Contract for work/Service contract

hereinafter referred to as “**Contract**”

between

State of Baden-Württemberg

represented by

The **Ministry of Food and Rural Affairs of Baden-Württemberg,**

Kernerplatz 10, 70182 Stuttgart,

Germany

represented by

the Director of the **Forstliche Versuchs- und Forschungsanstalt Baden-Württemberg**, an institution under public law of the State of Baden-Württemberg with no legal capacity,
Prof. Dr. Ulrich Schraml
- hereinafter referred to as the **“Client”**

and

Czech University of Life Sciences Prague Kamýcká 129, Prague 00 – Suchdol, Czech Republic

represented by

Ing. Jakub Kleindienst, Bursar

- hereinafter referred to as “**Contractor**” –

and

Landscape Research Institute (VUK)

Výzkumný ústav pro krajinu, v. v. i., Květnové náměstí 391, Průhonice 252 43, Česká republika

represented by

Director, Ing. Libor Hort

- hereinafter referred to as “**Data-holding institution**”

(collectively referred to as the "**Parties**" or “**Contracting parties**”)

Preamble

The project "Effect of rewilding in forests and agricultural lands on carbon sequestration and diversity" (WILDCARD) is funded by the European Climate, Infrastructure and Environment Executive Agency (CINEA) under the Horizon call HORIZON-CL5-2022-D1-02 (Project 101081177).

WILDCARD aims at quantifying the impact of rewilding abandoned agricultural land and managed forests (hereinafter: proforestation – cessation of forest management) on carbon sequestration and biodiversity conservation at European scale. Within the project, Workpackage 2 (WP2 - Carbon and biodiversity development when setting aside formerly managed forests – WP leader: Forstliche Versuchs- und Forschungsanstalt Baden-Württemberg, FVA-BW) aims to bring together, harmonise and analyse dendrometric and biodiversity data on unmanaged forests, which are relevant to model carbon sequestration and storage as well as species biodiversity.

As WILDCARD partners' sites are covering only part of the ecoregions and eco-gradients targeted by the project, WILDCARD WP2 needs to gather additional data from scientific Institutions external to the project.

In particular, the members involved in the European Forest Reserve Initiative (EuFoRIa) have been identified as valuable partners to help improve the coverage of the available dataset. EuFoRIa is a well-established network of organisations (www.euforia-project.org), together holding data on more than 500 sites in unmanaged and primary forests across 16 countries. The sites represent a wide range of time since abandonment in different forest types and cover various ecoregions and ecological gradients. On each of these sites, permanent plots (statistical sample plot inventory or single large plots (typically > 0.5 ha) are periodically surveyed for above-ground dendrometric data, often combined with data on vegetation and inventories of specific species groups.

This Contract regulates the exchange of pre-processed dendrometric data (and on selected sites Biodiversity data) on unmanaged forest sites from external partners to the WILDCARD project, such as EuFoRIa members.

1. SUBJECT-MATTER OF THE CONTRACT

1.1 By this Contract, the Contractor undertakes to perform the work at its own expense and risk for the Client, and the Client undertakes to take over the work and to pay the agreed price.

1.2 The Contractor delivers pre-processed dendrometric data of their unmanaged forest sites to the Data-holding institution.

1.3 The Contractor delivers biodiversity data from selected sites (a subset of the dendrometric data) to the Client.

1.4 The details of the work are specified in Attachments No. 1 (Detailed work description) to this contract, which forms an integral part of the contract.

1.5 By signing the contract the Contractor agrees to provide access to their pre-processed dendrometric data to the Client as well as to the Data-holding institution (as specified in Attachment No. 1) and authorizes the Client to elaborate those data to estimate, among all, carbon stocks in the different ecosystem pools at plot and/or site level and to publish aggregated data by site (for definition of site, please see Attachment No. 1) on a public repository/database.

1.6 By signing the contract the Contractor agrees to provide access to their pre-processed biodiversity data to the Client (as specified in Attachment No. 1) and authorizes the Client to elaborate those data and to publish aggregated data by site on a public repository/database.

2. PLACE AND TIMING OF PERFORMANCE

2.1 The pre-processed dendrometric data mentioned in article 1.2 cover the forest sites listed in Attachment No. 2. (List of forest sites) to this document

2.2 The pre-processed biodiversity data mentioned in article 1.3 cover a selection of the forest sites listed and highlighted in Attachment No. 2.

2.3 The Contractor shall always carry out the work in coordination with the Client and the WILDCARD partner holding the internal database - the Data-holding institution.

2.4 The schedule is sketched both here and in Attachment No. 1 and shall be bindingly agreed between Contractor and the Client in close cooperation with the Data-holding institution. *Pilot data* delivery (consisting of at least one site) shall be not later than four weeks after Contract signature. In any case the *final submission* of all data shall take place within three months after signature. Before approval, the Contractor guarantees their availability to provide all necessary cooperation for at least one month after final submission as well as during the entire four-month period (from Contract signing till final approval of data delivery). The final *approved work* is to be completed no later than by the fourth month after signature.

2.5 The date of completion of the work is defined by the data delivery approval issued by the Data-holding institution. Data delivery will be approved when complied with the Contract commitment, filling mandatory data requirements and delivered in the format and quality defined in Attachment No 1.

3. CONTRACTUAL PARTNERS

3.1 The contractual partners shall appoint qualified employees (contract participants) to carry out the cooperation in accordance with the requirements.

The Contracting parties shall each appoint a project leader/contract participant:

Client - FVA:

Name: xxxxx
Function: Researcher/Workpackage Leader
Phone: xxxxx
Email:

Contractor - CZU:

Name: xxxxx
Function: Head of Department of Forest Ecology
Phone: xxxxx
Email:

Data-holding institution - VUK:

Name: xxxxx
Function: Head of Department of Forest Ecology
Phone: xxxxx
Email:

The Parties involved in the Contract are responsible for the proper implementation of the cooperation.

3.2 The Parties involved are in regular contact according to Attachment No 1 to report on the progress of the data access and to clarify any questions that arise. The time of online meetings or discussions shall be determined by mutual agreement between the parties to the Contract.

3.3 The Contracting parties shall provide the resources required to carry out the collaboration.

4. PRICE AND PAYMENT CONDITIONS

4.1 The price for performing the work has been agreed as **€9,229.33**. This price includes VAT at the current rate.

4.2 The right to payment of the price for the work arises when the work is performed. This includes all expenses incurred in connection with the performance of the work (e.g. ancillary costs, expenses, commissioning and services of third parties). The work is performed when completed and handed over. The price for the work will be charged as a single payment after the proper handover of the work as a whole.

4.3 The proper handover of the work will be agreed by the Client/ Data-holding institution and the Contractor in a joint handover protocol that indicates any defects and incompleteness of the

work, its formal acceptance must be signed by Contracting parties. Upon the agreed handover of the work, the Contractor will issue the relevant invoice/tax document for the completed work no later than by 31.12.2025. This invoice/tax document will have a due date of 30 days after receipt.

4.4 If the work is accidentally destroyed before the work has been performed, the Contractor will lose the right to payment of the price for the work.

4.5 The Client is entitled not to pay the price for the work if the Contractor fails to do the work properly and on time, and/or to remove defects in the work within a reasonable period of time.

4.6 The work is defective if it does not comply with the specifications set out in Article I of the Contract.

4.7 The date of payment of a given invoice/tax document is deemed to be the date the invoiced amount is debited from the Client's account.

4.8 The Client has the right to return the invoice/tax document to the Contractor before its due date if it does not contain all the information required by binding legal regulations of this Contract, or if it contains incorrect or incomplete data (with missing details or incorrect data). A new due date of 30 days will start from the date of delivery of the corrected invoice to the Client.

5. RIGHTS AND OBLIGATIONS OF THE CONTRACTOR

5.1 The Contractor undertakes that the work will be free from any defects and that it will perform the work with due care within the agreed time.

5.2 The Contractor undertakes to perform the work independently, yet, is bound by the Client's instructions. The Contractor shall enter into valid and sufficient agreements with its employees and/or take all necessary measures to ensure that the work generated by the employees are transferred to the Contractor for the purpose of fulfilling its obligations under this Contract.

5.3 The Contractor is not entitled to perform the work through a third party (sub-contractor).

6. RIGHTS AND OBLIGATIONS OF THE CLIENT

6.1 The Client undertakes to take the properly performed work over and to pay the Contractor the agreed price for the work.

