plant health across the island. Ireland for the first time has the ability to write PRAs and provide the necessary evidence direct to the EU to support the regulation of pests and pathways.

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