



Report on FSC added value for biodiversity

**Deliverable 2.2 [Improving FSC's understanding of FSC
value for biodiversity conservation]**

Lauri Moisander
LUONTOA CONSULTING

CONTENTS

1. PURPOSE AND BACKGROUND	3
1.1. SCOPE OF THE DELIVERABLE.....	3
1.2. BACKGROUND INFORMATION	3
2. SYNOPSIS OF THE REPORT	4
2.1. OUTLINE OF THE ACTIONS TAKEN	4
2.2. CONCLUSIONS AND SUMMARY OF FINDINGS	4
3. MOST RELEVANT DATA SOURCES FOR FSC	6
4. RECOMMENDATIONS FOR FSC	7
4.1. ENSURE ACCESS TO AND CONTINUED USE OF SAME TYPE OF DATA	7
4.2. NEW INVENTORY AND MODELLING SYSTEMS ARE NEEDED AND IN DEVELOPMENT	7
4.3. CH DATA SUPPLEMENTATION AND VALIDATION	7
4.4. USE OF PROXY DATA SHOULD BE LIMITED	7
4.5. NOVEL DATA PRODUCTION FOR THE PURPOSES OF NATURE VALUE INVENTORIES.....	8
ANNEX 1 – SUMMARY TABLE OF FSC ADDED VALUE	9

1. Purpose and background

1.1. Scope of the deliverable

The report provides an overview of the differences between FSC and Finnish legislation as well as forest industry practices and highlights the perceived added value of FSC certification in relation to enhancing and protecting biodiversity in certified forests. The report is accompanied by a summary table (Annex 1), that highlights the NFSS criterion/indicator that go above legal requirements and entail additional measures as compared with industry practices. The annex provides a description of the added value, potential impacts to be identified and source of potential data to run comparisons.

The report covers the third deliverable (D2.2) of the service agreement.

1.2. Background information

The report and the annexed summary of FSC added value as compared with relevant legislation and industry practices is based on the Finnish NFSS P&C V4-0 (published in 2011), as outlined in the proposal for services.

2. Synopsis of the report

This section of the report outlines the actions taken to compile the report, as well as the synopsis of findings and conclusions of the work undertaken by the consultant.

2.1. Outline of the actions taken

Luontoa conducted a review of the relevant NFSS requirements offering benefits for biodiversity enhancement and conservation in certified forests. The review was followed with a comparison of those requirements with (1) relevant legislation and (2) industry practices. In cases where the requirements offered additional value as compared with the aforementioned, these were included into the Annex 1 of this report.

Legislation reviewed for the purposes of this report:

- Forest Act
- Nature Conservation Act
- Water Act
- Habitats Directive

Information related to industry practices stems from the prior rounds of interviews conducted with the Finnish forest industry companies and their monitoring activities, as well as the accumulated general knowledge of Luontoa related to how the Finnish forest industry operates.

2.2. Conclusions and summary of findings

FSC carries an impact, but the impact is not quantified

It is easy to highlight the potential and likely positive impact of FSC certification requirements onto the state of biodiversity in Finnish forests. The approach thus far has been that FSC requirements have been followed, but no outcomes surveyed.

A rules-based approach produces conformance or non-conformance. The CHs (or any other entity) have not taken up on possibilities to begin quantifying the positive outcomes and impacts of FSC certification.

Concrete data allowing the detection of impacts largely missing and not likely to emerge without CHs becoming active in surveying nature inventories and data production

As the prior report on monitoring (D1.1) pointed out, very little nature value or biodiversity specific data is being compiled by Finnish CHs. Forest inventory data on offer is considered best-in-class, and the Finnish forest related data production has been effectively harnessed into focusing on allowing access to accurate and timely information to ensure optimal harvest and forest management operations.

When focus is almost solely on production, the data is geared towards servicing this aspiration.

There are upcoming tools available that will allow efficient ways to monitor environmental performance

The forest industry will be able to use new tools in the near future to better keep tabs on its environmental performance on harvest sites and produce additional data on e.g., deadwood, retention elements and qualitative aspects related to natural values present at individual stands and sites of operation.

