



Arlinger John
Anders Rowell

07 February 2024

Minutes StanForD

2024-02-07

Place:	Uppsala/Teams, 2024-02-07, 09:00-15:00 CET
Participants:	John Arlinger, Secretary Johan J. Möller, Chairman Anders Rowell, Skogforsk <u>Attending through Teams:</u> Aapo Koskela, Logset Antti Korkiakoski, John Deere Asko Leivonmäki, Exertus Andreas Barth, CGI Bobby Szwajkowski, Tigercat Etienne Pilon, FPInnovation Fredrik Tjernberg, Komatsu Henrik Persson, Logmax Jaakko Mäkinen, Technion Jean-Philippe Gaudreau, FPInnovation Jeremy Gibson, forestPHD Jonas Thorsson, Dasa Jonas Gustafsson, Sveaskog Juha Korhonen, Technion Lars Henriksson, Biometria Lars-Erik Andersson, Dasa Louis-Vincent Gagne, FPInnovation Timo Melkas, Metsäteho Nicklas Nygård, Logset Asko Poikela, Metsäteho Janne Pursiainen, Ponsse Tapio Räsänen, Metsäteho Martin Whillans, Skogforsk

Decision summary

Decided to do the following schema updates:

- **Reporting butt-offs (short logs)**, meeting agreed on implementing a new element MINRegistrationLength. However the meeting decided to let the secretary differentiate the proposal based on butt logs and other cuts until the next meeting (described in minutes below).
- **EmbeddedGeoRefMap**, decided to make the element optional

Conclusions from discussions:

- **Emission reporting**, can be done without adding an emission report to the standard, user could manipulate the existing mom-file either with software directly in the machine or in the server. Issue postponed until the next meeting, Skogforsk and Metsäteho will have an **extra meeting to discuss this further**.
- **RelativeLimitationMatrix**, postponed until next meeting.
- **Registering stems with “sub-stems” (forks) in hpr**. It could probably be done with the existing stemcode. Postponed until the next meeting, Skogforsk and Metsäteho will have an **extra meeting to discuss this further**.
- **Multi-tree control data**. The meeting did not object to the basic data structures. However, it was decided to let the secretary create a proposal for including this information in an hqc-file rather than the hpr-file. A new hqc proposal has been added to the minutes below.
- **Tree species of unclassified products**. This is no schema issue before version 5.0, but the meeting decided to recommend that unclassified products are reported per SpeciesGroup. Schema changes are postponed. It is primarily an implementation issue.
- **ProductPresentationOrder when updating a pin**. No significant problems were found as long as this does not apply to the presentation order of species groups. Decided to postpone to the next meeting in order to analyse if it is relevant also for other parameters such as e.g. DeliveryPresentationOrder.
- **Zacco bark function in Canada**, there is a demand for StanForD2010 version 4.0. The limitation on the number of species can be a problem. It is not uncommon to have up to 15 species. There might be a partial solution in the Lithuanian bark function exemption. Skogforsk and

FPIInnovation will have a separate meeting to discuss how to continue this work.

- **Bark function 4.0.** Might be problematic when generating version 3 hpr based on spi according to 4.0. The meeting decided to let the secretary analyze this issue further.

Action list:

- Recommend that unclassified products are reported per SpeciesGroup.
- Strongly recommend that the diameter vector is adjusted if a short log is completely excluded from the hpr.

§1 Opening of meeting and agenda

Chairman Johan J Möller opened the meeting.

The agenda was accepted.

§2 Presentation of participants

Presentation of meeting participants.

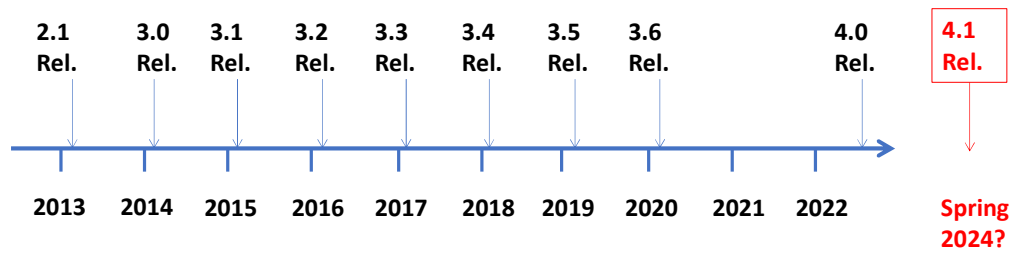
§3 Information about decisions and discussions at previous meetings

Main decisions and conclusions at last meeting (2023-11-23):

- It was decided that the following two new enumerations are added to schema version 4.1: "PPP RTK Fix" and "PPP RTK Float".
- It was decided that the data type DegreeType is changed from nonNegativeInteger to nonNegativeDecimal with version 4.1.
- It was decided to make FelledStemCoordinates repeatable to make it possible to register both BaseMachine and Attachment center when stems are laid down on the ground.
- It was decided to publish the forest regeneration production schema (rpr) at the web site (www.skogforsk.se/stanford) as PreRelease version 4.1. It was also decided to postpone the final decision until some manufacturer has done a test implementations of the PreRelease version of the new schema for ForestRegeneration. The secretary will communicate the updated proposal with the known manufacturers of planting and site preparation equipment (Risutec, Plantma, Bracke and M-Planter).
- It was suggested with the minutes to recommend that the enumeration value "None" is registered in attribute "barkFunctionCategory" in cases when converting bark parameters from version 4 to version 2 and 3.

§4 Future frequency of StanForD updates

The figure below illustrates the timeline for publishing all versions since 2.1.



The secretary stated that it is probably time to do an update to 4.1. during 2024 as we now have some significant updates proposed such as coding of features in the `ogi` and the new log positions and IDs in the `fpr`-file. The conclusion was therefore that we will probably have additional meetings in June and/or August to publish a pre-release version of 4.1.

From a data user perspective the most important improvements with version 4 are:

- New positioning data (e.g. log positions)
- Modern geographical instruction
- Better and more flexible bark functions

§5 Reporting of issues related to version 4.0

No new errors or bugs to report on.

§6 Proposals for next version 4.1

No issues presented/discussed. All discussiong and decisions are under item 7.

§7 Items for discussion

EMISSION REPORTING

Background

Fuel costs for logging have increased in recent years. As energy efficiency reporting evolves, routines are needed to monitor fuel consumption and emission developments transparently, uniformly, representatively and at a sufficiently individual level (support for emission-efficient choices).

There are initiatives from EU whereby relevant reporting of CO₂ emissions will become mandatory.

It is therefore proposed to make it possible to report fuel consumption parallel with production data. The reporting of fuel consumption should be activated by a machine setting and the fuel consumption should be reported per harvesting object.

Fuel consumption value should be registered as it is received from Engine Control Unit with the unit in litres. Considering CO2 emission reporting an additional unit could be also CO2 in kilograms.

It is also suggested that the need to report fuel type including product name of fuel and/or share of renewable fuel is analyzed. The share of renewable fuels has to be taken into account in emission reporting.

A wish is that machine manufacturers would add fuel consumption in Extension part of files for testing and forest company reporting system development purposes. The aim is to move on in the development sooner than waiting for the support to StanForD versions 4.0 or 4.1. It would probably be good to look at a more advanced and permanent solution for the future based on a separate fuel and emission reporting StanForD 2010 file.

