

**International Co-operative Programme on Assessment and  
Monitoring of Air Pollution Effects on Forests of UN/ECE (ICP Forests) in cooperation  
with the EU (Life+)**

**Minutes of the 12<sup>th</sup> ICP Forests Expert Panel on Foliage and Litterfall and FutMon  
(Life+) Action D2 meeting**

36 participants from 19 countries attended the meeting (Annex 1).

1. The 12th EP on Foliage meeting took place from 21 to 22 March 2011 in Tallinn Estonia.

**Day 1 (Monday 21<sup>st</sup> March)**

2. The Chairman (Mr. Pasi Rautio) opened the meeting

3. Mr. Kalle Karoles (Estonian Environment Information Centre) gave an introduction to the  
“Estonian Environment Information Centre”

4. Mr. Mati Valgepea (Estonian Environment Information Centre) gave an introduction to  
Estonian forests and forestry

5. Mrs. Endla Asi (Estonian Environment Information Centre) gave practical information  
about the meeting

6. The meeting adopted the attached agenda (Annex 2).

7. Selection of new co-chair for litterfall to replace Mrs. Rona Pitman (UK) who expressed  
her willingness to retire from this position. Chairman P. Rautio inquired EP members for new  
candidates in his e-mail sent on 15<sup>th</sup> Feb 2011. On the basis of the response from countries  
and discussion in the Expert Panel, the panel decided to nominate Mrs. Liisa Ukonmaanaho  
(Finland) as a new co-chair for litterfall.

8. Litterfall. EP members have raised few concerns about the data submission and formats  
concerning the litterfall data.

Mrs. Liisa Ukonmaanaho (Finland) presented the problem with the current definition of  
litterfall year where the start is on beginning of April (yr 1) to the end of March (yr 2): in  
areas where the snowy period continues until April-May this definition is artificial and can't  
be related to e.g. deposition or soil solution chemistry.

Mr. Hans-Peter Dietrich commented the present division saying that it would better do divide  
the “litterfall year” on the basis of vegetation period (varying from country to country).

Mr. Bruno De Cinti (Italy) proposed that it would be better to submit the data to the database  
in periods instead of annual mean.

After discussion it was decided to change the format so that partners can store the periodic  
samples (by using pooled / non-pooled code), but in the manner that the old procedure for  
reporting only annual means is still possible. The format change will be prepared by PCC and  
expert panel chairs after which it is circulated among EP members for approval.

9. P. Rautio (on behalf of Mr. Alfred Fürst) presented the results of the 13th Needle/Leaf Interlaboratory Test. A foliage litter, an oak leaves, a spruce needles and a pine needles sample were submitted to 60 participants in 29 countries. Deadline for the data submission was 2011-01-02. The full evaluation is available as LIFE+ report in the internet (<http://bfw.ac.at/rz/bfwcms.web?dok=1008224>) – the main results are:

Approximately half of the labs are or planned an Accreditation; most of the laboratories are using control charts in daily routine. The oak leaves sample was used for 9<sup>th</sup> and the 13<sup>th</sup> ringtest. The results are good comparable, but they are in general a little bit higher than the results from the 9<sup>th</sup> test. A lot of laboratories haven't corrected the results on dry weight (105°C) in the past and same labs corrected it in the wrong direction. Only the lead result is lower than in the 9<sup>th</sup> test – maybe because the avoidance of contamination.

The development of the results from the 3<sup>rd</sup> till the 13<sup>th</sup> test shows for foliage samples a clear improvement in the results. Especially in the last three tests within the FutMon project a big improvement is visible. The reasons for this are: better instrumentation, improvements in the methods, annual ringtest participation, QA/QC feedback (Qualification/Requalification, QA/QC forms for data submission) and the laboratory helping programme.

The re-qualification process is mandatory for all labs which want to submit monitoring data from the growing season 2010. The deadline is the 1<sup>st</sup> of October 2011 – for FutMon partners - it would be better for them to finish the re-qualification work before ending the FutMon project!

The ringtest programm will be continued annually after FutMon. The 14<sup>th</sup> test has already started with the information of the laboratories. 25 laboratories have done the registration till now, please check that your lab is registered (Deadline: 2011-07-04). The cost will be covered – as in the past - from a participation fee, advertising and the sample collection and preparation will be done partly from participants. So if somebody wants to collect and prepare a foliage, litterfall or ground vegetation sample, please contact Mr. Fürst per e-mail ([Alfred.fuerst@bfw.gv.at](mailto:Alfred.fuerst@bfw.gv.at)).

Mr. Rautio (on behalf of Mr. Fürst) presented in the second presentation – results from the last tests about problematic samples and methods. Not only foliage samples are used within the FutMon project as ringtest samples but also non foliage litterfall (pine branches) and ground vegetation samples (bears garlic, blueberry leaves) are used as ringtest samples. The iron content in pine branches are lower if dry ashing, open or microwave digestion is used instead of pressure digestion or X-ray method. Especially the often used microwave digestion influence the total mean (= "true value") of the ringtest.