6.2 The Contractor shall grant the Client the right to use the data without restriction in terms of time and place. This right of use includes:

a. the right to edit, change, modify and evaluate the research results and to use them for WILDCARD project objectives, deliverables and milestones (Section 23 of the German Copyright Act)

b. the right of publication and distribution of aggregated data by experimental site on public repository/database (§ 12, 17 Copyright Act)

c. the exhibition right (§ 18 Copyright Act)

d. the right of performance and presentation (§ 19 Copyright Act)

e. the right of making available to the public aggregated data by experimental sites (§ 19a Copyright Act, in particular, in the form of Internet offers)

6.3 The Client as well as the Data-holding institution has the right to check the performance of the work. If it finds that the Contractor is in breach of its obligation, it may require that the Client ensures that the work is rectified and performed in a proper manner.

6.4 The Client is entitled not to accept the work if the work shows such serious defects or incompleteness that it cannot be used for its intended purpose.

6.5 The Client is entitled to appoint one of its employees, the Data-holding institution or a third party to communicate with the Contractor and to authorise them to exercise its rights under this Contract.

7. CONFIDENTIALITY

7.1 Each Party shall treat as confidential to third parties all information and items received from the other Party and marked as confidential (hereinafter referred to as "**Confidential Information**") for a period of two years after termination of or withdrawal from this Contract.

7.2 Oral information shall be treated as confidential only if it is marked as confidential at the time of communication and is subsequently summarised in writing, marked as confidential and communicated to the other Party within 30 days of communication.

7.3 The above confidentiality obligation shall not apply if and to the extent that the information and items concerned are

- are generally known, or
- have become generally known without the fault of the receiving party, or
- have been or will be lawfully obtained from a third party, or
- are already available to the receiving party, or
- have been or will be developed by the receiving party independently of the communication,

or

- are required to be disclosed by law or official/judicial order.

8. WARRANTY PERIOD, LIABILITY FOR DEFECTS AND CONTRACTUAL PENALTIES

8.1 The Contractor shall carry out the research work with the usual care and provides a guarantee that the work has been performed in accordance with the relevant professional procedures and methods.

8.2 Usefulness and accuracy of the work will be ensured by (1) following the data requirements as specified in Attachment No. 1, and (2) through actively collaborating with the Data-holding institution to approximate best results.

8.3 The Contractor undertakes to remedy any objections raised by the Client regarding defects or incompleteness in the work upon handover of the performed work without undue delay, but no later than 20 days from the handover date.

8.4 The Contractor shall only be liable for property damage and financial loss caused by intent and gross negligence.

8.5 In the event of a breach of material contractual obligations, the Contractor shall be liable for intent and negligence. In the event of simple negligence, liability shall be limited to foreseeable, contract-typical and direct damages. Essential contractual obligations are those obligations, which protect the legal positions of the Contracting parties which are material to the Contract, and which are to be granted to them in accordance with the content and purpose of the Contract. Furthermore, essential contractual obligations are those, whose compliance makes the proper execution of the Contract possible in the first place and on whose compliance the contractual partner could regularly rely.

8.6 The limitations/exclusions of liability do not apply to claims under the Product Liability Act, due to fraudulent conduct and due to injury to life, limb or health.

8.7 In the event of the Contractor's delay in the performance of the work or its part in accordance with the work program in paragraph 2.3 the Client is entitled to a contractual penalty of 0.05 % of the price for the work for each day of delay, which the Client is entitled to unilaterally deduct from the price for the work. The payment of the contractual penalty (or the deduction of the contractual penalty from the price for the work) is without prejudice to the right to claim damages. In the event of conceptual changes, in particular to the scope and nature of the tasks to be processed, the Contractor reserves the right, after consultation with the Client, to modify the offer price of the remuneration accordingly in line with the work involved.

8.8 In the event of the Client's delay in paying the invoice/tax document for the performed work, the Client must pay the Contractor a contractual penalty of 0.05% of the total amount due for each day of delay.

9. OWNERSHIP AND AUTHORSHIP

9.1 The Contractor remains the owner of the pre-processed dendrometric data. The Client and Data-holding institution will be granted access to the pre-processed data for the purposes of WILDCARD.

9.2 The Contractor remains the owner of the pre-processed biodiversity data. The Client will be granted access to the processed data for the purposes of WILDCARD.

9.3 Aggregated and processed data, i.e. on carbon trajectories and biodiversity implications, at site level will be owned by the Client and will be made publicly accessible through online data portals.

9.4 The Contractor has the possibility to become co-author of scientific publications, provided that they also actively contribute to the process of manuscript development including manuscript editing and manuscript revision before submission. It is up to the lead author of a manuscript to take decisions regarding additional co-authors responsibly and to make sure that all authors have agreed with its content prior to the submission of a manuscript.

9.5 After the lifetime of the WILDCARD project, the Contractor agrees that the pre-processed data will be managed by the Data-holding institution following the EuFoRIa data sharing principles.

9.6 The Client will ensure that any pre-processed biodiversity data provided by the Contractor will be deleted after the lifetime of WILDCARD. Aggregated biodiversity data at the site level, however, will be available open access.

10.LIABILITY FOR DAMAGE

10.1 The Parties undertake to make every effort to prevent damage and to minimise any damage incurred.

10.2 If the Contractor demonstrably breaches an obligation under the Contract, it must compensate the Client for the resulting damage.

10.3 If the Client breaches an obligation under the Contract, it must compensate the Contractor for the resulting damage.

11.EXTRAORDINARY TERMINATION OF CONTRACT

11.1 The Contract may only be terminated by either party for good cause by written notice with immediate effect.

11.2 If the Contract is terminated for good cause and the Contractor is not responsible for this cause, the Client undertakes to reimburse the Contractor for the services duly rendered up to the time of termination.

11.3 If the Client or Data-holding institution discovers, when inspecting the performance of the work, that the Contractor is in breach of its legal or contractual obligations or is not performing the work in a proper manner, and the Contractor fails to remedy this even within two weeks after the defined four months, the Client is entitled to withdraw from this Contract.

12. SEVERABILITY CLAUSE

12.1 Should individual provisions be wholly or partially invalid or unenforceable, this shall not affect the validity of the remaining provisions.

12.2 The same applies if a loophole is found. In place of the invalid or unenforceable provision or to fill the loophole, an agreement shall apply retroactively which the contracting parties would have made if they had been aware of the invalidity of the provision.

13.FINAL ARRANGEMENTS

13.1 This agreement shall enter into force upon signature by all contracting parties and shall run until four months after signature. This Contract shall come into force and effect on the date of signing of the Contract by the authorised representatives of both Parties. In case the Contract is subject to the obligation to be published in the register of contracts in accordance with Act No. 340/2015 Coll., on Special Conditions for the Effectiveness of Certain Contracts, Publication of Such Contracts and the Register of Contracts (the Register of Contracts Act), as amended, it shall come into effect on the day of its publishing in the register of contracts. The Parties agree that the performance provided mutually between the Parties under the subject matter of this Contract

prior to its effectiveness shall be set off against the performance under this Contract and the Parties shall not claim any unjust enrichment claims against each other on this account.

13.2 The Parties unconditionally agree to the publication of the full text of the Contract so that the Contract can be the subject of information provided in accordance with Act No. 106/1999 Coll., on free access to information, as amended. The Parties also agree to publish the full text of the Contract in accordance with Act No. 340/2015 Coll., on Special Conditions of Effectiveness of Certain Contracts, Publication of Such Contracts and on the Register of Contracts (Act on the Register of Contracts), as amended.

13.3 All contracting parties declare that they read this Contract before signing it, that they understand its contents, that they agree with its contents and that this Contract is the expression of their free wills.

13.4 All rights and obligations arising from the Contract are subject to German law.

13.5 The Contracting parties agree to the exclusive jurisdiction of the court for all disputes arising from and in connection with this Contract, to the extent permitted by law.

13.6 The attachments are an integral part of the Contract. Should this Contract and the annex contain contradictory provisions, the provisions of this Contract shall take precedence.

13.7 Any amendments and supplements to this Contract and its attachments may only be made in writing and by mutual agreement between all parties. Such agreements can be made by email.