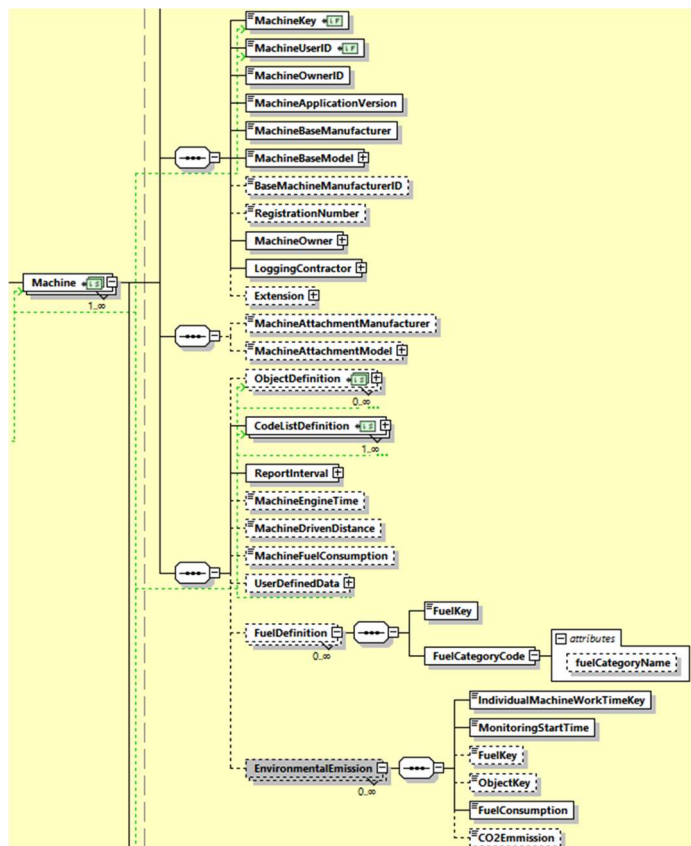
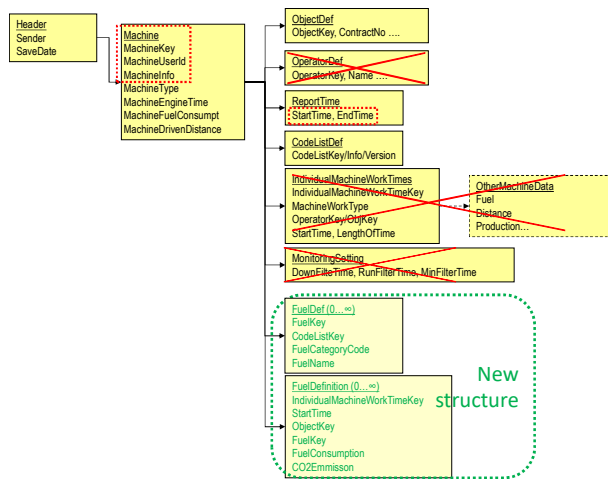
There was a long discussion at the previous meeting regarding whether it is suitable to include this information in the normal production files as this is often viewed as sensitive information from a contractor perspective. The alternative solution of reporting a new separate message and/or reporting a calculated CO2 mass was discussed. Another important issue is how to register the type of fuel and the share of renewable fuel. The main question is who actually has knowledge about this and how to format the fuel type. Fuel type may change depending on the season and the price. On top of this the fuel tank may include a mix from different fuel deliveries.

Proposal

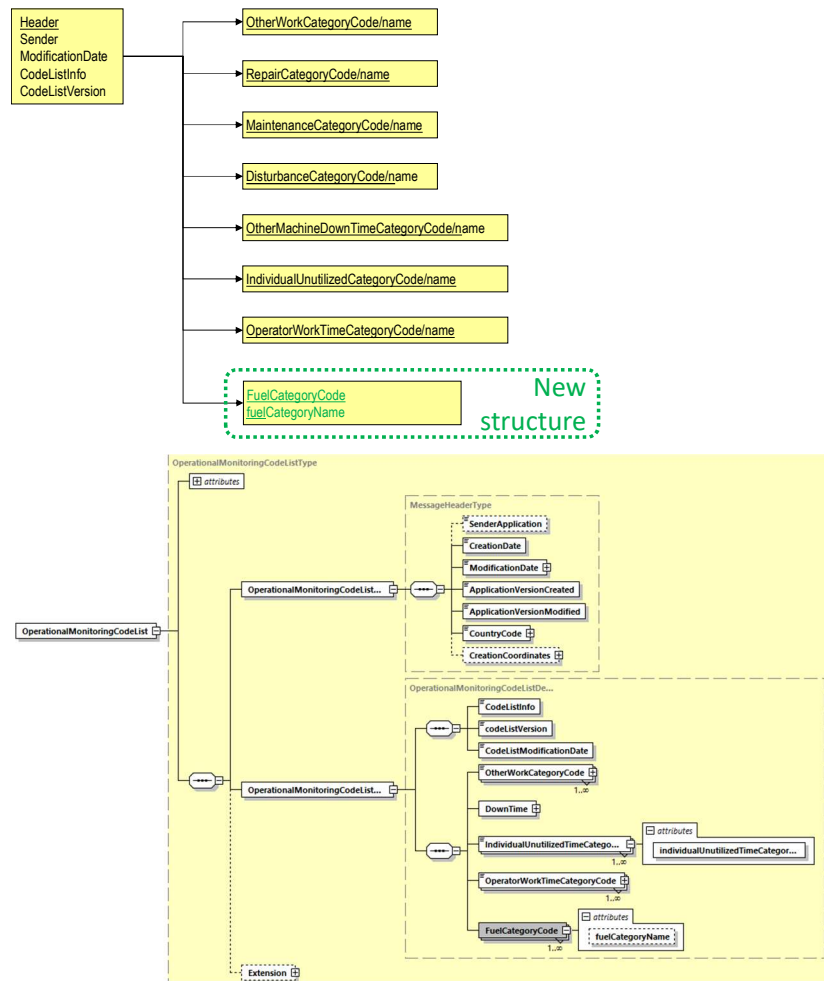
The issue of having a separate fuel report per object from forest machines was discussed further at a separate meeting between Metsäteho and Skogforsk (2024-12-14).

It was agreed that the proposal should include a new type of message called environmental emission monitoring (eem).

It is thus suggested that a new message for emission reporting is created as illustrated below. This new schema is based on the mom-schema and could be reported parallel with the mom. The fuel consumption registered in element FuelConsumption should be the total sum of all values registered in element OtherMachineData.FuelConsumption in a mom-file reported for the same object and time interval. This means that an emission file could be generated outside the machine in cases where a mom-file is available with the expectation that the FuelDefinition does not exist in older schema versions and thus would have to be added “manually”.



The operational monitoring code list must also be updated in order to be able to define relevant types of fuel as illustrated below.



Discussion

How would you manage a mix of fuel, say HVO one week and then a switch to normal diesel. What would you report this fuel mix?

This is further complicated when considering how the fuel consumption is calculated by different engine manufacturers. They themselves have several different engine manufacturers. How would we standardise this? Can we trust the ecu?

The great variation in diesel consumption on single machines, could partially be explained by how it is measured in the machine. It is partially a measure of time a fuel valve is open, but the physical valve changes diameter over time, expands. It would have to be calibrated.

Another problem with adding a measure of fuel consumption is that we tend to think its accurate and true just because there are many decimals. In a big picture, what fuel you put in might be better and easier to measure compared to what the engine thinks it has used.

It was pointed out that before something like this is put into the standard, we have to be sure of what it is that the EU actually demands so we won't have to redo this standardisation work later on.

