

## Pine-tree Lappet Moth Outbreak Management Team

Minutes of Fifth Meeting held on 20 December 2010

Silvan House, Edinburgh

### **Present:**

Stewart Snape, Deputy Head of Plant Health (Chair)

Stuart A'Hara, Molecular Biologist, Forest Research

Roddie Burgess, Head of Plant Health

Hugh Clayden, Sustainable Forest Management, Forestry Commission Scot, Silvan House

Joan Cottrell, Programme Group Manager, Forest Research

David Jardine, Forest District Manager, Inverness Forest District (via telecon)

Roger Moore, Senior Scientific Officer, Forest Research

Ian Murgatroyd, Regional Manager North, Plant Health

Robin Payne, Invasive Non-native Species Coordinator, Scottish Natural Heritage

Tom Prescott, Species Conservation Officer, Butterfly Conservation

Athayde Tonhasca, Species Adviser, Scottish Natural Heritage

Richard Wallace, Development and Operations Advisor, Highland Conservancy

Debbie Erskine, Secretary

### **Agenda Item 1: Welcome and Introductions**

1. Stewart welcomed everyone to the meeting. Apologies were received from:

David Barbour, Consultant Entomologist

Chris Inglis, Executive Director & Company Secretary, ConFor

Paul Munro, Press Officer, Forestry Commission Scotland

Michael Petr, GIS Analyst, NRS

Duncan Ray, Woodland Ecology, NRS

Bruce Sewell, Forest Management Officer, FES Head Office Inverness.

### **Agenda Item 2: Minutes of the meeting held on 25 August 2010**

2. The minutes of the last meeting, held on 25 August 2010, were agreed.

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## Agenda Item 3: Matters Arising

3. Action points outstanding from the fourth meeting held on 25 August 2010.

### Agenda Item 3: Matters Arising

- Roddie had spoken to Pat Snowdon about an Economic Impact Assessment. A submission, which included a copy of the Impact Appraisal, had been sent to Defra ministers seeking additional funding in the region of £18 million over the next five years to deal with five pests including P-tL. The Defra Local Approvals Panel had asked the Commission to consider reducing the amount of the funding bid which they would re-consider again in January.

### Agenda Item 4: Situation Report

- Stewart had spoken with Joan and met with Duncan about updating the Climate Modelling Report.

### Agenda Item 9: SNH Update

- Robin Payne explained that a memo had been sent to the SNH Management Team which set out the background on the latest developments on P-tL. He added that SNH recognised that it was unlikely that we would be able to establish the native / non-native status of the moth absolutely. SNH supported FC Scotland's work to explore options for eradication and control. Once proposals for eradication and control emerged, SNH would offer advice on the potential impacts on other animals.

**Action: Robin to send a copy of the memo to OMT members.**

### Agenda Item 10: Communications and Publicity

- Paul Munro was to update and re-publish the Q&A on the website. Stewart agreed to follow this item up with Paul as he was not present at the meeting.

**Action: Stewart to confirm with Paul whether the Q&A had been updated and re-published on the website.**

### Agenda Item 4: Research Update

- Tom confirmed that he had been trying to obtain further samples from overseas contacts.

### Agenda Item 6: Public Meeting

- Richard confirmed that the public meeting had been well received.

### Agenda Item 7: Discussion on Future Direction and Required Actions

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- Stewart confirmed that a biosecurity protocol had been circulated emphasising that woodland owners were responsible for implementing the controls on timber and tree movement. Statutory Notices would not be issued to sawmillers. He added that Chris Inglis, ConFor, had confirmed that he had not received any objections from private owners. Richard confirmed that owners were concerned about how decisions would be reached and how long notices would be in force. Hugh added that they were very concerned about the impact on their woodlands in terms of the economy and the environment.
- David B did not attend the meeting and therefore was unable to confirm whether he had telephoned the Royal Museum for Scotland.
- Joan confirmed that she had sent a copy of the list of whom she had contacted to OMT members.
- Chris Inglis did not attend the meeting and therefore was unable to confirm whether he had spoken to a colleague who had contacts in Latvia and Estonia.

**Action: Stewart to confirm with Chris Inglis whether he had spoken to a colleague who had contacts in Latvia and Estonia.**

- Tom confirmed that he had made enquiries with international Butterfly Conservation contacts.
- Ian Murgatroyd confirmed that he had produced an analysis of spraying methods. He had been in touch with industry contacts and Forest Research colleagues and had identified two pesticides that could be considered. He had also scoped costs and technical feasibility. He added that the New Zealand Ministry of Agriculture and Forestry website had information about two spraying programmes they had used on moths, one achieving eradication over three years using *Bacillus thuringiensis* (Bt) and another which took longer. He had also included information about spraying programmes in Germany.