Many of the upcoming tools are in currently development, and may be available in the near future. These include combining drone+LiDAR+satellite imagery, deep learning and modelling of deadwood, semi-automated deadwood and retention tree mapping as part of harvest operations.

Albeit lack of data is evident, some outcomes and impacts may be monitored with existing data sources

There are a number of positive outcomes and impacts related to biodiversity that may be monitored and attributed to FSC certification.

Annex 1 already points out some of the potential impacts to be monitored based on the data available. Deliverables 2.1 and 2.3 outline the applicable data sources and data analysis plan that will be geared towards producing an analysis that yields an impact monitoring framework that is replicable in the future.

3. Most relevant data sources for FSC

The below table outlines the data owners in Finland of relevant data repositories available to FSC and the type of data made available by these organizations. Some of the repositories require authorized access, whilst some of them operate with an open access premise.

Owner	Role and focus in terms of data	Description of the type of data
Finnish Forest Centre (<i>Metsäkeskus</i>)	Finnish Forest Centre is an organization that plays a key role in the administration and development of forestry in Finland. They are responsible for various forestry-related tasks, including the provision of forest data.	<ul style="list-style-type: none"> ▪ Forest inventory data ▪ Forest resources ▪ Forest management plans ▪ Various geospatial datasets
Finnish Biodiversity Information Facility (<i>Lajitietokeskus</i>)	Finnish Biodiversity Information Facility (FinBIF) is a national node of the Global Biodiversity Information Facility (GBIF) and plays a crucial role in aggregating and disseminating biodiversity data in Finland. While FinBIF primarily focuses on biodiversity information, including species occurrences and distributions, and it is used as a primary source of species data in forestry in Finland.	<ul style="list-style-type: none"> ▪ Species occurrence data <ul style="list-style-type: none"> ○ Algae, birds, algae, fungi, lichens, mammals, insects, etc.
National Land Survey (<i>Maanmittauslaitos</i>)	The Finnish National Land Survey typically offers geospatial data related to forests through its geographic information systems (GIS) and data services.	<ul style="list-style-type: none"> ▪ Topographic maps ▪ Water bodies ▪ Conservation areas

Note: For any analyses to be conducted specifically for FSC certified forests, polygon data is necessary to be obtained from CHs. Cadastral data is a bare minimum, and additional compartment level data and especially management objectives for specific compartments should be obtained as part of the data package from CHs as well to conduct a meaningful analysis.

4. Recommendations for FSC

As may be reduced from the report on monitoring (deliverable 1.1), the Finnish forest industry companies are not very active in producing data on environmental performance, biodiversity impacts or administering inventories relating to species or habitats.

There are several ongoing projects that aim to improve the ability of the Finnish industry, landowners, financial institutions, and others to measure and quantify their impacts, understand the outcomes of their management decisions and be able to report on those.

The below recommendations relate to the ability of FSC to access and use data to run analyses, adopt mechanisms that could improve the ability to produce more accurate data that is unattainable from CHs or from other sources directly, as well as to improve the system's monitoring requirements that could provide access to more accurate and better suited data to run future analyses on biodiversity impacts attributable to FSC.

4.1. Ensure access to and continued use of same type of data

Firstly, there are many different sources of data that should be considered when conducting an analysis of impacts on forest biodiversity. Many of the relevant data repositories require authorization, and justification for the use of the data.

For future analyses to run smoothly, a process for accessing and utilizing the same data repositories and types of data should be developed.

4.2. New inventory and modelling systems are needed and in development

FSC should reach out to relevant research consortiums and projects where novel analysis and modelling methodologies are being developed with an aim to produce new and improved nature and biodiversity value specific data and inventories (e.g., IBC-Carbon).

4.3. CH data supplementation and validation

CH data outputs are limited, and if not posed as a requirement, likely obsolete in many instances. Supplementing CH data with public data might be necessary if data is hard to obtain. Even if data outputs from CHs are abundant, validation of the data might become necessary, and use of reference or proxy data to validate the findings is advised.