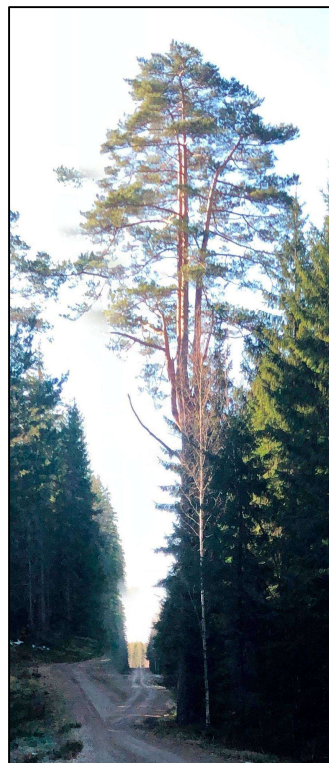
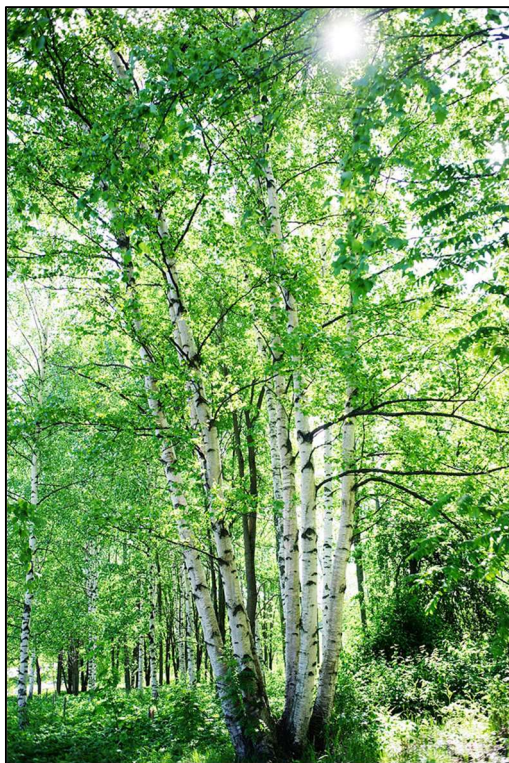
The emission report is more of a user problem than a problem that should be solved within the Standard. It can be solved on the server side. We need to test either way, if it is to be part of the standard or if it's a user solution.

This is more of an organizational question than a technical one. Will the contractors want to share this? Is the data accurate enough to be used in something official?

Decided to **postponed** until the next meeting. The secretary will make his conversion tool filtering the mom-fil into a emission report available. Metsäteho and Skogforsk will have an **extra meeting**.

REGISTERING STEMS WITH “SUB-STEMS” (FORKS) IN HPR

A question has been raised in Finland how stems with two or more “sub-stems” (stems with one or several forks) should be measured and saved in the hpr so that these stems could be managed in a consistent way.



An argument for the improvement is that count of harvested trees can be calculated incorrectly for objects including a lot of stems with forks depending on the harvester's registration method and operator's working style

Currently a stem with a fork may be registered in different ways depending on controller and how the operator processes the stems:

- Logs of sub-stems included in the main stem
- Sub-stems and their logs as separate single stems

Development of automatic calculation of thinning results and harvesting quality monitoring systems based on hpr-data require that the count of harvested stems is correct. This is especially important in first thinnings.

This also influences the calculation of average tree size (volume or DBH) and therefore on the price of harvesting. This means that a correct stem count is also a cost-calculation and harvesting work compensation matter.

The objective with the proposal is that if a sub-stem is saved as a separate stem, it should have a reference to the main stem. However, it is a practical challenge that stems with sub-stems can be processed in so many ways.

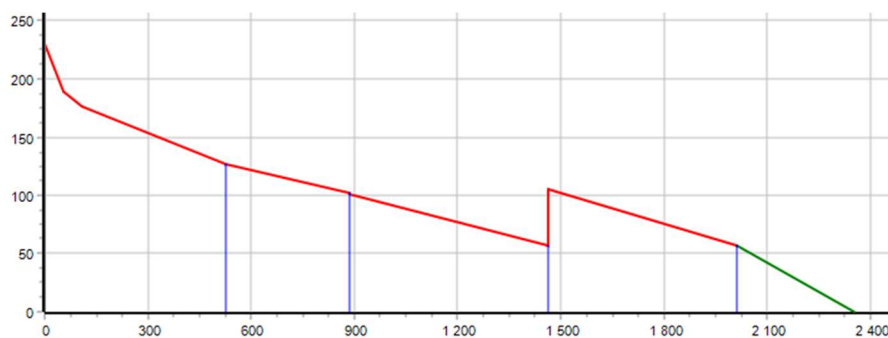
How these stems are registered also affects the post-processing of the diameter vector.

Example all forks registered as one single stem

Stem count, basal area and mean volume of removed trees are correct when used for

- follow-up of thinnings
- calculating the remaining stock
- updating forest resource data based on hpr-data
- using harvester data as ground truth for remote sensing

Processing time per stem gets higher which has an effect on productivity key figures and pricing of logging.

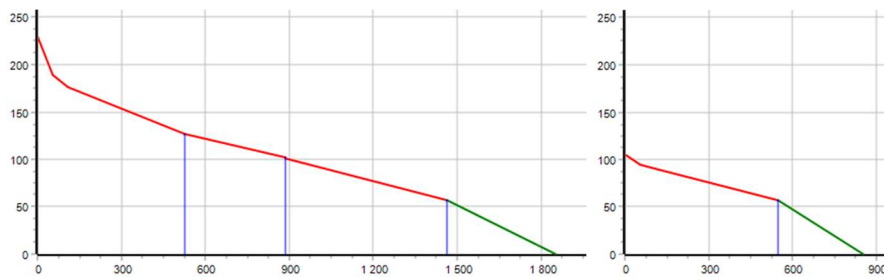
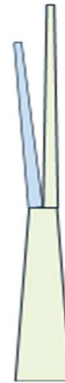


Example forked stem registered as separate stems

Stem count, basal area and mean volume of removed trees may be misleading when used for

- follow-up of thinnings
- calculating the remaining stock
- updating forest resource data based on operations
- using harvester data for ground truth of remote sensing

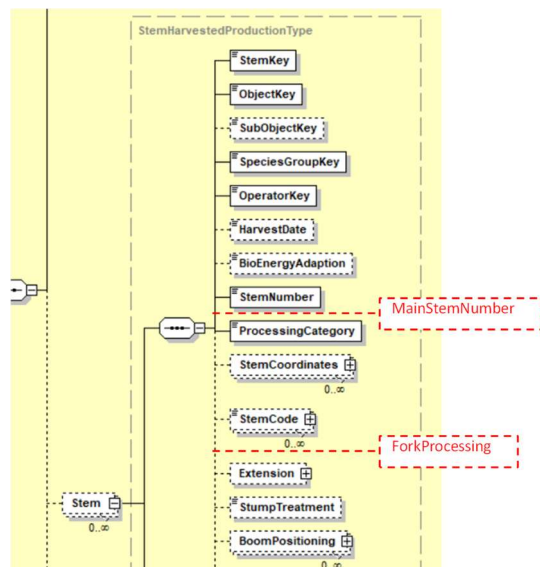
Processing time per stem corresponds better to actual logging conditions when used for productivity key figures and setting the price of logging.



Possible solutions

A possible proposal is that in case when a fork of the stem is registered as a separate stem it would either have a reference to the main stem e.g. a new optional element MainStemNumber or at least be marked as a fork with a new Boolean type element (e.g. ForkProcessing).

In cases when forks are registered to the main stem the stem could be marked with a new Boolean type element (e.g. ForkProcessing).