Contractor	**Client**	**Data-holding institution**
Czech University of Life Sciences Prague	Forstliche Versuchs- und Forschungsanstalt Baden-Württemberg (FVA-BW)	Výzkumný ústav pro krajinu, v. v. i.
Location, Date	Location, Date	Location, Date
_____	____,____	
_____		_____
Ing. Jakub Kleindienst, Bursar	Prof Ulrich Schraml – Director der FVA-BW	Ing. Libor Hort, Director

14. ATTACHMENTS:

- No. 1: Detailed work description (PDF document)
- No. 2: List of forest sites (Excel sheet)
- No. 3: Pricing guide (PDF document)

Effects of rewilding in forests and agricultural lands on carbon sequestration and diversity

Work package 2: Carbon and biodiversity development when setting aside formerly managed forests ("Proforestation")

Service Contract

Dendrometric & Biodiversity Data

Detailed Work Description

Grant Agreement number: 101081177

WILDCARD — HORIZON-CL5-2022-D1-02 / HORIZON-CL5-2022-D1-02-05

Project Acronym: WILDCARD

Effects of rewilding in forests and agricultural lands on carbon sequestration and diversity

Duration of the project: January 1st, 2024 – December 31st, 2027

VERSION HISTORY

Version	Date	Author /Reviewers	Partner	Description
0.1		xxxxx xxxxx	VUKOZ VUKOZ	Draft description
0.2		xxxxx xxxxx xxxxx	VUKOZ FVA-BW FVA-BW	Final draft
0.3		xxxxx xxxxx xxxxx xxxxx xxxxx xxxxx	FVA-BW FVA-BW FVA-BW VUKOZ UNIUD NW-FVA	Consolidated draft
1.0	29.11.2024	xxxxx xxxxx	FVA-BW FVA-BW	Final version for submission

ACKNOWLEDGEMENT

DISCLAIMER

Table of Contents

1. Overview

This Detailed Work Description serves as an Appendix to the WILDCARD Workpackage 2 (WP2) Service Contract on dendrometric data deliveries from external partners (institutions/research groups outside of the WILDCARD project), hereinafter the Contractors. This contract regulates the access to pre-processed dendrometric and biodiversity data on unmanaged forests from the Contractor to the WILDCARD project, hereinafter the Client and Data-holding institution. The Detailed Work Description then specifies requirements and workflow of external data deliveries provided under the Service Contract, including minimal data requirements, process and steps of data delivery, required data formatting and passing basic data consistency checks.

This guideline also describes how spatial and (multi-)temporal data on woody stems are being collected, put together and harmonised as much as possible across different sampling approaches. The unifying concept of all collected dendrometric data is that woody stems above a size-specific measurement threshold (mostly diameter at breast height, DBH) are at least once or repeatedly measured for size and for status (at least alive/dead) and identified to species.

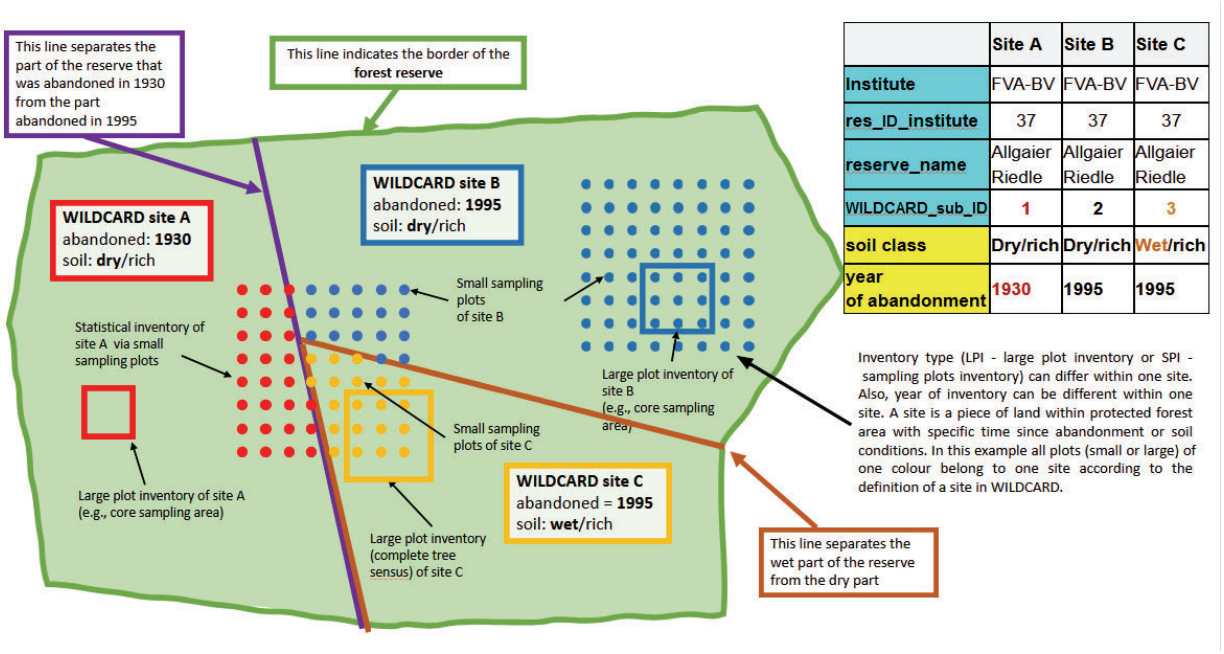
Further, this document specifies how and in what format biodiversity data should be delivered to the Client (Section 6).

We expect the inventories to follow widely varying methodologies specific to countries, regions and research institutes. Therefore, the Contractor is obliged to closely follow instructions given here and in the Data Template, thus providing the Client and the Data-holding institution with all necessary information to understand and harmonise the delivered data.

2. Terms, definitions and data requirements

2.1 Site

In the context of the WP2 of the WILDCARD project, a SITE is defined as a relatively homogenous study area in terms of EEA European Forest Type categories, soil water and nutrient class, and time since abandonment (TSA). The site may consist of one or more plots (Fig. 1). The definition of a (quasi-)homogenous site should be achievable based on the existing dataset of the Contractors. Additional field mapping and refinement are not anticipated; therefore, limited internal variability in site conditions is acceptable.



	Site A	Site B	Site C
Institute	FVA-BV	FVA-BV	FVA-BV
res_ID_institute	37	37	37
reserve_name	Allgaier Riedle	Allgaier Riedle	Allgaier Riedle
WILDCARD_sub_ID	1	2	3
soil class	Dry/rich	Dry/rich	Wet/rich
year of abandonment	1930	1995	1995

Figure 1. Definition of the SITE and its labelling in the WILDCARD Metadata table.

2.2 TSA

Time Since Abandonment (TSA) is the time in years after abandonment of forest management at the particular forest site. In terms of dendrometric data analysis, TSA is the time in years between the year of abandonment and the year of tree census/ forest inventory. If the year of abandonment is not known, the year of reserve designation may be used as a proxy.

2.3 Proforestation

Proforestation is defined as the cessation of forest management to allow spontaneous development (Kun et al., 2020; Moomaw et al., 2019)

2.4 Minimum dendrometric data requirements

The following standards have been defined for the use of dendrometric data in the WILDCARD project:

1. Dendrometric data have been collected on **permanent plots** in strictly unmanaged, old-growth or primary forests. At least one (but preferably more) tree census is available. Either one or several large (≥ 0.5 ha) or multiple (n ≥ 5) small sample plots (≥ 500 m^2) have been set up within one site. A single measurement (tree census/ inventory) is acceptable as long as the plot location can be re-identified in the field and thus re-measured.
2. For each site, information on **time since abandonment** (TSA), European Forest Type, and soil water and nutrient class is available.
3. **Individual trees**/stems and **deadwood** objects have been measured. For each object, information on species (or genus; for deadwood: broadleaved/coniferous and decay class), diameter, length/height (sub-sample possible) and basic status (alive/dead) is available. If deadwood has not been measured on the level of individual objects (stems/pieces), a plot-level estimates of CWD volume/biomass is also permissible, assuming the method of the estimate is documented and provided as metadata along with the data delivery. In very exceptional cases (agreed on all sides before signing the Service Contract), information on deadwood/CWD volume/biomass may be based on simplified estimates at the site level.

3. Detailed work description

3.1 Steps for dendrometric data access/delivery

- Step 1: Signing the Service Contract
- Step 2: Update/completion of the WILDCARD Site Metadata Table
- Step 3: Formatting (pre-processing) the dendrometric data according to the Data Template
- Step 4: Pilot data consistency check (on pilot data)
- Step 5: Pilot data delivery
- Step 6: Data consistency check (full dataset)
- Step 7: Full data delivery
- Step 8: Database upload and database data query tests
- Step 9: Final data approval

3.2 General approach to data harmonization

This European-wide dendrometric data harmonization stands on 3 pillars: i) basic pre-harmonization on the side of the Contractor – following the data template provided by the Client; ii) internal data harmonization by the Data-holding institution at various stages throughout the data delivery process, such as after the pilot data delivery and after the full data delivery and iii) extensive data documentation for each data delivery (metadata).

Metadata should be integral part of each dendrometric data delivery, and they will be integral part of the final relational database. Especially the first and the third pillars are important in terms of this work description.

To gather and harmonise data collected in different countries and maintained in different languages using various methodological approaches and different hierarchical levels of inventory (site, plot, tree/stem and coarse woody debris) is an extremely challenging task. To achieve this in an efficient manner, pre-processing of the data must be conducted by the Contractor before submission. This includes translation of data fields and values into English and using prescribed labelling and formatting at least for a set of basic attributes. For this purpose, a Data Template has been created, which the Contractor should follow as closely as possible.