The bears garlic sample show very high sulphur content. In this concentration sulphur should be measured easily, but a lot of laboratories failed. The reason for this could be a wrong calibration range (extrapolation of the calibration curve).

The last example was about results below the limit of quantification (LOQ), especially for lead, cadmium and copper. There is no guideline from the expert panel or from PCC about the sensitivity of the method. Some labs are using a multielement method/instrument like ICP-AES for all the analysed elements. This instrument is not sensitive enough for detect e.g. low lead concentration (e.g. <0.5mg/kg). It was discussed if the foliage/litterfall experts could determine a concentration range (or the minimum limit of quantification) for Pb, Cd and Cu in foliage, litterfall and ground vegetation. General opinion was that for (environmental) monitoring purposes we should aim to as low LOQ level as possible, because one aim of environmental monitoring is to detect changes and patterns in environment. On the other hand it was noted that aiming for lower LOQ also incurs costs, so this matter is also a matter of balancing between the accuracy level and the costs. As this item will be a topic for the next lab head meeting in Arachon/France in June the EP decided to aim for lower LOQs but to inspect also the opinion of the meeting of lab heads in Arachnon.

10. Mr. P. Rautio presented latest development in the data use policy and publication policy. After the latest manual revisions there is pressure among PCG of ICP Forests to more effectively use the collected data. Since the pan-European data is available for the programme bodies (like different EPs) the aim is to collect ideas within EP foliage and litterfall and use the pan-European data in publications by interested partners. P. Rautio will coordinate this work so that overlapping work is avoided. Partners that have ideas how to use the data can contact P. Rautio so that he knows the ongoing work. When results from these kind of data investigations are obtained P. Rautio will contact the EP members to ask for willingness to contribute in future work (e.g. finalising a scientific publication).

11. Mr. Oliver Granke reviewed the ongoing work to check the foliar data. Foliar data was sent to EP members to check the outliers and to solve the problem with missing value in "Code sample number" in the old (FIMCI) data. It was assumed that this missing value is 0 (meaning current needle set) but this was specifically asked when the request to check the data to countries were sent. Deadline for checking the data is in the end of March 2011.

O. Granke then presented the FutMon/ICP Forests database structure and data submission procedure. He demonstrated the needs to edit the submission formats for foliage:

- a) leaf age is reported in different column than the species code,
- b) new column for "Sample ID" is added,
- c) tree numbers will be reported in another form, and
- d) carbon is reported among mandatory parameters

In addition to these FutMon Action D2 lists "the number of needle age classes". It is unclear if countries have recorded this since it was not in the formats that were in use when results of 2009 foliar survey was submitted. In case this parameter has been recorded (this has to be asked from countries) an additional column is needed after which FutMon Action D2 partners can submit this data in the database.

Expert panel approved these changes.

O. Granke also gave a demonstration of the tools to investigate the data in the FutMon/ICP Forests database (web GIS application). The panel also discussed about the data requests that are not always clear, or are incomplete in the way that it is hard to see what is requested. In these cases countries are requested to just send a mail to PCC if the request has come from within the programme, but if it comes outside the programme PCC can't usually help in these cases and countries are advised to contact the party asking the data directly.

## **Day 2 (Tuesday 22<sup>nd</sup> March)**

12. ICP Forests manual update: Both foliage and litterfall manuals were updated in 2010 and accepted by the ICP Forests Task Force. The FutMon field protocol for „Nutrient budgets for ground vegetation“ should be converted to ICP Forests manual. The update will happen after the results from ground vegetation sampling are available and can be evaluated. The update will be done in cooperation with EP members.

Mrs. Anne Thimonier (Switzerland) expressed the need to record visual symptoms in the foliar samples harmonised way. They presented the current problems when using e.g. the methods used in the manual for crown condition. She presented the formats used in Switzerland for symptom recording. It was decided to put these formats in FFCC homepage from where it can be downloaded by other countries and they can use it and develop further with Swiss colleagues.

13. P. Rautio presented the current state of FutMon Action D2. Field work has been finalised in cases of ground vegetation sampling and sampling for more intensive foliar survey. Some laboratory work remains to be done. Litterfall and soil solution collection and analysis continues until the end of FutMon project.

Selected EP members (Endla Asi from Estonia and Liisa Ukonmaanaho from Finland) presented results from national monitoring activities in the field of foliar element concentration in different forests and litterfall mass variation during the year.

Peter Waldner (Switzerland) presented the plans to evaluate the relationships between critical load exceedances and foliar concentrations. This work is done under a contract of vTI and will be done in cooperation with EP foliage and litterfall.

O. Granke inquired if countries have more litterfall data than what is stored in the database. Especially data before 2002 is very weak in the database. It was decided to inquire countries if they have data that is not in the FutMon/ICP Forests database at the present. In case such data exist the database is opened for submission of such historical data.

15. The chairman closed the meeting

Expert Panel wants to warmly thank the organisers of the meeting, Endla Asi and her Estonian colleagues from Estonian Environment Information Centre!