**Action: Ian to send a copy of his analysis of spraying methods to OMT members.**

- Athayde confirmed that the Strathfarrar native pinewoods were internationally important and had been designated at a European level.
- Duncan Ray had carried out climate modelling for Boblainy, Culbin, Glen Affric, Strathfarrar and south west Black Isle.
- Hugh and Stewart had discussed the cordon sanitaire but did not feel there was any mileage in taking this forward as a potential statutory action.
- Roger was continuing to obtain information on the management of outbreaks in Europe, including spraying methods.
- Roger and Stewart had resolved the funding for further survey and monitoring and confirmed that funds were in place.
- Roger had provided Hugh with tree banding costs. Roger confirmed to David J that trees in Birchwood had been banded. He added that 12 sites had been banded to catch the autumn descent but only three caterpillars had been caught to-date.

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## Agenda Item 4: FCS Update

4. Hugh reported that contact with private owners had been established. He added that the priority questions for FC Scotland were:

- whether P-tL was native or non-native;
- whether populations would actually reach damaging levels (parasitology etc);
- how far the moth might spread; and
- if required, what the most appropriate control or eradication method would be.

He also reminded the OMT that the Scottish Government's overall philosophy was to avoid simply 'dumping' the problem on private individuals but rather to regard such matters as a shared issue.

The team agreed that they were concerned about the burden on owners but also recognised that the potential damage from this pest should not be underestimated.

5. David J reported that felling which had commenced in early December in the north-west corner of Boblainy was almost complete and solutions for cleaning harvesting equipment were being looked at. He added that he was considering hosting a Biosecurity best-practice demonstration. Hugh suggested that producing a training video would be useful.

## Agenda Item 5: Research Update: Origin of the Moth

6. Stuart A'Hara gave an update on his research. He summarised that: Currently the status of this moth (i.e. native or non-native) remains 'undecided'. The data indicate that the Scottish population is very different from the sampled populations closest to Scotland (i.e. across the North Sea) and it appears most likely that the origin was somewhere in southern Europe. However, FR had not, as yet, been able to eliminate the possibility of the moth having reached Scotland by natural spread through south and eastern France and across the English Channel via a post-glacial land bridge.

7. Hugh C offered FC Scotland funds if that would assist the collection of more European samples. David J added that it was possible that the moth could have been imported on harvesting machinery returning from France in late 1999. This needed further investigation. He also suggested that further surveys be carried out at, for example Tentsmuir. Tom offered to contact international colleagues for more samples from France. He agreed to consider trapping at Tentsmuir and to contact recorders to confirm whether P-tL had been trapped at Aigas Field Centre.

**Action: Tom to contact colleagues for more samples from France. Tom would contact colleagues to discuss trapping in Tentsmuir and he would also contact recorders to confirm whether P-tL had been trapped at Aigas Field Centre.**

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## Agenda Item 6: Research Update: Will climate change result in P-tL having a negative impact on tree health?

8. Roger Moore introduced this item as Duncan Ray was unable to attend the meeting. Duncan's conclusions were:

- Ecology of the pine-tree lappet moth - preference for infertile, sandy textured soils, summer climatic conditions that are warm and dry, and cold winters.
- Soils formed from till and diamicton of the Moine schists around the Moray Firth are sandy in texture and infertile, supporting a large area of plantation and Caledonian pine woods.
- Climatic analysis using the weather generator simulations for projected emissions scenarios shows that the summer climatic conditions are likely to become warmer and drier in this part of north eastern Scotland.
- Winter climate is likely to become milder, although there will be years in which colder winter conditions prevail.
- Increased probability of critical SHC values (between 1.2 and 1.5) being reached in the Great Glen, Beaully, Black Isle and Culbin forests in Low and High emissions scenarios.
- Glen Affric and Glenmore are unlikely to have suitable summer climates for P-tL.
- Black Isle, Beaully and Culbin forests (in increasing magnitude) have the highest probability of critical SHC values in both 2050 and 2080. This is likely to range from 6-9 years per decade with a summer climate that is very suitable for P-tL.
- There will be an increase in the likelihood of ideal summer climatic conditions for outbreak in consecutive years. This could make outbreaks more serious and damaging.
- Further research on natural predators, parasites and winter climatic conditions were needed to understand whether pine-tree lappet moth could become a serious pest in Scotland.

9. Hugh considered that it was important to establish by when ideal conditions for outbreaks were really likely to become an issue – was it in a few years or decades? David J agreed and added that the climate modelling was a useful piece of work.

## Agenda Item 7: Research Synthesis: What level of risk does P-tL pose?

10. Roger reported that:

- the population area was still quite confined;
- P-tL densities were currently low;
- caterpillars probably hatch from eggs during July-August and feed on pine needles until October-December when they climb down the trees to overwinter in the soil/litter layer. They remain inactive at the base of the trees during December-February and climb back up the trees during February-March, feeding up to May-June before pupating in cocoons and emerging as moths to mate and migrate during June-July;
- 2010 captures were higher than in 2009. However, once the trapping effort been taken into account captures per trap were lower in 2010;

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- adult male moths in 2010 had been trapped up to 6 km outwith the 2009 suspected breeding area and they had also been captured at three additional sites which were up to 5km out from where the male moths had been captured in 2009;
- only three caterpillars had, so far been caught by glue banding in the autumn of 2010 at 13 sites;
- it was possible that caterpillars fall out of the trees so don't get caught on their descent. A better indication of density, to enable comparisons between 2009/10 and 2010/11 will be given when the caterpillars start reascending to feed in the canopy in spring 2011;
- it was also possible that the caterpillars are now being eaten by birds (learnt behaviour) as they accumulate at the glue bands alongside abundant caterpillars of other species (e.g. pine looper); and
- larval counts in the soil hadn't been carried out as it was very labour intensive and the density of larvae was anticipated to be very low.