The Data template serves as a guideline, detailing the types of data required and how they should be structured. It was designed to be as robust as possible to accommodate a variety of methodologies and data structuring options. Individual data attributes are described there in detail and illustrated with examples for each hierarchical level (site, plot, stem, and coarse woody debris). The data template describes in particular:

- data format and file names and format (**DATA_FORMAT** sheet)
- site-level data on sampling strategies (**DESIGN** data sheet),
- plot-level data (**PLOT** data sheet),
- tree/stem-level data (**STANDING** and **LYING** data sheets),
- CWD data (**CWD** data sheet).

The Contractor is asked to prepare each of the five data sheets as a separate **.txt** data file. It is preferred that all sites are grouped into a single data file (many-to-one) for each of the five data types (DESIGN, PLOTS, STANDING, LYING and CWD). If it is easier for the Contractor to dedicate one data file to each site (one-to-one), this is also acceptable. The Contractors should title their data files according to the “Data File Title” section of the respective data sheet in the Data Template, as well as the section 4.1 of this document.

3.3 WILDCARD Site Metadata Table

3.3.1 Updating the Metadata Table

Every data delivery starts with an update and completion of the WILDCARD Site Metadata Table, which is based on the Metadata table of EuFoRIa. Firstly, definition of the SITE in the WILDCARD Site Metadata Table and in the Dendrometric Data Delivery must be identical(!). The definition and description of sites starts with the definition of the institute, institute-specific study area ID *(res_ID_inst),* study area name *(reserve_name)* and WILDCARD-specific site ID (*WILDCARD_sub_ID*). They are listed as columns C, D, E, and F. Each site has strictly one row in the WILDCARD Site Metadata Table, related purely to environmental conditions of the site (but not methodological specifics of data collection). Thus, if in the metadata table of EuFoRIa one site had multiple lines related to different plots or inventory years, these should be merged in one line. On the contrary if one EUFoRIa reserve is composed of different sites

sensu WILDCARD, it should be split in multiple lines, one per site (see Fig. 2). Other site information, especially the columns related to year of abandonment, inventory years, soil water and soil nutrient class, EEA Forest Type, latitude/longitude and availability of other data than dendrometric (e.g. LiDAR, or data on biodiversity of selected guilds) should also be updated and edited. This must be completed for all sites. Before delivery, the data should include all sites listed in the Metadata table and vice-versa – all sites (according to WILDCARD definition) in the data delivery should be listed as one row in the Site Metadata Table (relation 1:1).

3.3.2 Site Coding

When updating and completing the WILDCARD Site Metadata Table - if there is more than one combination of forest type, soil class and TSA in the study area (typically a forest reserve that is large enough to encompass multiple forest types, soil classes or management histories), it is necessary to assign a unique *WILDCARD_sub_ID* to each such combination, but label them with the same *res_ID_inst.* This site coding ensures that a study area defined by one *res_ID_inst* can consist of multiple sites (homogenous in terms of EEA Forest Type, soil class and TSA), each with a unique *WILDCARD_sub_ID* (see Fig. 1 and 2).

C	D	E	F	O	P
institute	res_ID_inst	reserve_name	WILDCARD_sub_ID	confirmed_HIS_TSAclass	confirmed_HIS_fortype
FVA-BW	37	Allgaier Riedle	1093	60-100	Alpine coniferous forest
FVA-BW	37	Allgaier Riedle	1094	0-30	Alpine coniferous forest

Figure 2. Definition of two sites within one reserve due to the difference in TSA. The two rows of the WILDCARD Metadata table differ in TSA and therefore in (and only in) the WILDCARD_sub_ID.

If there is only one combination of forest type, soil class and TSA in the study area, the site definition fully overlaps with the definition of the study area (usually a reserve), i.e. study area = site. In such cases, do not assign a *WILDCARD_sub_ID* to the site *(*enter *"NA").*

Again, it is crucial that the site identification data attributes (*institute, res_ID_inst, reserve_name and WILDCARD_sub_ID*) MUST be filled identically in the Site Metadata Table and in the dendrometric data delivery (there as institute, *SITE_ID, SITE_NAME* and *WILDCARD_sub_ID,* respectively). It is the Contractor, who assigns study areas and sites with *res_ID_inst, reserve_name* and *WILDCARD_sub_ID* in the WILDCARD Site Metadata Table and ensures they match with *SITE_ID, SITE_NAME* and *WILDCARD_sub_ID* in the data delivery.

Use of "Umlauts" and other special characters (ä, ž, í) must be avoided, both in the Site Metadata Table and in the dendrometric data delivery. This can be done by using analogical letters without special characters, or phonetic transcriptions. It is crucial to have the transcript of site names identical in the Site Metadata table and dendrometric data delivery.

3.4 Description of Data Template

An important feature of the data template is that it was designed to facilitate the structuring of data from the two main types of forest inventories: **large plot inventories (LPI)** and **sampling plot inventories (SP**I). The former involves sampling trees on large-scale plots, as illustrated by e.g. the ForestGEO global network of permanent forest plots (https://forestgeo.si.edu/). The latter takes the approach of sampling trees on multiple small-scale plots. National forest inventory programs are good examples of this approach (e.g. https://research.fs.usda.gov/programs/nfi#overview).

3.4.1 DATA_FORMAT sheet

This sheet predefines data formatting of provided data fields and specifies format of files submitted by the Contractor. The data fields for plots and standing and lying stems are divided into BASIC and EXTENDED attributes. BASIC attributes are mandatory andshould be provided if measured in the field. Basic attributes further distinguish among strictly defined format (marked in grey – Tables 2-4) and user-defined format (marked in ochre – Tables 2-4). With the user-defined columns, the Contractor should use only the format that is relevant to their data and ignore the columns referring to other possible formats. EXTENDED attributes (marked in pale blue – Tables 2-4) may be added to data submission if they are related to plot topographic characteristics and the characteristics of the tree status, mortality mode and tree-related microhabitats.

3.4.2 DESIGN sheet

This data table aggregates site-level information on inventory design for each site and inventory year combination, providing site summaries of inventory design(s). The table describes the inventory strategy (LPI, SPI or combination), target woody structures (tally trees/sampled population), spatial definition of plots and sites, and others. Opposed to the plot-level 'PLOTS data table' with one LPI or SPI plot per each row (one-to-one), this data table groups all plots with the same characteristics for each site and inventory year combination into one row (many-to-one = all plots of the same data collection design in a given inventory year are in one row). To list and describe individual plots for each site and inventory year combination, please use the PLOTS data sheet instead.

Table 1. Attributes of the DESIGN data table.

Attribute name	Attribute description
SITE_ID	Institute-specific reserve ID from the WILDCARD Metadata table (*res_ID_inst*). If the site is not in the WILDCARD Metadata table yet, please set up a new row for the site in the metadata table first.
SITE_NAME	Site name from the WILDCARD Metadata table (*reserve_name*). Please avoid special characters such as ¨, ´, ˇ, or ß.
WILDCARD_sub_ID	WILDCARD_sub_ID divides the reserve into parts that are homogenous in the combination of FT, TSA and soil-class (corresponds to the *WILDCARD_sub_ID* from the WILDCARD Metadata table). Fill in *NA* if not relevant.
INVENTORY_YEAR	Nominal inventory year.
INVENTORY_TYPE	Either large plot inventory (LPI) or sampling plot inventory (SPI).
PLOTS_LIST	Complete list of sampled LPI_IDs or SPI_IDs with the following inventory design, target woody structures and spatial definition listed as a string. Please use ";" as a separator between ID's. Plots that were not sampled due to specific reasons (lost, inaccessible, destroyed by machinery, lack of resources) should not be listed here (but see PLOT_SAMPLED in the PLOTS sheet for clarity). For sites with multiple plots, each line in this data table represents a group of plots with the same characteristics (e.g. circle radiuses, DBH thresholds)
CIRCLE_NO	Applicable only to SPI. For instance, if the plot (SPI) is composed of three sub-circles, fill in *1* for the largest sub-circle, *2* for the middle-sized sub-circle, and *3* for the smallest sub-circle. For single-circle plots, fill in *1*. If single-circle plots have multiple radii within a site, also fill in *1*. Fill in *NA* for LPI.
CIRCLE_RADIUS	Applicable only to SPI. Sub-circle or circle radius in meters. Fill in *NA* for LPI.
CIRCLE_AZIMUTH	Applicable only to SPI with plots composed of multiple sub-circles. It represents the angular coordinate (azimuth) for the center of the appropriate sub-circle from the center of the sampling plot Fill in *0* for plots with concentric sub-circles and plots with only one circle. Fill in *NA* for LPI.
CIRCLE_DISTANCE	Applicable only to SPI with plots composed of multiple sub-circles. It represents the radial coordinate (horizontal distance) for the center of the appropriate sub-circle from the center of the sampling plot.