Comments from secretary

This is the present definition of the diameter vector:

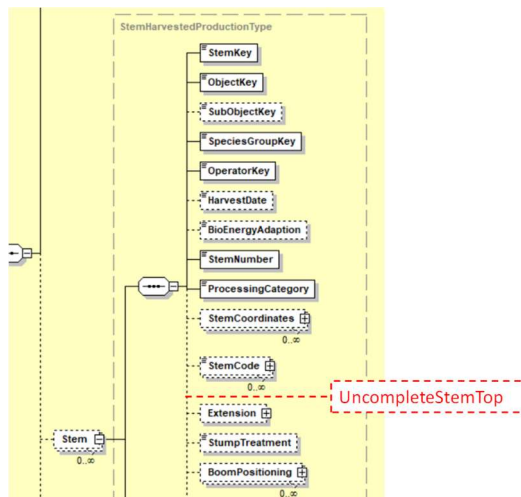
Diameter at heights defined by diameterPosition attribute (representing the actual point of measuring). Refers to filtered values on bark. Same values as used in bucking optimisation and

calculations of solid volumes. No systematic error when comparing log volumes and volume calculations based on DiamValue. Diameter values must start at height 0 cm from stump. Extrapolated diameters at butt end are to be registered. Height of first and last measured diameter registered in DiameterMeasuredStart and DiameterMeasuredLast

This definition does not specifically forbid the registration of “sub stems” together with the “main stem”.

An idea suggested at the previous meeting was to modify ProcessingCategory with a new enumeration value “ForkProcessing”. However, the secretary is quite hesitant since the ProcessingCategory is presently used for a separate type of information.

A suggestion could be to add a new boolean element called UncompleteStemTop. The basic rule that “no increasing diameters should be registered” means that a double stem should normally be registered as two stems where the second has value “true” in element UncompleteStemTop.



Another way forward, as suggested by Henrik Persson, could be to update the rule regarding filtered diameters so that it is clearly specified that “*filtered diameters means that increasing diameters should never be registered within a log but that the diameters of the next log may be increasing, typically in case of processing a so called stem fork*”. This would make it possible for the operator to choose to register several sub-stems as one single stem.

Discussion

The possibility of using stemcodes rather than adding an additional element was discussed.

It was decided to postpone this issue until the next meeting. Skogforsk and Metsäteho will have an **extra meeting to discuss this further**.

REPORTING BUTT-OFFS (SHORT LOGS)

As there is only one control system where this issue may have a serious impact on the control measurement it is not deemed to be a very urgent issue for most of the control systems.

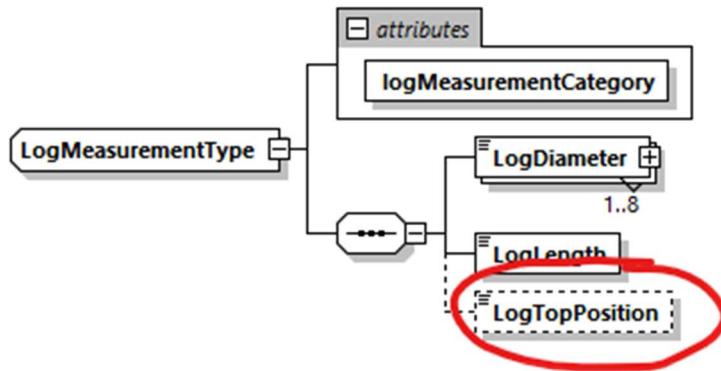
The meeting in April 2023 decided to let the secretary send out a questionnaire in order to prepare a proposal or recommendation for the next meeting.

Below is a compilation of the answers:

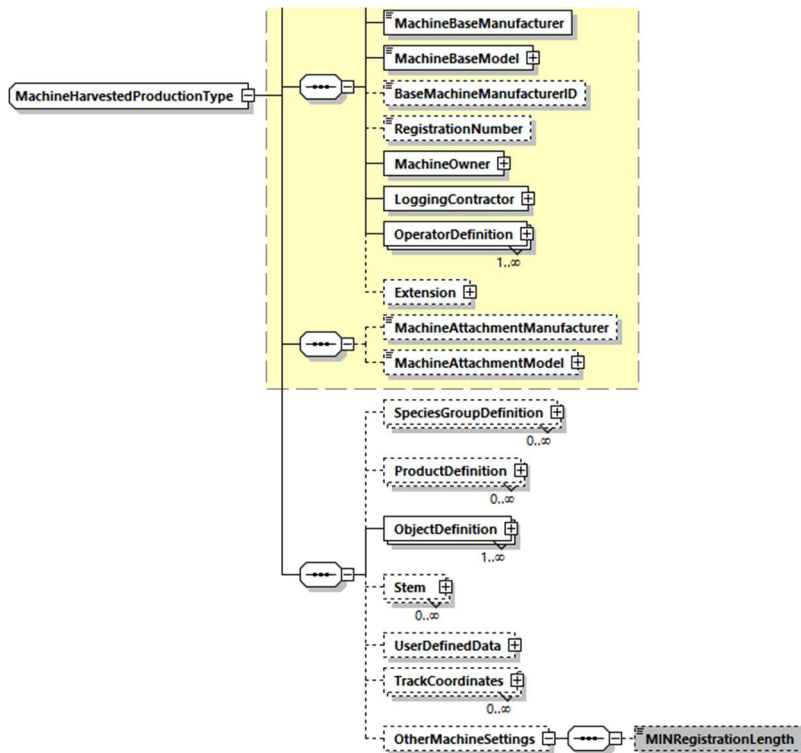
Question	X1	X2	X3	X4	X5
Is the diameter vector reduced (affected) in order to exclude the same length interval as covered by the discarded butt-offs or is the diameter vector unchanged in cases where butt-offs are discarded?	Yes	No	No	Yes	No
Is the length of discarded butt-offs settable in the machine?	Yes	Yes	No, fixed	No, fixed	No, fixed
• What are the maximum and minimum settable lengths?	0-100	0-150	10 cm	10 cm	>0 cm
• Default value for maximum length?		10 cm			
• Different default settings on different markets? (yes/no)	Varies	No	No	No	No
Are all butt-offs discarded independent of where they are cut within the stem? Discarded if butt-off is cut at the top of the stem.	No (only 1 st)	Yes	Yes	Yes	-
What are the consequences if a waste matrix with a minimum length of 20 cm (pin-file) is in use while the machine setting defines that all butt-offs shorter than 30 cm are to be excluded?					
• Are logs between 20 and 30 cm discarded or added to the waste matrix?	Discarded	Discarded	-	-	-
Possible/suitable to add a new element "LogEndPosition" to the hpr per log as it would make it possible to identify stems where short logs have been discarded?	No need	Yes	No	Perhaps but complex	Not needed
Possible/suitable to add a new element "MINRegistrationLength" to the hpr per machine as it would make it possible to identify which short logs are discarded?	Perhaps yes	Perhaps yes	Yes	Yes	Not needed

Possible standard updates to be discussed

Add optional element LogTopPosition in order to report the position of the physical top of the log. The position is defined as the distance from the first (0) value in the diameter vector. The element makes it possible to identify a stem where butt-offs has not been registered as unclassified logs.



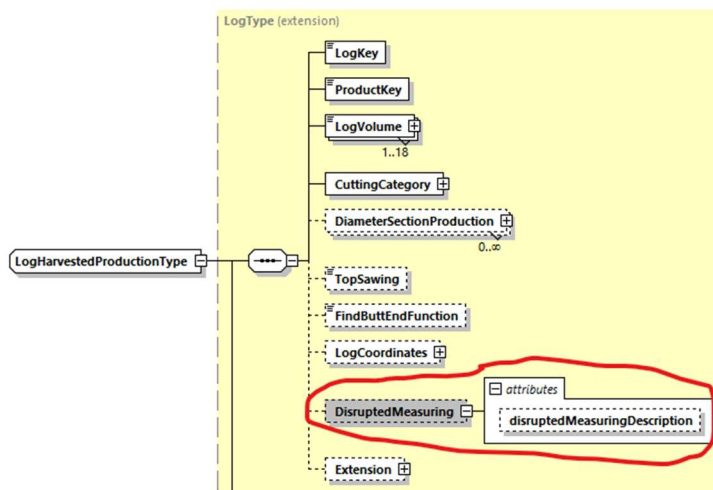
Add optional element MINRegistrationLength in order to make it possible to check which minimum length is in use. It will be used in order to keep track of what setting is in use. This element will not make it possible to tell whether a very short log has been cut without being registered or not.