4.4. Use of proxy data should be limited

Some metrics currently used by the CHs rely on proxy data and aggregated findings. Surveying tens or hundreds of thousands of hectares of forests is often impossible, and the use of proxy data is warranted. However, the use of proxy data should be very limited, especially when the object of monitoring is something that could easily be monitored as part of the forest management

operations (e.g., retention elements, deadwood or other element specifically addressed in the NFSS as a 'retention or set-aside element').

4.5. Novel data production for the purposes of nature value inventories

FSC should pursue the uptake of novel data production methodologies and suggest the use of methodologies and systems to CHs that could improve the surveying and inventorying of nature values.

Annex 1 – Summary table of FSC added value on biodiversity

Annex 1 provides an overview of the NFSS requirements that require additional measures or clarify the intent of relevant legislation or go beyond the industry practice.

NFSS references			Comparison with legislation/industry practice		Possibilities to demonstrate impacts and sources of data			Categorization of impacts (binary, non-qualitative visualization of impacts)							
Validity of requirement	Indicator / sub-indicator	Requirement text	Industry practise / Legislative requirements	Description of main differences	Potential impact to be detected based on conforming with the requirement?	Data source	Data availability for comparison	Maintenance of continuous forest cover	Improved forest structure (diversity, age, diameter of trees)	Increased deadwood volume	Maintenance/conservation of valuable habitats	Conservation of species	Maintenance and improvement of resources for species	Increased set-aside areas (conservation), improved connectivity and	Avoiding disturbances to breeding and nesting
All / Large / Small	P.C.I.S	[Text]	[Qualitative]	[Descriptive]	[Suggestions]	[Applicable sources]	Open / Restricted [Descriptive]	y/n	y/n	y/n	y/n	y/n	y/n	y/n	y/n

The objective of the Annex is to provide an overview of where FSC forest management certification is having its most significant impacts as compared with legislative requirements and industry practices. The Annex is provided as a separate excel document that outlines the NFSS requirements that add additional requirements or additional value to biodiversity as compared with Finnish legal requirements and/or industry practices.

FSC added value to biodiversity as compared with applicable Finnish legislation (comparison based on Finnish NFSS from 2011 : P&C V4-0)

Valid for which type of forest owner		Finnish NFSS (P&C V4-0)	Industry practise / Legislative requirements	Description of main differences	Maintenance of continuous forest cover	Diversified forest structure / composition	Increased deadwood volume	Conservation of valuable habitats	Conservation of species	Maintenance of resources for species	Increased set-aside areas / connectivity	Avoiding disturbances to breeding and nesting
Indicator												
All	5.5.3	In forest management, the forest owner shall consider the following aspects of game management: a) During forest operations, the forest owner preserves wetlands important for game animals and paludified depressions with their shelter trees. b) In conifer-dominated forests, the forest owner retains tree species important for game animals (juniper, aspen, alder, rowan and goat willow). c) Regarding mires where drainage has not increased tree growth and ditch cleaning and supplementary ditching will not be economically feasible, the forest owner preserves them as mire habitats for game animals.	No applicable legal requirements and no industry-wide practices for non-certified operations that require similar actions.	The requirement imposes a practise that focuses on the preservation of small sized environmentally important areas that are specifically offering habitats and shelter for game animals. Such requirements are absent from legislation.				+	+	+		

Large	6.2.8	<p>The forest owner (> 10,000 ha) shall use prescribed burning to maintain habitats of species dependent on forest fires. The minimum total area of prescribed burnings performed annually shall be 3% of the regeneration felling area of suitable sites (MT and poorer sites) during a 5-year period. The purpose is to produce a minimum average of 20 fire-damaged stems (DBH > 20 cm in Southern Finland, DBH > 10 cm in Northern Finland) per hectare in the burnt area.</p>	<p>No applicable legal requirements and no industry-wide practices for non-certified operations that require similar actions.</p>	<p>Hugely important requirement in FSC. Prescribed burning is very important for the occurrence of a large number of RTE species. Lack of burnt habitats in Finland is a result of efficient forest management, dense network of roads and fire prevention activities.</p> <p>There are no legal requirements, and no industry practices outside of FSC that would require the use of prescribed burning.</p>		+		+		+
Large	6.3.1	<p>Dead trees (DBH > 10 cm) shall be retained during forest operations, totalling a minimum of 20 trees/ha when available in the area. Decaying broadleaved trees are always retained. Dead standing trees may be felled if they endanger the safety of forest workers or people roaming in the forest. Forest management operations shall be planned in a way to minimise damage to dead stemwood.</p>	<p>No applicable legal requirements for non-certified operations.</p>	<p>Volume and quality of deadwood is one of the most prominent issues in nature loss in Finnish productive forests. FSC adds significant requirements going above industry practices in this regard.</p> <p>Note: Forest Damages Prevention Act actually requires the removal of fresh coniferous deadwood from sites where fresh deadwood has emerged in abundance to minimize further insect driven forest damages.</p>		+	+		+	