	Fill in *0* for plots with concentric sub-circles and for single-circle plots. Fill in *NA* for LPI.
POM_MARK	Point of diameter measurement is marked (Y) or not marked (N) on alive tree stems.
STANDING_ALIVE_THRESHOLD	DBH measurement threshold above which alive standing woody stems were recorded (threshold DBH >= X). For the SPI plots with multiple sub-circles, DBH measurement thresholds are often specific to each sub-circle number (CIRCLE_NO).
STANDING_DEAD_THRESHOLD	DBH measurement threshold above which dead standing woody stems were recorded (threshold DBH >= X). For the SPI plots with multiple sub-circles, DBH measurement thresholds are often specific to each sub-circle number (CIRCLE_NO).
LYING_ALIVE_THRESHOLD	DBH measurement threshold above which alive lying woody stems were recorded (threshold DBH >= X).
LYING_DEAD_THRESHOLD	DBH measurement threshold above which dead lying woody stems were recorded (threshold DBH >= X). For dead stem fragments (pieces), measurement threshold is defined as diameter of the lower end of the piece in centimeters (D1; see Lying_metadata for details).
SPECIES_POOL	It indicates if All Woody Species (AWS) or All Tree Species (ATS) were recorded.
	For specific cases, use the "OTHER" attribute to define which species were or were not recorded.
LIS_CWD	It indicates if coarse woody debris (CWD) other than dead standing and lying stems (e.g. tree branches, broken tops) was (Y) or was not recorded (N).
	The method used can be the line intersect sampling (LIS) or other. Please provide methodology - your sampling protocol. CWD data are listed in the CWD sheet.
BOUNDARY	It defines the geometry of site boundaries and LPI plot boundaries. If possible, fill in as a well-known text geometry (WKT). e.g. type Polygon for site boundary or one LPI plot, MultiPolygon for site boundary + one or multiple LIP plots. Alternatively, please provide shapefiles.
STEM_COORD_REF_POINT	Define the reference point for measuring coordinates or azimuth with distance of the standing tree. It can be either the center of the stem base (SBC) or stem center at breast height (BHC).
EPSG_CODE	EPSG code of the reference coordinate system. Preferably, use a single EPSG code for the spatial definition of sites, plots and standing/lying stems. If you use different EPSG codes for e.g. site boundary and tree stems, please clarify this in the "OTHER" attribute.
OTHER	Provide any other important details about your inventory design beyond what is mentioned above.
ACKNOWLEDGEMENT	The statement of acknowledgement. For instance, you can state how you need your institute, other authorities and grant/funding agencies to be acknowledged when using data from a respective inventory. Fill in NA if not relevant.

3.4.2 PLOTS sheet

This data table describes the plot-level data by recording the plot-site relationship, plot ID, coordinates and possibly also several topographic characteristics such as slope, exposition and elevation. Each SPI and LPI plot must be uniquely described, resulting in one row per plot. In contrast to the site-level DESIGN data table grouping all LPI or SPI plots of the same data collection design in a given inventory year into one row (many-to-one), this data table lists and describes individual plots for each site and inventory year combination.

Table 2. Attributes of the PLOTS data table.

Attribute name	Attribute description
BASIC attributes	Attributes of strictly defined format are in grey fields
SITE_ID	Institute-specific reserve ID from the WILDCARD Metadata table (*res_ID_inst*). If the site is not in the WILDCARD Metadata table yet, please set up a new row for the site in the metadata table first.
SITE_NAME	Site name from the WILDCARD Metadata table (*reserve_name*). Avoid special characters such as ¨, ´, ˇ, or ß.
WILDCARD_sub_ID	Year of reserve declaration or abandonment, forest type, and soil class can sometimes vary within a study area. If so, this WILDCARD_sub_ID then divides the site/reserve into the parts homogenous in terms of FT, TSA and soil-class (sensu WILDCARD).
INVENTORY_YEAR	Nominal inventory year.
LPI_ID	Plot ID in Large plot inventory (LPI).
SPI_ID	Plot ID in Sampling plot inventory (SPI).
CIRCLE_NO	Applicable only to SPI. For instance, if the plot (SPI) is composed of three sub-circles, fill in *1* for the largest sub-circle, *2* for the middle-sized sub-circle, and *3* for the smallest sub-circle.
	For single-circle plots, fill in *1*. If single-circle plots have multiple radii within a site, fill in *1* and specify this size difference in CIRCLE_RADIUS. Fill in *NA* for LPI.
CIRCLE_RADIUS	Applicable only to SPI. Sub-circle or circle radius in meters. Fill in *NA* for LPI.
PLOT_SAMPLED	The plot was sampled (Y) or not sampled (N) in a respective inventory year. Some plots may not be sampled for specific reasons (lost, inaccessible, destroyed by machinery, lack of resources).
SAMPLED_AREA	The sampled area of a plot [in squared meters]. In some cases, it can be smaller than the total area for specific reasons (e.g. road crossing the plot, partly inaccessible). In the case of SPI provide area for each different CIRCLE_NO.
CONSISTENT_ID_STANDING	The identification numbers of standing stems from the previous inventory year were completely (Y), partly (P) re-identified or were not re-identified (N). If you chose *P*, specify in the STANDING sheet which stems could not be re-identified and were assigned new IDs. For single-inventory sites and the first (oldest) inventories, fill in NA.

CONSISTENT_ID_LYING	The identification numbers of lying stems from the previous inventory year were completely (Y), partly (P) re-identified or were not re-identified (N). If you chose *P*, specify in the LYING sheet which stems could not be re-identified and were assigned new IDs. For single-inventory sites and the first (oldest) inventories, fill in *NA*.
OTHER	Provide any other important details about the plot-level data beyond what is mentioned above.
USER-DEFINED attributes	Use the attributes relevant to your data and ignore the rest.
COORDINATES	Document selected format in DESIGN table and/or in BASIC_metadata.txt file.
X	X coordinate (easting) of the center of the SPI plot. Coordinate system (EPSG code) used is specified in DESIGN sheet. If using WSG 84 (EPSG code 4326), use decimal format with precision up to centimeters.
Y	Y coordinate (northing) of the center of the SPI plot. Coordinate system (EPSG code) used is specified in DESIGN sheet. If using WSG 84 (EPSG code 4326), use decimal format with precision up to centimeters.
Z	Z coordinate (elevation) in meters.
WKT_GEOM	For SPI, it is possible to fill in the coordinates of SPI plot centers as well-known text (WKT) point geometry (https://en.wikipedia.org/wiki/Well-known_text_representation_of_geometry). For LPI, enter the coordinates of the LPI plot boundaries as WKT polygon geometry.
EXTENDED attributes (examples).	Provide your definitions in EXTENDED_metadata.txt file.
SLOPE	Mean inclination of the plot in degrees°. For LPI, it can be a range of inclinations (min, max) - feel free to add appropriate data field - for Extended attributes, this is possible (but always provide unambiguous description of the attribute in appropriate metadata file).
TOPO	Topography. Type of terrain (plateau, crest, upper, middle, lower slope, valley, valley head, level). Use of range of pre-defined values only (ENUM data type) if possible.
EXPO	Exposure to eight cardinal points (N, NW, W, SW etc.). Can be also azimuth in degrees - depends on your data (please always describe in appropriate metadata file). For LPI more exposures can be listed.
ELEV_CENTER	Elevation of the plot centre above sea level in meters.
ELEV_RANGE	Range of elevation (min, max). Applicable only for LPI.

3.4.3 STANDING sheet

This data table is designed to characterize alive and dead STANDING stems on a particular site, LPI or SPI, qualitative and quantitative attributes of each individual stem. In case when the standing stem was measured in several inventories, the records are listed for each inventory on a separate row. These are divided into Basic strictly defined grey attributes (columns of the Data Template), where missing values are filled in as "NA"; ochre attributes, where unused variants need to be deleted; and Extended attributes (pale blue). Extended attributes are provided only if available. Each Contractor should clearly describe the methodology for measuring standing trees on their own research areas in the Standing_metadata.txt file.