It was suggested that we discuss the possibility of adding MINRegistrationLength in the hpr-schema. As LogStartPosition is more complex to implement it is suggested that this proposal is postponed indefinitely, it could be added as an extension if deemed relevant by the manufacturers.

We may also discuss to use the new element “DisruptedMeasuring” (decided 2023-04-26) whenever a butt-off has been discarded from the stem. The definition of this element is:

Name	Type	Unit	Description
Disrupted-Measuring	boolean	true/false	Disruptions in measuring of log that decreases the measuring accuracy in a significant way. Typically, value is true if length measuring wheel is not in constant contact with the stem. An example is if the head is completely opened during feeding of log due to significant defect such as stem fork. It may also indicate that a butt-off (short log) has been discarded and there is not registered in the hpr.
disrupted-Measuring-Description	String	Free text	Text describing reason for disrupted measuring. Free text set by the harvester controller.



Discussions and decisions

Why is there a need to discard anything in the first place? One important cause is when you have trees with thick branches and defects where a stem e.g. might be completely delimbed before you process the stem and a butt-off has to be done to “re-set” length measuring. The length of this butt-off has very low accuracy (might be a negative value) and it is thus logical not to register this short log. There are also some markets that require that a butt-off is not registered at all.

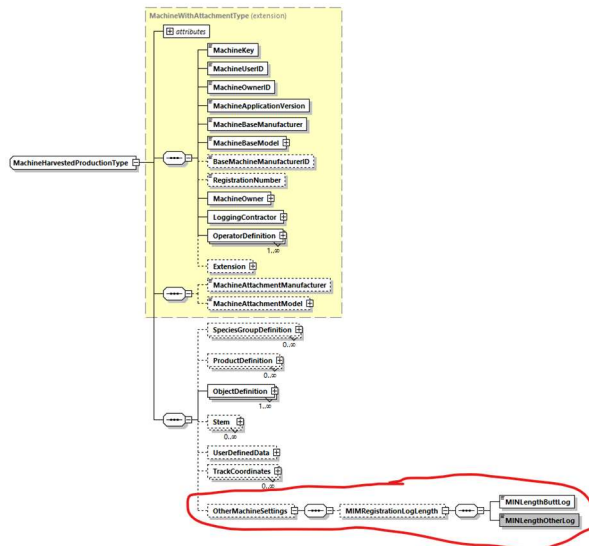
The meeting decided to implement a new element MINRegistrationLength but not to do any further work on element DisruptedMeasuring. However, the meeting

decided to let the secretary differentiate the proposal based on butt logs and other cuts until the next meeting.

The meeting also decided to strongly recommend that the diameter vector is adjusted if a short log is completely excluded.

Comments added after the meeting

This issue could be solved by adding two elements ButtLog and OtherLog under element MINRegistrationLength as illustrated below.



A possibility could also be to look at registering if a “length re-set cut” is done at the butt end of a log. This is probably a common reason for generating a butt-offs.

MULTI-TREE CONTROL DATA IN HPR

New structure MultiTreeControlData for registering control data for multi tree handling.

Martin Whillans presented (2023-11-23) results from the project to develop a method controlling and calibrating multi-tree handled stems as illustrated below.

Calibration of multi tree processing (MTP)



Method:

1. Multi tree handling – the first stem in every bunch is colour-marked
2. Every 20th MTP-bunch is selected by control system for control measurement. Stems released and register as MTF-stem in hpr.
3. Operator confirms real number of stems in bunch
4. Single tree processing of every stem in bunch. Coloured stem processed first.
5. STP-stems register in both hpr and hqc.

The tested procedure can be described as follows:

1. Operator accumulates several stems to be processed (MTP). First stem always color marked.
2. Bunch is randomly selected as a control bunch.
3. Bunch registered as MTF bunch in hpr.
4. The operator releases stem bunch on ground.
5. The operator processes the individual stems starting with the first stem (color marked) in the bunch.
6. The stems are also stored in an hqc in order to make it possible to identify the control stems.
7. Analysis and calibration based on comparison of MTF and STP stems registered in hpr.

A consequence of this project might be a proposal to add a new optional element ControlStemCategory to the hpr schema with one of the following enumeration values as this would make it possible to easily identify hpr stems selected for control:

- *Random SingleTree Control*
- *Operator SingleTree Control*
- *Random MultiTree Control*
- *Operator MultiTree Control*

The same stems are stored in the hpr both as MTF and STP in the test machines. This means a double registration where no felled stems will be found at the object since they are always processed. It is therefore suggested that a new structure for storing control data from the multi-tree-felling is added where it is also possible

for the operator to manually input how many that were actually felled (element NoOfStemsInBunchManual). It is also suggested that an element NoOfStemsInBunchMachine is added in order to register the number of felled stems in the bunch as estimated by the harvester.



Below is an example of data stored according to the suggested update where all stems are registered as SingleTreeProcessed stems:

StemKey	SpesGrp-Name	DBH	Ref-Diam	HarvestDate	m3	ControlStem-Category	DBH*	Spes*	Rel-Dia*	m3*	Bunch-stms* (operator)	Bunch-stms* (machine)
3804	BJÖRK	113	113	17/10 13:38:27	0,053							
3806	GRAN	77	75	17/10 13:39:08	0,017	Random MultiTreeCalibration	81	Gran	82	0.021	2	2
3807	GRAN	115	113	17/10 13:39:30	0,059	Random MultiTreeCalibration	81	Gran	82	0.021	2	2
3808	TALL	168	164	17/10 13:40:07	0,157							
3809	TALL	186	183	17/10 13:40:37	0,155	Random SingleTree Hqc**						

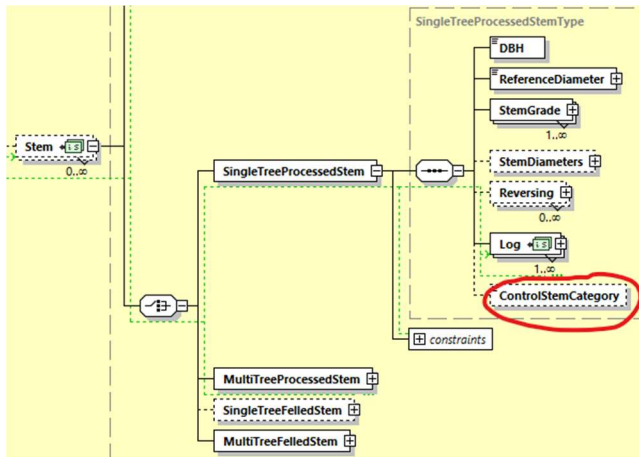
*Data from MTF registered under the new element MultiTreeControlData