Annex 1 (List of participants)

Annex 2 (Agenda of the meeting)

**Annex 1: Participants of compined 12th ICP Forests Expert Panel on Foliage and Litterfall and FutMon (Life+) Action D2 meeting, March 21 - 22 2011 in Tallinn, Estonia**

Country	Name	Company/Organization
1 BELGIUM	Arne Verstraeten	Research Institute for Nature and Forest (INBO)
2 CROATIA	Nenad Potočić	Croatian Forest Research Institute
3 CZECH REPUBLIC	Bohumir Lomsky	Forestry and Game Management Research Institute
4 ESTONIA	Mae Uri	Estonian Environmental Research Centre Ltd
5 FINLAND	Liisa Ukonmaanaho	Finnish Forest Research Institute/Metla
6 FINLAND	Pasi Rautio	Finnish Forest Research Institute
7 FINLAND	Päivi Merilä	Finnish Forest Research Institute
8 FRANCE	Manuel Nicolas	Office National des Forêts
9 GERMANY	Christina Broesike	Johann Heinrich von Thuenen Institute
10 GERMANY	Hans-Peter Dietrich	Bavarian State Institute of Forestry
11 GERMANY	Oliver Granke	PCC of ICP Forests/ vTI
12 HUNGARY	Miklós Manninger	Forest Research Institute
13 ITALY	Bruno De Cinti	National Council Research
14 LATVIA	Andis Bardulis	Latvia State forest research institute "Silava"
15 LATVIA	Arta Bardule	Latvia State forest research institute "Silava"
16 NORWAY	Volkmar Timmermann	Norwegian Forest and Landscape Institute
17 POLAND	Anna Kowalska	Forest Research Institute / Instytut Badawczy Lesnictwa
18 ROMANIA	Marius Teodosiu	Forest Rsearch and Management Institute ICAS
19 RUSSIA	Maria Orlova	Centre for Forest Ecology and Productivity RAS
20 SLOVAKIA	Slavka Tothova	National Forest Centre
21 SLOVAKIA	Tibor Priwitzer	National Forest Centre
22 SLOVENIA	Daniel Žlindra	Slovenian Forestry Institute
23 SLOVENIA	Primož Simončič	Slovenian Forestry Institute
24 SPAIN	Ana De La Cruz	INIA
25 SWITZERLAND	Anne Thimonier	Swiss Federal Institute for Forest, Snow and Landscape Research WSL
26 SWITZERLAND	Peter Waldner	WSL, Swiss Federal Institute for Forest, Snow and Landscape Research
27 TURKEY	Rabia Gunhan	EGE FORESTRY RESEARCH INSTITUTE
28 TURKEY	Seyfettin Kinis	WESTERN BLACK SEA REGION FOREST RESEARCH INSTITUTE
29 TURKIYE	Mehmet Sayman	Ministry of Environment and Forest

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	<b>Country</b>	<b>Name</b>	<b>Company/Organization</b>
30	ESTONIA	Endla Asi	Environment Information Centre
31	ESTONIA	Kalle Karoles	Environment Information Centre
32	ESTONIA	Heino Õunap	Environment Information Centre
33	ESTONIA	Eve Kaur	Environment Information Centre
34	ESTONIA	Vladislav Apuhtin	Environment Information Centre
35	ESTONIA	Ülle Napa	Environment Information Centre
36	ESTONIA	Mati Valgepea	Environment Information Centre



**EC Life+ project "Further Development and Implementation of an EU-Level Forest Monitoring System" (FutMon) and UN/ECE ICP FORESTS**  
Meriton Grand Conference & Spa Hotel, Paldiski mnt.4. 10149 Tallinn, Estonia

**Combined meeting of ICP Forests Expert Panel on Foliage and Litterfall and FutMon Action D2 (Life+)**  
21-22 March 2011, Tallinn, Estonia

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## AGENDA

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**Monday 21<sup>st</sup> of March 2011: Combined meeting of ICP Forests Expert Panel on Foliage and Litterfall and FutMon Action D2 (Life+)**

11.00-12.00 - Arrival, coffee and registration

12.00- 14.00

- Opening, welcome and organisational items by organizers and EP chairs
- Organisational issues: selecting new co-chair for litterfall (Rautio)
- Litterfall issues: definition of litterfall year in reporting etc. (Rautio & new litterfall co-chair)

14.00-14.20 Coffee break

- Ring-test results (Fürst)
- Discussion: quality issues in the future (Fürst)
- Data use and publication policy (Rautio)

*Evening programme:*

*City tour & social event 18:00-*



## **Tuesday 22<sup>nd</sup> March**

9.00-10.30

- Data use continues: database and tools to investigate the data (Granke)
- News from PCC and PCG (Granke)

10.30-10.50 Coffee break

- Manual update:
  - FutMon field protocol as new part in ICP Forests manual (Rautio & Fürst)
  - Methods in recording visual symptoms in foliar samples (Rautio & Fürst)

13.00-14.00 *Lunch break*

14.00-16.00

- FutMon Action D2-issues (Rautio)

16.00-16.20 Coffee break

16.20-18.00

- Reports & results from EP members
- Closing of the meeting