Table 3. Attributes of the STANDING data table

Attribute name	Attribute variant	Attribute description
BASIC attributes:		
SITE_ID		Institute-specific reserve ID from the WILDCARD Metadata table (*res_ID_inst*).
WILDCARD_sub_ID		Corresponds to the *WILDCARD_sub_ID* in tables DESIGN, PLOTS and WILDCARD Metadata table.
		Indicates the geographical location of the tree (point) within the area of WILDCARD_sub_ID polygon (site Boundary).
LPI_ID		ID of LPI within the site, in which the tree belongs to.
SPI_ID		ID of SPI within the site, in which the tree belongs to. Trees which are recorded both in LPI and SPI (overlap of plots) will have ID filled in both columns.
TREE_ID		Tree ID serves as a unique identifier of the tree individual in the site/plot from the database perspective. A tree may have one or more stems.
STEM_ID		Stem ID serves for identification for individual stems within one tree, separated up to a height of 1.3 meters.
INVENTORY_YEAR		Calendar year when tree census / forest inventory was conducted.
CONSISTENT_ID		The indentification number of standing stems from the previous inventory year were reidentified (Y) or were not reidentified (N).
		For single-inventory sites and the first (oldest) inventories, fill in NA.
STATUS	LIFE	Life can be in the form of Alive (A) or Dead (D).
	POSITION	Position of the stem can be only Standing (S) in this table.
	INTEGRITY	Integrity of the stem can be only Complete (C) or Fragmented (F). When more values are presented, group them into these two.
HEIGHT		**Measured** height of the stem in meters with one decimal place. **Provide sampling approach for measuring heights** (for example: representative sample, highest trees, fragmented trees, etc.)

DATE		Date of measurement of a particular stem (format yyyy-mm-dd).
USER-DEFINED attributes		Use the attributes relevant to your data and ignore the rest.
DBH	DBH_cm	Diameter at breast height (1.3 m) in centimetres either with one decimal place or **provide information about rounding.**
	DBH_mm	Diameter at breast height (1.3 m) in milimetres.
TREE_SPECIES	FULL_SCIENTIFIC	e.g. Abies alba
	GENUS and SPECIES	Abies
	CODE	521
DECAY	ABBREVIATION	ABAL
	NUMERIC	Numerical value of the decay class. Alive trees: NA. Decomposed dead trees (finished sequencies, not measurable) should be denoted by special symbol. **Provide classes and their definitions.**
	TEXT	Text string of the decay class. Alive trees: NA. **Provide classes and their definitions.** Decomposed dead trees (finished sequencies) should be denoted by special decay class.
COORDINATES	X	X-coordinate (easting) of the standing stem. Coordinate system (EPSG code) used is specified in DESIGN sheet. If coordinates are not collected, fill in NA.
	Y	Y-coordinate (northing) of the standing stem. Coordinate system (EPSG code) used is specified in DESIGN sheet. If coordinates are not collected, fill in NA.
	Z	Z-coordinate = Elevation of the base of standing stem in meters (m a.s.l.). If coordinates are not collected, fill in NA.
	AZIMUTH	If you choose local polar tree coordinates, then provide **Azimuth** between the centre of the plot and the respective object [in degrees].
		Definition of the target point is found in the DESIGN table (STEM_COORD_REF_POINT).
	DISTANCE	If you choose local polar tree coordinates, then provide **Horizontal distance** from the centre of the plot to the object [in m].
		Definition of the target point is in DESIGN table (STEM_COORD_REF_POINT).
	WKT_GEOM	Well-known text representation of tree stem positions, POINT geometry preferably, https://en.wikipedia.org/wiki/Well-known_text_representation_of_geometry
EXTENDED attributes (example):	**Provide description of your own data**	in EXTENDED_metadata.txt file

HOM_m		Height of diameter measurement. Default is at 1.3m above the ground (DBH). Important when HOM significantly deviates from breast height because of stem malformations.
STATUS2	MIS	Complicated (missing) tree status. For instance, a tree was accidentally measured although its DBH was below the measurement threshold.
		Or, a random tree position was mapped by mistake, although the tree itself did not exist.
		Or, a recruited tree that was accidentally not measured in the first possible inventory but was measured later.
		Or, a tree could not be reidentified for multiple reasons (lost, harvested).
	ASI	Alive standing intact tree.
	ASB	Alive standing broken tree, typically missing top (significant biomass loss).
	ASC	Alive standing cracked tree, a tree with significant fracture but integrity (completeness) not corrupted.
	DALB	Dead Above Live Below. Tree is live at a height < 1.3 m, at a height ≥ 1.3 m is dead.
	DSB	Dead standing broken tree (snag) with height ≥ 1.3 m.
	DSI	Dead standing intact (complete) tree.
TAG		Tag number hanging on the tree. It can be the same as TREE_ID, but it can be also different. Tag serves for unambiguous identification of the tree in the field.
CAUSE_OF_DEATH	Code (examples)	Category
	10	Biotic
	20	Physical
	30	Fire
	40	Other

3.4.4 LYING sheet

This data table of the Data Template is designed to provide object-based descriptions of LYING stems on a particular site, LPI or SPI, i.e. qualitative and quantitative attributes of each individual stem or even pieces, if available. In the case of a lying stem being measured in several inventories, the records are listed for each inventory on a separate line.
These are divided into Basic strictly defined grey attributes (columns in the Data Template), where unavailable values are filled in as "NA"; user-selected ochre attributes, where unused variants need to be deleted; and Extended attributes (in pale blue). Extended attributes are provided only if available. Each Contractor should clearly describe the methodology for measuring lying stems on their own research sites in the Lying_metadata.txt file.

Table 4. Attributes of the LYING data table.

Attribute name	Attribute variant	Attribute description
BASIC attributes:		
SITE_ID		Institute-specific reserve ID from the WILDCARD Metadata table (*res_ID_inst*).
WILDCARD_sub_ID		Corresponds to the *WILDCARD_sub_ID* in tables DESIGN, PLOTS and WILDCARD Metadata table.
		Indicates the geographical location of the lying log within the area of WILDCARD_sub_ID polygon (site Boundary).
LPI_ID		ID of LPI within the site, in which the lying log belongs to.
SPI_ID		ID of SPI within the site, in which the log belongs to. Logs which are recorded both in LPI and SPI (overlap of plots) will have ID filled in both columns.
TREE_ID		Tree ID serves as a unique identifier of the tree individual in the site/plot from the database perspective. A tree may have one or more stems.
STEM_ID		Stem ID serves for identification for individual stems within one tree, separated up to a height of 1.3 meters.
PIECE_ID		Piece ID refers to a physically separated fragment of one stem.
INVENTORY_YEAR		Calendar year when census was conducted.
CONSISTENT_ID		The indentification number of lying stems from the previous inventory year were reidentified (Y) or were not reidentified (N).
		For single-inventory sites and the first (oldest) inventories, fill in NA.
STATUS	LIFE	Life can be in the form of Dead (D) or Alive (A) in the case of lying living stem.
	POSITION	Position of the log can be only Lying (L) in this table.
	INTEGRITY	Integrity of the log can be only Complete (C) or Fragmented stem (F). When more values are present, group them into these two. Use 'NA' if stem integrity is not recorded in the field survey.

DATE		Date of measurement of a particular log (format yyyy-mm-dd).
TREE_SPECIES	FULL_SCIENTIFIC	e.g. Abies alba
	GENUS and SPECIES	Abies
	CODE	521
	ABBREVIATION	ABAL
D1	D1_cm	Diameter of the lower end of the lying log in centimetres, precision to one decimal place.
	D1_mm	Diameter of the lower end of the lying log in milimetres.
	D1.3	Diameter at distance of 1.3 m from the lower end of the lying log.
D2	D2_cm	Diameter of the upper end of the lying log in centimetres. **Specify the point of measurement** (e.g. plot boundary; upper end of the log).
	D2_mm	Diameter of the upper end of the lying log in milimetres. **Specify the point of measurement** (e.g. plot boundary; upper end of the log).
LENGTH	LENGTH_m	Length of the lying log in metres with one decimal place. Important when the end point of the log is not measured.
DECAY	NUMERIC	Numerical value of the decay class. Decomposed logs (finished sequence of records) should be denoted by special symbol.
		Provide classes and their definitions.
	TEXT	Text string of the decay class. **Provide classes and their definitions**. Decomposed logs (finished sequence of records) should be denoted by special decay class.
COORDINATES	X_1, X_2	X-coordinate (easting) of the lying log - lower and upper end. Coordinate system (EPSG code) used is specified in DESIGN sheet. If coordinates are not collected, fill in NA.
	Y_1, Y_2	Y-coordinate (northing) of the lying log - lower and upper end. Coordinate system (EPSG code) used is specified in DESIGN sheet. If coordinates are not collected, fill in NA.
	Z_1, Z_2	Elevation in metres of lower and upper end of the log. If coordinates are not collected, fill in NA.
	AZIMUTH_1	Azimuth between the centre of the plot and the respective object [in degrees]. **Specify the target point of the object (this also applies for azimuth_2).**
	DISTANCE_1	**Horizontal** distance from the centre of the plot to the object [in m]. **Specify the target point of the object (this also applies for distance_2)**.
	AZIMUTH_2	Azimuth between the centre of the plot and the respective object [in degrees].
	DISTANCE_2	**Horizontal** distance from the centre of the plot to the object [in m]. Specify the target point of the object (this also applies for distance_1).