**Data from this stem transferred to caliper for control measuring (only stems accepted for control measuring).

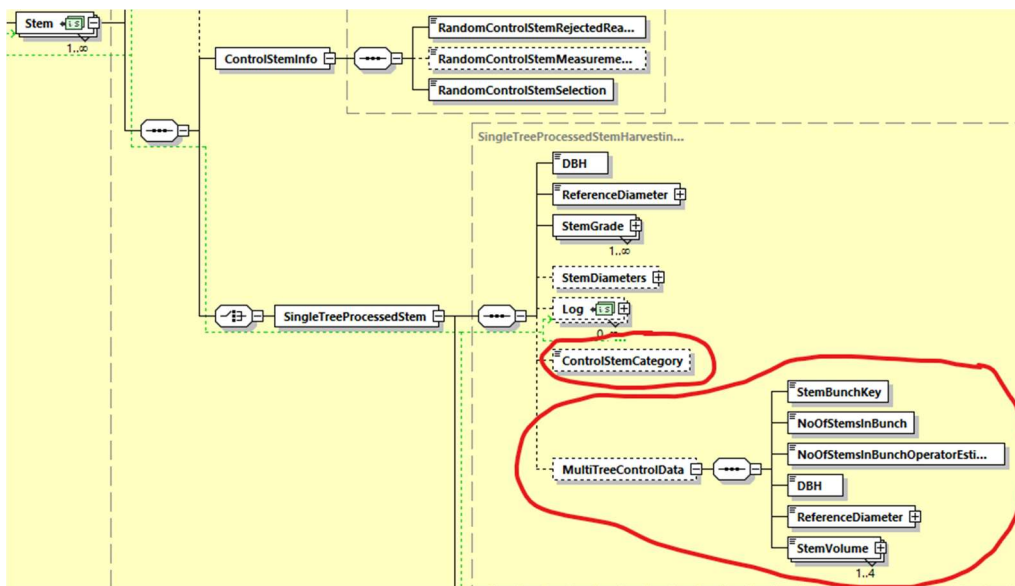
The meeting did not object to the basic data structures. It was decided to let the secretary create a proposal for including MultiTreeControlData in the Hqc but to keep the proposed ControlStemCategory in the hpr with enumerations “Random SingleTree Control”, “Manual SingleTree Control”, “Random MultiTree Control” and “Manual SingleTree Control”.

Comments added by secretary after meeting

Possible update to hpr illustrated below:



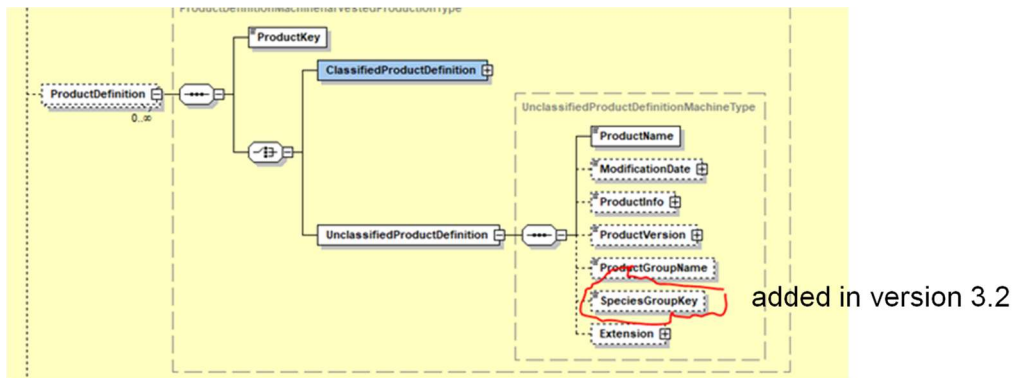
Possible update to hqc illustrated below:



Observe that an hqc with MultiTreeControlData would typically only include log measurements from the machine (M1). It is not intended to be sent to a caliper but directly used for control and possible calibration. It could therefore be described as an “M1-file” that is never used for M2 or M3 measurements.

TREE SPECIES OF UNCLASSIFIED PRODUCTS

It has been noted in Finland that volumes of unclassified logs are not always calculated correctly in the WoodForce system due to the fact that one single UnclassifiedProductDefinition is often reported for all SpeciesGroups. It was not possible to reference a SpeciesGroup per UnClassified product up until version 3.1. Element SpeciesGroupKey was added to the UnClassifiedProductDefintion with version 3.2. Observe that it is possible to calculate the volume per UnClassifiedProducts and SpeciesGroup using the SpeciesGroupKey that is mandatory for each Stem even if this is a somewhat more complex method.

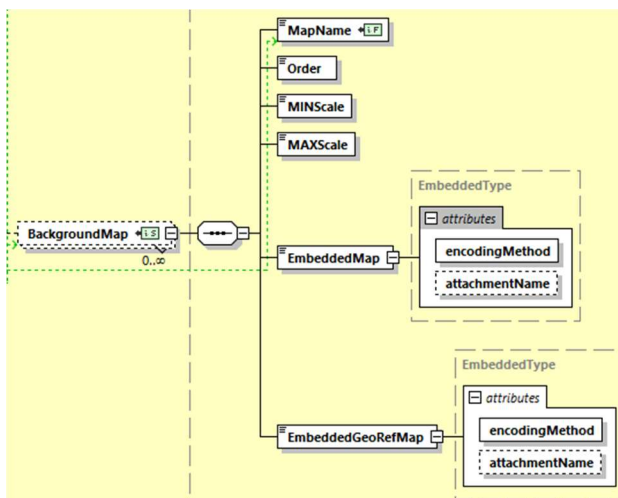


It was decided to recommend the use of one Unclassified product per species and that it would be an advantage to use the existing SpeciesGroupKey in the UnclassifiedProductDefinition. It was decided not to do any schema updates presently since making SpeciesGroupKey is not possible until version 5.0.

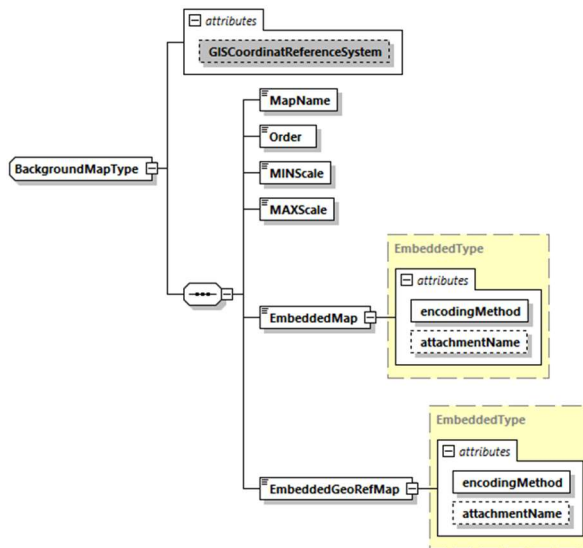
EMBEDDEDGEOREFMAP

Discussed at meeting 2023-04-23. By mistake not discussed at meeting 2024-11-23.

The positioning of a background map (e.g. jpg, tif) is given by a world file (e.g. jgw, tfw) that is enclosed in element EmbeddedGeoRefMap. However, these files normally do not include information about what geo-reference system is used.



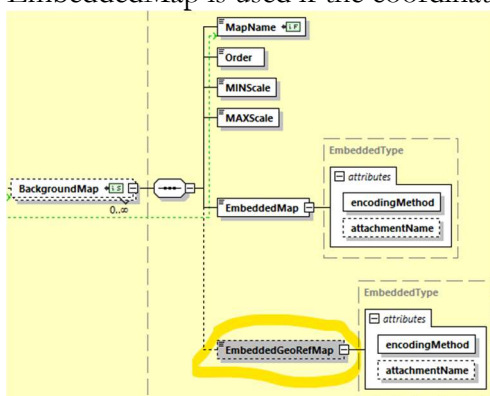
It was therefore earlier decided that we add a mandatory GISCoordRefSystem attribute also to the background maps (element BackgroundMap) in version 4.0 as illustrated below:



In order to handle this issue when testing ogi 4.0 the secretary added an extension to the ObjectDefinition as illustrated below:

ObjectDefinition	
<> ObjectUserID	s43f
<> ObjectName	Väsby 2018
<> ObjectModificationDate	2022-06-28T12:00:00.000+00:00
<> ForestCertification	Not known
Extension BackGroundMap GISCoordinateReferenceSystem EPSG:3006	
<> SubObject <SubObjectUserID> 24325432 <SubObjectName> Delskogen	
<> FeatureCollection (5)	
<> BackgroundMap (3)	
<> InformationToOperator	

Henrik Persson pointed out a problem with the present 4.0 structure since it requires that a world-file must be included in element EmbeddedGeoRefMap. This is a problem since there exists bitmap-files that include georeferences. This means that the EmbeddedGeoRefMap is not always needed. It was thus decided to make element EmbeddedGeoRefMap optional, which means that only EmbeddedMap is used if the coordinates are included inside the map.