Small	6.3.1	<p>Dead trees (DBH > 10 cm) shall be retained during forest operations, totalling a minimum of 20 trees/ha when available in the area. Dead standing trees may be felled if they endanger the safety of forest workers or people roaming in the forest. A minimum of 20 decaying broadleaved trees per hectare are retained, if present. Forest management operations shall be planned in a way to minimise damage to dead stemwood.</p>	<p>No applicable legal requirements for non-certified operations.</p>	<p>Volume and quality of deadwood is one of the most prominent issues in nature loss in Finnish productive forests. FSC adds significant requirements going above industry practices in this regard.</p> <p>Note: Forest Damages Prevention Act actually requires the removal of fresh coniferous deadwood from sites where fresh deadwood has emerged in abundance to minimize further insect driven forest damages.</p>		+	+			+		
All	6.3.2.1	<p>On a regeneration felling compartment, the forest owner shall permanently retain a minimum average of ten large-diameter (DBH > 20 cm in Southern Finland, DBH > 15 cm in Northern Finland), living trees of native species per hectare. Retention trees may be concentrated at the planned logging site level, especially when listed valuable trees occur as a group. These retention trees may include trees which are listed in sub-indicator 6.3.2.2 and meet the diameter requirement of this subindicator.</p>	<p>No applicable legal requirements for non-certified operations.</p>	<p>Industry practise is to retain equal quantity of living retention trees at harvest sites. However, the significant difference emerges that FSC requires larger diameter trees to be retained. Additionally, FSC requires deadwood retention, and overall the quality of retention trees is superior to industry practise (PEFC as the baseline).</p>			+			+		

All	6.3.4.1	<p>The forest owner shall ensure a sufficient proportion of broadleaved trees in conifer-dominated forests as follows: Thinning:</p> <p>a) In thinning, the proportion of broadleaves is not reduced below 10% of the number of stems of thinning-sized trees.</p> <p>b) If the proportion of broadleaves before thinning is less than 10% of the number of stems, the broadleaves are retained, except for those that clearly disturb the growth of coniferous trees.</p>	<p>No applicable legal requirements and no industry-wide practices for non-certified operations that require similar actions.</p>	<p>FSC sets a requirement that significantly improves the industry practise on diversifying forest structure and introducing mixed species stands across the board.</p>		+						
All	6.3.4.2	<p>The forest owner shall ensure a sufficient proportion of broadleaved trees in conifer-dominated forests as follows: Tending of seedling stands:</p> <p>a) In tending of seedling stands, broadleaves are retained to make up a minimum of 10% of the number of stems.</p> <p>b) If the proportion of broadleaves is less than 10% of the number of stems before tending of seedlingstands, the broadleaves are retained, except for those that clearly disturb the growth of coniferous trees.</p>	<p>No applicable legal requirements and no industry-wide practices for non-certified operations that require similar actions.</p>	<p>FSC sets a requirement that significantly improves the industry practise on diversifying forest structure and introducing mixed species stands across the board.</p>		+						

All	6.3.5	<p>The forest owner (> 20 ha) shall delineate special sites, i.e. sites of special significance to the diversity of the forest ecosystem or for diversifying the forest structure. Combined with the sites listed in Indicators 6.4.1 and 6.4.2, special sites shall cover a minimum of 10% of the certified forest land</p>	<p>No applicable legal requirements for non-certified operations.</p>	<p>The 10% threshold (6.3.5+6.4.3) greatly improve a systematic approach within the industry in incorporating areas within each MU with special environmental objective. Indicator 6.3.5 requires stands to be managed with a prescribed environmental objective.</p> <p>Note: P&C V4-0 NFSS in Finland leaves conformity with this indicator to be very subjectively defined, and there is a very large spectrum of different environmental objectives accepted to conform with this requirement.</p>	+	+	+	+	+			
-----	-------	---	---	--	---	---	---	---	---	--	--	--