11. Hugh added that FC Scotland would consider funding for the soil based pupal/larval counts at selected sites and asked Roger to provide costs.

**Action: Roger to provide Hugh with costs for soil analysis work.**

12. Roger added that:

- Larvae caught in the spring developed quickly in laboratory conditions and he thought they would be able to breed-out in one season. This contrasted with Roy Leverton's observations and the OMT agreed it was important to establish whether a one-year cycle in field conditions was more than just a theoretical possibility. At this stage it was considered more likely that a two-year life cycle was the norm although a mixture of one and two-year cycles was likely;
- other species in the genus *Dendrolimus* group can take even longer than two years to develop but this does not stop them outbreaking and causing major defoliation;
- the rate of initial population build up is likely to be slower over a two-year cycle and, if true, it may therefore give more time to deal with the current situation in Scotland; and
- it would be a worthwhile exercise to collect eggs and study the growth rate in field conditions.

**Action: Roger to collect eggs and study the growth rate of the caterpillars in field conditions.**

**[Agenda Item 8: was Lunch]**

**Agenda Item 9: Discussion: In the light of the research and surveillance presented should the objective be eradication or containment?**

13. Stewart introduced this item and asked, in the light of the research and surveillance presented, whether there was now enough information to determine whether phytosanitary

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measures were justified and, if so, whether the next step should be eradication or containment. The Team discussed the issue and noted that:

- more work was needed to resolve the 'French Connection' i.e. whether the moth could have made its way to Britain via south and eastern France;
- the level of risk in the short term needed to be considered;
- in Poland, authorities would not consider action until the population had reached 50 larvae per tree. Currently the Kiltarlity populations were only a fraction of that density;
- to eradicate now and spray with Bt could cost £4-5 million if the whole 'outbreak' area was to be treated;
- a single spraying would not eradicate the population completely although repeated programmes might be able to do so;
- there was still time to resolve outstanding issues so precipitate action was not justified;
- the restriction on the movement of timber should, however, continue;
- further information on the legality and technicalities of aircraft based spraying was needed via a hypothetical scenario; and
- the Forestry Commission should implement an inspection and licensing regime for P-tL rearing facilities being run by Roy Leverton and Mark Young. SASA would be asked to undertake a similar inspection of the FR premises.

It was concluded that the current Pine tree Lappet population did not appear to be at a level where direct control action (e.g. through the use of pesticides) was warranted and given such a low population, it would, in any case, be very difficult to gauge success. However, the climatic data, coupled with current uncertainty about the origins of the moth, suggested that it would be premature to 'stand down' in terms of vigilance and precautionary measures. Accordingly, the intention was to continue monitoring the population as well as maintaining restrictions this year on the movement of timber in the active period (although consideration could be given to suitably regulated alternatives such as chipping for fuelwood).

## **Action:**

**Ian Murgatroyd would develop a licencing protocol.**

**Richard Wallace agreed to inspect the P-tL rearing facilities being run by Roy Leverton and Mark Young.**

**Roger Moore would ask SASA to inspect NRS facilities.**

**Hugh to discuss glue banding funding with Roger.**

## **Date of Next Meeting**

14. The Team agreed that the next meeting should be held at the end of May 2011.

**Action: Debbie to secure a date for the next meeting to be held at the end of May.**

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## Summary of Actions

### Agenda Item 3: Matters Arising

Agenda Item 9: SNH Update

**Robin to send a copy of the memo to OMT members.**

Agenda Item 10: Communications and Publicity

**Stewart to confirm with Paul whether the Q&A had been updated and re-published on the website.**

Agenda Item 6: Public Meeting

**Stewart to confirm with Chris Inglis whether he had spoken to a colleague who had contacts in Latvia and Estonia.**

**Ian to send a copy of his analysis of spraying methods to OMT members.**

### Agenda Item 5: Research Update: Origin of the Moth

**Tom to contact colleagues for more samples from France. Tom would contact colleagues to discuss trapping in Tentsmuir and he would also contact recorders to confirm whether P-tL had been trapped at Aigas Field Centre.**

### Agenda Item 7: Research Synthesis: What level of risk does P-tL pose?

**Roger to collect eggs and study the growth rate of the caterpillars in field conditions.**

### Agenda Item 9: Discussion: In the light of the research and surveillance presented should the objective be eradication or containment?

**Ian Murgatroyd would develop a licencing protocol.**

**Richard Wallace agreed to inspect the P-tL rearing facilities being run by Roy Leverton and Mark Young.**

**Roger Moore would ask SASA to inspect NRS facilities.**

**Hugh to discuss glue banding funding with Roger.**

### Date of Next Meeting

**Debbie to secure a date for the next meeting to be held at the end of May.**