RELATIVE LIMITATION MATRIX

The next step, as decided at the previous meeting, is running a practical test in a Ponsse harvester before deciding on a standard update. A test will be carried out later in the spring of 2024. It was decided to postpone the issue to next meeting.

The secretary has done a test of the relative limitation matrix using Skogforsk bucking simulator Aptan after the meeting. This implementation seems to work as expected with a slight decrease in value and saw log volume when the number of short saw logs is limited to e.g. 5%.

PRESENTATION ORDER WHEN UPDATING A PIN

Heikki Komulainen, Ponsse, 2024-01-03.

The standard does not make any difference in how instructions are versioned if presentation order is modified in the machine. I assume that a new version of instruction should be made if it is modified and also if presentation order is changed?

In some cases, if the operator modifies the presentation order by sorting list, it might cause the situation that we need to change presentation order of several instructions at same time. Do we need to make new versions of all products (new ProductKeys)?

Should we always obey the incoming instruction presentation order to overwrite presentation order modified in the machine? Or take new instructions in, but not to overwrite the presentation order as we do with the qualities, color marking and sawing window?

I think that it might be the best solution to make presentation-order a non-versioning element. That would be then a new rule for StanFord2010.

Do You have any good examples or rules how presentation order should behave or re-calculated when the list is modified in the measurement system?

Comments from secretary

From my point of view I do not see any problems in keeping the old presentation order, just like we handle grades and colours when importing a pin-file.

PresentationOrder is one of those messy concepts that looked simple enough when added to the standard early on but turned out to be quite complex and often of limited use. When sent from the forest company in a pin I view it as an indication of how the product could be sorted. The PresentationOrder is not too difficult to handle in case of SpeciesGroups which are static and quite few. However, in the case of products you often find that a big company may have more than a 100 pins in their database (e.g. Sveaskog) and they do not know exactly which combinations of products are used together so it is very difficult to set up the PresentationOrder elements in a good way.

Minutes from 2014-11-20 includes the following decision:

The meeting did agree to recommend that manufacturers implement a solution where ModificationDate is not to be updated in cases where ColorMatrix, CuttingWindow and Quality settings are changed in the harvester.

Later on we had the following text on the action list:

- It is recommended that all manufacturers make it possible to update a product (pin) during harvesting at a harvesting object and that the GUI for operators is simple when updating a product (e.g. keeping settings for grades and color matrix).

We could probably update this text to include also PresentationOrder. CuttingWindow is mentioned above but I suppose that this is something that many Swedish forest companies would object to.

A proposal could be to update rule 3.3:

R3.3	Key and ModificationDate MUST be updated when modifying a Definition in the machine, e.g. updating prices and length classes of a ProductDefinition.	ModificationDate not to be updated if ProductKey is updated only because SpecieGroupDefinition was modified and SpeciesGroupKey was updated. <u>Another exception to this rule is if Product- or DeliveryPresentationOrder is updated in the machine then no new Key and ModificationDate must be created.</u>
R3.8	It MUST be possible for operator to edit products and species groups during production if attribute modificationRestricted is false. ProductKey and SpeciesGroupKey MUST be updated if product or species group is modified.	<u>An exception to this rule is if Product- or DeliveryPresentationOrder is updated then no new Key must be created.</u>

Discussions and decisions

There are potential problems if you start reordering SpeciesGroups, as it is sometimes used for identifying tree species. This means that it is known that it would be a problem with SpeciesGroupPresentationOrder for Logmax.

No other participant raised any significant objections.

It was decided to postpone the issue to next meeting and to let the secretary analyse if there are other elements that could be included as exceptions from rule 3.3. For example ProductPresentationOrder and DeliveryPresentationOrder. No other relevant elements that would need this exception was found after the meeting.

ZACCO BARK FUNCTION IN CANADA (FPINNOVATION)

Etienne Pilon, FP Innovation, 2024-01-23

In the past few months, we observe that the VMF/Zacco bark function is somewhat limited, and this depends on the standard (2010 vs classic).

- The classic will only accept 3 characters for the A and B parameters.
- The 2010 limits the value to 500 for the A and B parameters.
- The 2010 won't take any negative values.
- The 2010 won't take any decimals.

If we are using the following bark function, you can see the problem we are facing, Balsam Poplar from Alberta: A= -13.36 B= 1055

Our other problem is regarding the number of species managed by different controllers.

- There are 32 different commercial tree species in Québec alone.
- It is frequent to see more than 12 species on a single site, we can do species group but there are some limitations.
- Canadian forests are mostly managed in a more natural fashion.

The number of species the operator can have is becoming a problem. They have up to 15 species. Wide differences in number of species. Why are the controllers limited to 6-8 species? They are currently forced to make less than ideal groups.

The question is: can we add more species to controller, the usual limitation is around 6 to 8?

We mainly use apt-files, and it is not a problem in Quebec. But in Alberta the bark function is a problem. With too many decimals and so on. The commonly used application for creating apt is Silvia.

For implementing StanForD2010 Canada will probably wait for version 4.0.

The definition of the old var113 type 1 is:

- *Bark parameters/ tree species (first parameter in 100ths of mm; second in 10ths er mille): 1...var112_t1/ 1...var111_t1*
Unit: 0.01 mm 0.1%%
Data type: integer

Observe that the classic standard allows for communicating decimal part:

In some cases, decimals are split between two variables, one for the integer part and one for the numerator (decimal places). The numerator part is assigned the variable number 1000 plus the variable number for the integer part. Only the three first decimals are registered (decimals/ 1000).

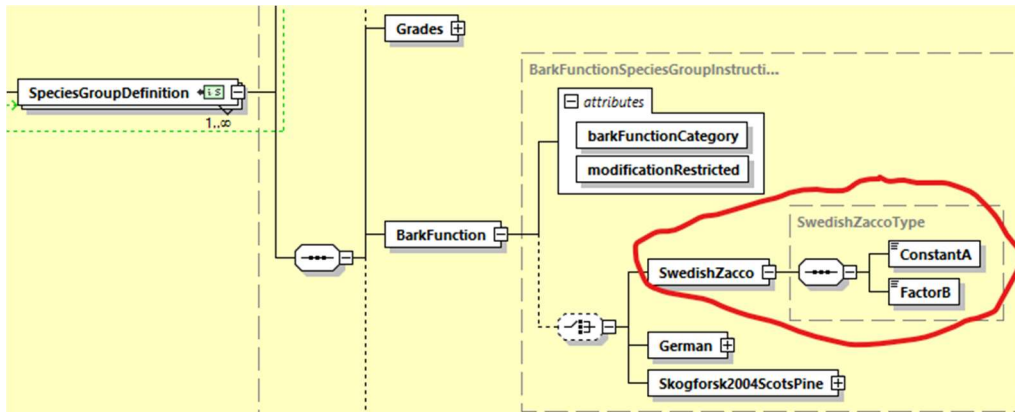
The classic standard allows for negative integers (e.g. var190).