	WKT_GEOM	Well-known text representation of tree stem positions, LINESTRING geometry preferably, https://en.wikipedia.org/wiki/Well-known_text_representation_of_geometry
EXTENDED attributes (example)	**Provide your descriptions**	in the EXTENDED_metadata.txt file
VOLUME		Volume of each log (piece) in cubic meters with two decimal places. **Provide definition of calculation - allometry.**
GROU_CON		Ground contact of the lying log. Identifies suspended (hanging) logs. Piece of log is assessed as a whole. Figure 4. **Provide description of your own data.**
SUN_EXP		Sun exposure. Provide description of your own data.
RED_FACTOR		Reduction factor for standing deadwood. Provide description of your own data.
HABITAT 1-3		Microhabitat. Provide description of your own data.

3.4.5 CWD sheet

This data table is designed to provide plot level estimates of coarse woody debris (CWD) volume (by line intersect sampling) summed by species and decay classes, but unlike LYING data table does not include information on individual objects - dead stems and decaying logs. It is crucial that the Contractor provides details on their CWD estimation methodology.

Table 5. Attributes of the CWD data table.

Attribute	Attribute description
SITE_ID	Institute-specific reserve ID from the EuFoRIa Metadata table (*res_ID_inst*). If the site is not in the EuFoRIa Metadata table, fill in your own site ID.
WILDCARD_sub_ID	Corresponds to the WILDCARD_sub_ID in tables DESIGN, PLOTS and WILDCARD Metadata table.
SPI_ID	Plot ID of SPI within the site. Using consistent Plot_IDs as in other data tables (DESIGN, PLOT, STANDING, LYING) is necessary.
LPI_ID	Plot ID of LPI within the site.
TREE_SPECIES	Tree species identifier, must be compliant with STANDING and LYING tables, only one lookup table for tree species is acceptable
DECAY	Decay class, must be compliant with STANDING and LYING tables, only one lookup table for decay is acceptable
VOLUME	Volume of coarse woody debris on the plot (m3) for given species and decay class.

3.4.6 Metadata sheets

Attributes to be filled in the individual data sheets described above are explained and described in detail in dedicated metadata sheets of the template (i.e. DESIGN_metadata; PLOT_metadata; STANDING_metadata; LYING_metadata; CWD_metadata).

3.5 Provision of metadata

Extensive data documentation is the third and very important pillar of the data collection and harmonization. Some dendrometric data attributes cannot be harmonized mechanistically without a substantial loss or bias of the information. Moreover, the way of optimal harmonization may differ depending on the specific purpose. For these reasons in some cases the database maintains original values provided by each Contractor (e.g. deadwood decay classes), while maintaining also definition of these decay classes in related metadata. It is therefore essential to accompany the data delivery with all necessary metadata.

3.5.1 Mandatory metadata

All data fields formatted by the Contractor should be clearly documented in two Metadata Files (.txt): *BASIC_metadata* for user-selected formatting of mandatory attributes and *EXTENDED_Metadata* for extended attributes that usually vary for every Contractor and thus a complete metadata here is necessary. BASIC metadata file (txt table) is divided into Plots, Standing, Lying and CWD by the 'TABLE' column (see Table 6). If the tree inventory design cannot be fully described by the DESIGN data table provided in the template (DESIGN sheet), please provide also the DESIGN metadata.

Table 6. Example of basic user-selected data fields Metadata table.

TABLE	FIELD_ name	PARAMETER	METHODS	VALUE_ CODE	VALUE_ DESCRIPTION
Lying	NA	Tally stems	Only lying stems which grew on the plot are measured. In its whole length.	NA	NA
Lying	D1	Point of measurement	D1 is measured at the base of the log.	NA	NA
Lying	D2	Point of measurement	D2 is measured at the top end of the log.	NA	NA
Standing	Height	Sampling approach	Height is measured for all fragmented trees and for the sub-sample of complete trees for each DBH class.	NA	NA

EXTENDED Data Fields and Data Values should be defined in the second mandatory metadata txt file structured as follows: TABLE, FIELD_name, FIELD_description, VALUE_code, VALUE_ description as columns and particular names/descriptions and possible values as rows (Table 7). Here the Contractor must provide lookup tables or explanatory notes describing what the extended attributes stand for and how different attribute levels are coded. The attributes for which we anticipate these additional explanatory notes to be especially useful are marked in bold in the metadata sheets of the data template.

Table 7. Example of extended attributes Metadata table.

TABLE	FIELD_name	FIELD_description	VALUE_ CODE	VALUE_ description
Standing	MULTISTEM	Character of stems per one tree individual	FRK	Forked
Standing	MULTISTEM	Character of stems per one tree individual	PLC	Polycormon
Standing	MULTISTEM	Character of stems per one tree individual	SGL	Single
Standing	MULTISTEM	Character of stems per one tree individual	MTR	Mother tree
Standing	MULTISTEM	Character of stems per one tree individual	MTX	From mother tree
Standing	FOLIAGE_CL	Foliage class (health status) of a tree	0	Foliage 0%, dead tree
Standing	FOLIAGE_CL	Foliage class (health status) of a tree	1	Foliage 1-24%
Standing	FOLIAGE_CL	Foliage class (health status) of a tree	2	Foliage 25-49%
Standing	FOLIAGE_CL	Foliage class (health status) of a tree	3	Foliage 50-74%
Standing	FOLIAGE_CL	Foliage class (health status) of a tree	4	Foliage 75-100%

3.5.2 Other explanatory metadata files

Sometimes the data template as well as the formally formatted metadata cannot fully explain all possible ways in which the data was collected and coded. Therefore, please provide additional descriptions of methods for data collection or explanatory pictures if they help to explain the data and inventory strategy. For instance, they can further clarify height measurement methods, definition of microhabitats or more detailed definitions of deadwood decay scales and classes (e.g. accompanied by pictures). Such explanatory metadata files are best submitted as standalone .txt, .docx, PDF or .xlsx files. We ask Contractors to check if these extra files are in English.

4. Timeframe and delivery process

4.1 File formatting and naming

4.1.1 Format of data and metadata files:

Type of the file: **txt**
Separator: **tab**
Decimal: **“.”**
Encoding of the file: **UTF_8**
Missing (unavailable) values for basic attributes:
Use “**NA**” in strictly defined (grey) columns and delete unused variants in user selected format (coloured columns)

4.1.2 File naming convention:

Data files should be titled based on the relevant institutional abbreviation and the data sheet name such as INSTITUTE_TABLE-name.txt, e.g.: *VUKOZ_STANDING.txt*. This is also specified in the respective data sheets as Data file title.
Metadata files should be titled analogically, i.e. as INSTITUTE_BASIC_metadata.txt and INSTITUTE_EXTENDED_metadata.txt.

4.2 Data submission process

The Contractor should upload all data (five txt files) and metadata (at least two txt files) as a single archive file, such as a ZIP and RAR file into EUFoRIa Data Upload VUKOZ Sharepoint folder, which will be made available upon signing the Service Contract.

Before each data delivery (either pilot or full) please contact Jan Zálešák zalesak@vukoz.cz, who will aid with the on-line data consistency checking application: https://databasechecking-euforia.streamlit.app/.

Pilot data delivery of at least one site is due within the 4 weeks after signing the Service Contract.

Full data delivery of all sites is due within 3 months after signing the Service Contract.

Test of database implementation and **Final approval** within one month after the full data delivery. The final approved work is thus to be completed no later than by the fourth month after the Service Contract signature.

4.3 Test of the database data implementation

Final approval of data delivery will be issued after successful implementation of delivered data into the database. This will be validated by querying the database for dendrometric summary statistics of each delivered site and inventory year. The contractor is therefore **obliged** to provide reference values for each forest inventory of the sites for following variables; for standing trees: Mean/Min/Max site DBH (mm); Stand BA ($m^2.ha^{-1}$) and site tree/stem density (ha^{-1}). For lying stems (deadwood): Mean/Min/Max site D1 and D2 (mm) and No. of lying stems per hectare (ha^{-1}); lying site deadwood volume ($m^3.ha^{-1}$), if included in the data delivery. For CWD: total site CWD volume ($m^3.ha^{-1}$), if included in the data delivery.

Optionally, in addition to the basic quantitative site summary statistics listed above the contractor may provide qualitative breakdown, i.e. providing the same site summary statistics for individual tree species, statuses and/or decay classes.

5. Data approval and support

5.1 Approval for dendrometric data delivery

Data Delivery will be approved if:

i) The data delivery is complete – all sites listed in the Appendix No.2 (List of forest sites/reserves) are delivered;
ii) The data delivered meet the minimum requirements specified in the section 2.4 of this document;
iii) The data were formatted according to the Data Template and passed the basic data consistency/plausibility checks;
iv) The data delivery includes all mandatory metadata;
v) The Contractor also provided the dendrometric site-level reference statistics (section 4.3) as well as all necessary cooperation for final data alignment and database implementation.