All	6.3.5.1	<p>Special sites may also include forests for which a site-specific, diverging environmental objective with supporting measures is set, such as:</p> <ul style="list-style-type: none"> a) part of the forests grown with an uneven-aged structure or permanent cover, i.e. continuously with a minimum of 50 trees more than 20 cm in diameter per hectare, or b) sites regenerated with fellings with a maximum size of 0.5 ha, or c) sites allowed to generate more than 10 m³/ha of deadwood, or d) forests permanently dominated by broadleaved trees, managed in a manner that maintains biodiversity based on broadleaved forests e) buffer zones of water courses (6.5.1) f) herb-rich forests with representative vegetation (6.4.3) g) the parts of high-altitude forests managed with special fellings (6.3.12) h) the parts of recreation areas managed with special fellings (5.5.5) i) sites treated with prescribed burning (6.2.7) 	No applicable legal requirements for non-certified operations.	<p>Although the requirement is thought to positively contribute to diversifying forest structure, require the use of 'alternate' harvest techniques and apply an environmental objective driven management regime in certain stands, the requirement lacks concise outcomes and thresholds. The list of options provided under sub-indicator 6.3.5.1 provide an array of options that are not limited to just this list.</p> <p>Note: (e) water course buffer zones are most commonly calculated under indicator 6.4.3.</p>	+	+	+	+		+		
Large	6.3.11	<p>The forest owner (> 1,000 ha) shall manage high-altitude forests, more than 300 m above sea level on northern and eastern slopes and more than 330 m above sea level on southern and western slopes, cautiously and preserving the landscape pronouncedly. Fellings shall be carried out mainly as thinnings, release fellings, special fellings that maintain forest cover as well as openings with a maximum size of 0.5 ha</p>	No applicable legal requirements for non-certified operations.	<p>The requirement requires the application of continuous cover forestry in high-altitude forests, increasing the share of continuous cover forestry in certified stands.</p>	+	+						

All	6.4.1.1	<p>The forest owner shall leave defined valuable habitats and certain sites of special importance for species protection outside forest operations. Treatments supporting protection objectives are permitted on them. These sites include: Statutory sites:</p> <ul style="list-style-type: none"> a) Habitats of special importance referred to in the Forest Act, section 10 b) Protected habitat types referred to in the Nature Conservation Act, section 293 c) Trees hosting large birds of prey referred to in the Nature Conservation Act, section 39 d) Habitats of species under strict protection referred to in the Nature Conservation Act, section 473 e) Breeding sites and resting places of species referred to in the Nature Conservation Act, section 49, and listed in Annex IV (a) of the Habitats Directive³ f) Small waters meeting the criteria of the Water Act, sections 15 a and 17 a 	<p>Forest Act Nature Conservation Act Water Act Habitats Directive</p>	<p>The requirements enforces various legal requirements and strictly requires the sites specified to be left outside of the forest operations as set-aside areas.</p> <p>Note: by default the habitats and listed sites are protected by various laws.</p>									
					+	+	+	+	+	+	+	+	+

swamps with natural and
near-natural hydrological conditions⁷
o) Natural or near-natural low-productive and non-productive lands.