The following parameter values could thus be registered correctly as illustrated below:

A= -13.36 B= 1055

113 1 -13 1055~1113 1 360 0~

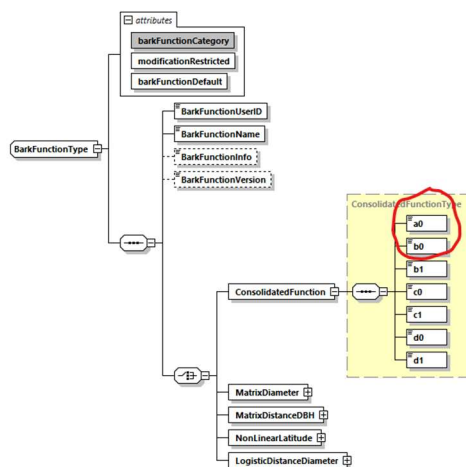
This is the present structure for registering parameters for the linear Zacco bark function- in spi and hpr (StanForD2010). Both ConstantA and FactorB have data type NonNegativeDecimal (no changes from 2.1 to 3.7).



The 4.0 version of standard includes the linear bark function inside the ConsolidatedFunction as illustrated below. All parameters in this function are based on the data type “decimal”, e.g. both a0 and b0. The double bark function is calculated using the following function

$$a_0 + b_0 \cdot D + b_1 \cdot D^2 + c_0 \cdot DBH + c_1 \cdot DBH^2 + (d_0 + d_1 \cdot DBH) \cdot \ln(H).$$

This means that negative values are valid for the linear functions (previously named as SwedishZacco).



The conclusion is that the classic standard and version 4 of StanForD2010 both supports negative values and higher precision. The issue here is whether any administrative applications or harvester controllers support negative values or var1113_t1?

Unfortunately it is not possible to do anything about negative values in version 2-3.

The standard does not have any limitation on the number of species in use simultaneously. This is a pure implementation issue.

Discussion and decision

Fredrik Tjernberg mentioned the possibility of using the Lithuanian bark function (LogisticTypeBarkModel). The possibility of using this will be checked by the secretary as well as whether it is supported by any manufacturers.

It was decided to let the secretary discuss this further with FPInnovation in order to analyze the present situation and to discuss this further with both developers of administrative softwares as well as machine manufacturers.

Comments after meeting

Observe that it is not known to what extent the LogisticTypeBarkFunction (Lithuanian) bark function has been implemented. It was added with version 3.4.

The LogisticTypeBarkFunction (Lithuanian) bark function was implemented with schema version 3.4. Below is the definition of this bark function:

$$\begin{aligned}a &= a3 / (1 + ((a3 / a1) - 1) * \exp(-a2 * H)) \\b &= b3 / (1 + ((b3 / b1) - 1) * \exp(-b2 * H)) \\DblBark &= a + b * D\end{aligned}$$

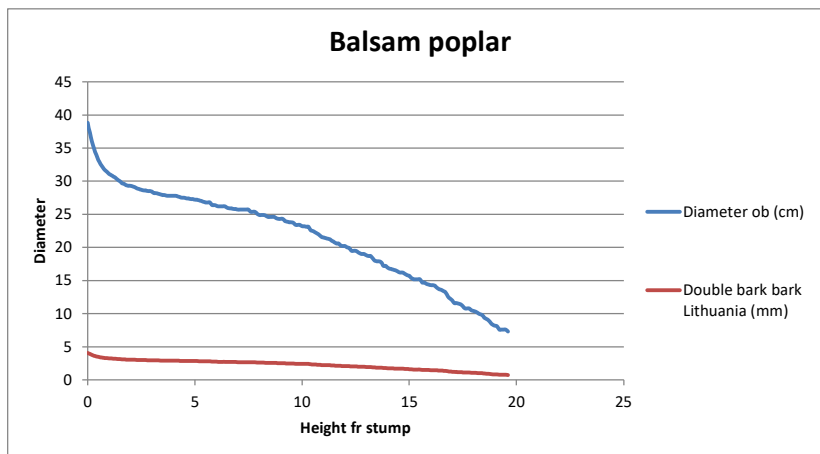
The following parameters are used for Norway spruce in Lithuania:

$$\begin{aligned}a1 &= 3,8631192 \\a2 &= 14,456982 \\a3 &= 3,2548644 \\b1 &= 0,4159701 \\b2 &= 4,3664951 \\b3 &= 0,3725121\end{aligned}$$

This function could probably be used for the balsam poplar function parameters described above ($dbl_bark = -0,01336 + 0,1055 * DiamOb$). The following parameters should give the same linear result:

$$\begin{aligned}a1 &= -0,01336 \\a2 &= 0 \\a3 &= 1 \\b1 &= 0,1055 \\b2 &= 0 \\b3 &= 1\end{aligned}$$

Figure below illustrates an example of the calculated bark thickness using LogisticTypeBarkFunction.



§8 StanForD2010 projects / implementations

The next test will be carried out in the spring of 2025. The main focus will be on version 4 but will not be a requirement in order to participate.

§9 Other issues

UPDATED MEMBERSHIP AGREEMENT

Johan Möller informed the meeting about the plan to have all members sign a formal agreement. This has been done for new members since the last 5 years.

A STORM CALLED “HANS” - HANDLING WINDTHROWS

The secretary informed the meeting about the fact that a number of Swedish companies decided to use a new set of SPceiesGroups in order to report individual windtrhows after a storm in August. These companies were all hesitant about using stemcodes for this purpose but right now Södra skogsägarna are looking at the possibility of using stemcodes for registering snow damaged trees.

Bark functions in 4.0

It was suggested with the previous minutes to recommend that the enumeration value “None” is registered in attribute “barkFunctionCategory” in cases when converting bark parameters from version 4 to version 2 and 3.

However, several participants noted that this might indicate that no bark function has been used at all and that m3sob and m3sub thus would be equal. The meeting decided to let the secretary analyse this issue further.

COMMENTS EFTER MEETING

The evolution of bark functions within StanForD is described below.

StanForD Classic (apt-file) hade the following bark functions:

- *Zacco*, linear function based on diameter ob (var113_t1), included 1988.
- *German* table, bark deduction based on diameret ob (var113_t2 and var113_t3), added to standard 1995
- *Skogforsk 2004*, *Scots pine*, added to standard 2004.

- *Skogforsk 2004, Norway spruce*, added to standard 2004.

The *GermanDistanceBased* function was added with StanForD2010, version 3.0.

The *LogisticTypeBarkFunction* (Lithuanian) bark function was added with StanForD2010, version 3.4.

Two new functions were also added with 4.0 in the form of a “*2nd degree polynomial*” and a “*Logarithmic*” function. Both of these are included in the Consolidated function. The ConsolidatedFunction also includes the old linear *Swedish Zacco* function and the *Skogforsk 2004, Norway spruce function*.

It can thus be noted that this issue has existed for a fairly long period of, e.g. if generating a 2.0 hpr based on a spi according to 3.4 (both *GermanDistanceBased* and *LogisticTypeBarkFunction* missing from 2.0).

The StanForD2010 versions up to 3.6 all requires attribut BarkFunctionCategory and element BarkFunction. One of the enumerations in BarkFunctionCategory is “*None*” which is used on markets where volumes and diameters under bark is not in use at all (e.g. Finland).

A solution could be to either use enumeration value “*None*” or to use a specific function such as the linear *Zacco* function with parameter values set to 0. The second alternative would indicate that a bark function has been used but is not supported.

§10 Next meetings

StanForD meeting 2024-04-17--18, Helsinki/Teams (12:00-14:00 EET)

By default, all financially contributing members will receive an Outlook invitation to all meetings in advance.

§11 End of meeting

The chairman Johan J Möller thanked everyone for attending the meeting.