All	6.4.3	<p>The forest owner (> 20 ha) shall preserve a minimum of 5% of the certified area's forest land to secure biological diversity. All forest land permanently excluded from forest operations to implement the Indicators of this Standard (e.g. 6.2.2, 6.4.1, 6.5.1 and 6.5.7) may be calculated in the protected proportion.</p> <p>6.4.3.1 The sites shall be selected among those with significant biodiversity values.</p> <p>6.4.3.2 The sites to be preserved shall be permanent.</p>	<p>No applicable legal requirements or industry practises for non-certified operations.</p>	<p>FSC imposes a requirement that automatically increases the set-aside areas in certified forests. Coupled with existing conservation areas, this requirement can improve connectivity of conservation areas in a forest landscape, target RTE specie occurrence vitality and improve the diversification of forest structure at a landscape level.</p>	+	+	+	+		+	+	
All	6.4.4	<p>Herb-rich forests with representative vegetation, other than sites listed in Indicator 6.4.1, shall be managed so as to secure the preservation of the demanding and diverse species of herb-rich forest.</p>	<p>No applicable legal requirements or industry practises for non-certified operations.</p>	<p>FSC expands the Forest Act on management of herb-rich forests with an objective of maintaining and preserving the demanding and diverse species of such stands.</p>		+		+	+	+		
All	6.4.5	<p>The forest owner shall ensure that forest management operations, including ditching or construction of forest roads, will not damage existing protected areas, Natura 2000 areas or habitats listed in Indicator 6.4.1.</p>	<p>Nature Conservation Act</p>	<p>The requirement enforces the NCA and clarifies that no damage may be inflicted on Natura areas, but it also introduces additional sites not currently covered by the NCA or any other applicable legislation.</p>				+				

All	6.5.1	The forest owner shall leave a buffer zone determined by topography and soil type adjacent to water courses (including seashores) and small waters. The minimum width of the buffer zone shall be: a) 10 m on all ponds and lakes b) 15 m on brooks, rivers and seashores c) 30 m on flads and gloe lakes	No applicable legal requirements for non-certified operations.	No legal requirements. Industry practise relies on PEFC requirements. PEFC sets buffer zones, but trees may still be harvested from the buffer zones. FSC requires by default an untouched buffer zone to be established. This has a direct water quality impact, but a subsidiary impact is that the water course buffer zones are often biodiverse rich areas and may have a function of maintaining connectivity of old growth forests across landscapes.	+	+		+		+	+	
Large	6.5.5	During ditch cleaning and supplementary ditching, the forest owner shall restore drained mires classified as critically endangered (CR), if appropriate for nature conservation.	No applicable legal requirements for non-certified operations.	The requirement enforces an industry practise of restoring poorly productive forest areas, and focuses the efforts on critically endangered mires.				+		+		
All	6.5.9	When performing clear and seed tree fellings, first-time ditching, ditch cleaning and supplementary ditching as well as site preparation, the forest owner shall retain: a) small, paludified depressions inside heath forest compartments with natural hydrological conditions, clearly distinguishable by their vegetation and trees b) paludified transitional zones of mires with natural hydrological conditions, clearly distinguishable by their vegetation	No applicable legal requirements for non-certified operations.	The requirement imposes a practise that focuses on the preservation of small sized environmentally important areas.				+		+	+	

Large	7.2.2	The forest owner shall check annually the authorities' data on valuable habitats (listed in Indicator 6.4.1), occurrences of threatened species (6.2.1) and ancient monuments valuable in terms of cultural history (6.2.7), and update them in the management plan.	No applicable legal requirements for non-certified operations.	Requires actively keeping tabs with authorities data and occurrence points of valuable sites. Legislation requires the preservation of values, but through FSC, the notification of authorities leads to changes in the forest management plan				+	+	+		
Small	7.2.2	The forest owner shall record the data received from authorities on valuable habitats (listed in Indicator 6.4.1), occurrences of threatened species (6.2.1) and ancient monuments valuable in terms of cultural history (6.2.7)	No applicable legal requirements for non-certified operations.	Reactive, but additional to what the legislation requires. Legislation requires the preservation of values, but through FSC, the notification of authorities leads to changes in the forest management plan				+	+	+		
Large	9.1.2	The forest owner shall consider and survey high conservation value areas when making a management plan, and record them in it.	No applicable legal requirements for non-certified operations.	FSC specifies in more detail what are high conservation values, expands the area and requires delineation of those areas.	+			+		+		
Small	9.1.2	The forest owner shall assess high conservation value areas in the forest management area and record them in the management plan.	No applicable legal requirements for non-certified operations.	Legislation poses mostly reactive restrictions, but FSC requires a proactive survey to be conducted and a delineation in the FMP if values are detected.	+			+		+		



LUONTOA
consulting