Payment will be provided directly after the final approval.

5.2 Contact and support

If you have any questions about the data template or data preparation and submission in relation to dendrometric data, feel free to contact Jan Holík (holik@vukoz.cz) and/or Tomáš Přívětivý (privetivy@vukoz.cz). For help with the on-line data consistency checks before the submission please contact Jan Zálešák (zalesak@vukoz.cz).

6. Biodiversity data delivery option

6.1 Description of data

Contractors are eligible for further payment for delivering observational data on species groups other than trees (hereinafter Biodiversity data) when the following criteria are fulfilled.

- The sites for which Biodiversity data is delivered are also selected for soil sampling within the WILDCARD project (HIS-below).
- Biodiversity data must be in temporal and spatial proximity to the sampling of the dendrometric data.

Biodiversity data includes information about the presence, absence, or abundance of the following species groups.

- Ground vegetation (including shrubs)
- Mosses
- Fungi (fruiting body)
- Lichens
- Insects
- Birds
- Bats
- Species presence data derived from metabarcoding or eDNA

6.2 Data format

The data can be delivered in any format that allows relating the presence, absence, or abundance to the location and time of sampling of the plot or reserve level of the dendrometric data. Consequently, the data delivery includes at least two tables plus sufficient documentation of each column, and the data collection methodology needed to derive useful response variables for data analysis:

- **Observation table**: a table that includes the presence, absence, or count of species, guild, or any other meaningful organism group plus an identifier that is used in the biodiversity meta data table (e.g. BIODIV_PLOT_ID).
- **Biodiversity meta data**: a table that relates the locations (e.g., plots) at which the data was collected to the dendrometric data. A link of these plots to SITE_ID, SITE_NAME, WILDCARD_SUB_ID, INVENTORY_YEAR, and BIODIV_PLOT_ID must be provided.
- **Documentation** of columns in observation table and sufficient information for understanding the collected data.

6.3 Timeframe and delivery process

Unlike the dendrometric data, biodiversity data should be delivered to the Client (FVA) and not the Data-holding institution (VUKOZ).

The Client should discuss and mutually agree with each Contractor how best they should pre-process and deliver their biodiversity data. The biodiversity data from all selected sites should be delivered at the latest by four months after the date of signature of the Service Contract.

6.4 Contact and support (biodiversity data)

Please contact Lucia Seebach (lucia.seebach@forst.bwl.de) for any queries related to biodiversity data processing or delivery.

List of forest sites

composed_site_id	institute	res_ID_inst	reserve_name	WILDCARD_sub_ID	Year_reserve	vegetation	mosses	fungi	lichens	insects	birds	bats	biodiv_comment	biodiv_contact	biodiv_email
CULS__101__Albania_Curraj i Eperm_beech__NA	CULS	101	Albania_Curraj i Eperm_beech	NA	-9999	N	N	N	N	N	N	N			
CULS__102__Albania_Lumi i Gashit_beech__NA	CULS	102	Albania_Lumi i Gashit_beech	NA	-9999	N	N	N	N	N	N	N			
CULS__103__Bosnia_Perucica_beech__NA	CULS	103	Bosnia_Perucica_beech	NA	-9999	N	N	N	N	N	N	N			
CULS__104__Bulgaria_Boatin_beech__NA	CULS	104	Bulgaria_Boatin_beech	NA	-9999	N	N	N	N	N	N	N			
CULS__105__Bulgaria_Steneto_beech__NA	CULS	105	Bulgaria_Steneto_beech	NA	-9999	N	N	N	N	N	N	N			
CULS__106__Croatia_Corkovo Uvala_beech__NA	CULS	106	Croatia_Corkovo Uvala_beech	NA	-9999	N	N	N	N	N	N	N			
CULS__107__Croatia_Cudinka_beech__NA	CULS	107	Croatia_Cudinka_beech	NA	-9999	N	N	N	N	N	N	N			
CULS__108__Croatia_Rjecica_beech__NA	CULS	108	Croatia_Rjecica_beech	NA	-9999	N	N	N	N	N	N	N			
CULS__109__Croatia_Risnjak_beech__NA	CULS	109	Croatia_Risnjak_beech	NA	-9999	N	N	N	N	N	N	N			
CULS__110__Croatia_Ramino Korito_beech__NA	CULS	110	Croatia_Ramino Korito_beech	NA	-9999	N	N	N	N	N	N	N			
CULS__111__Croatia_Smrceve Doline_beech__NA	CULS	111	Croatia_Smrceve Doline_beech	NA	-9999	N	N	N	N	N	N	N			
CULS__112__Romania_Arpasul_beech__NA	CULS	112	Romania_Arpasul_beech	NA	-9999	N	N	N	N	N	N	N			
CULS__113__Romania_Belia_beech__NA	CULS	113	Romania_Belia_beech	NA	-9999	N	N	N	N	N	N	N			
CULS__114__Romania_Boia Mica_beech__NA	CULS	114	Romania_Boia Mica_beech	NA	-9999	N	N	N	N	N	N	N			
CULS__115__Romania_Sebesu_beech__NA	CULS	115	Romania_Sebesu_beech	NA	-9999	N	N	N	N	N	N	N			
CULS__116__Romania_Ucea Mare_beech__NA	CULS	116	Romania_Ucea Mare_beech	NA	-9999	N	N	N	N	N	N	N			
CULS__117__Romania_Bistra valley_beech__NA	CULS	117	Romania_Bistra valley_beech	NA	-9999	N	N	N	N	N	N	N			
CULS__118__Romania_Criva_beech__NA	CULS	118	Romania_Criva_beech	NA	-9999	N	N	N	N	N	N	N			
CULS__119__Romania_Paulic_beech__NA	CULS	119	Romania_Paulic_beech	NA	-9999	N	N	N	N	N	N	N			
CULS__120__Romania_Izvoarle Nerei_beech__NA	CULS	120	Romania_Izvoarle Nerei_beech	NA	-9999	N	N	N	N	N	N	N			
CULS__121__Slovakia_Kornietova_beech__NA	CULS	121	Slovakia_Kornietova_beech	NA	-9999	Y	N	Y	Y	Y	Y	N	insects only saproxylic beetles		
CULS__122__Slovakia_Sramkova_beech__NA	CULS	122	Slovakia_Sramkova_beech	NA	-9999	Y	N	Y	Y	Y	Y	N	insects only saproxylic beetles		
CULS__123__Slovakia_Sutovska_beech__NA	CULS	123	Slovakia_Sutovska_beech	NA	-9999	Y	N	Y	Y	Y	Y	N	insects only saproxylic beetles		
CULS__124__Slovakia_Obrstin_beech__NA	CULS	124	Slovakia_Obrstin_beech	NA	-9999	N	N	N	N	N	N	N			
CULS__125__Slovakia_Polana_beech__NA	CULS	125	Slovakia_Polana_beech	NA	-9999	Y	N	Y	Y	Y	Y	N	insects only saproxylic beetles		
CULS__126__Slovakia_Havesova_beech__NA	CULS	126	Slovakia_Havesova_beech	NA	-9999	N	N	N	N	N	N	N			
CULS__127__Slovakia_Stuzica_beech__NA	CULS	127	Slovakia_Stuzica_beech	NA	-9999	N	N	N	N	N	N	N			
CULS__128__Slovakia_Klenovsky Vepor_beech__NA	CULS	128	Slovakia_Klenovsky Vepor_beech	NA	-9999	Y	N	Y	Y	Y	Y	N	insects only saproxylic beetles		
CULS__129__Slovakia_Vihorlat_beech__NA	CULS	129	Slovakia_Vihorlat_beech	NA	-9999	N	N	N	N	N	N	N			
CULS__131__Germany_Harz_spruce__NA	CULS	131	Germany_Harz_spruce	NA	-9999	N	N	N	N	N	N	N			
CULS__136__Romania_Cocos-Dragus_spruce__NA	CULS	136	Romania_Cocos-Dragus_spruce	NA	-9999	N	N	N	N	N	N	N			
CULS__137__Romania_Arpaselu_spruce__NA	CULS	137	Romania_Arpaselu_spruce	NA	-9999	N	N	N	N	N	N	N			
CULS__138__Romania_Arpasul_spruce__NA	CULS	138	Romania_Arpasul_spruce	NA	-9999	N	N	N	N	N	N	N			
CULS__139__Romania_Belia_spruce__NA	CULS	139	Romania_Belia_spruce	NA	-9999	N	N	N	N	N	N	N			
CULS__140__Romania_Boia Mica_spruce__NA	CULS	140	Romania_Boia Mica_spruce	NA	-9999	N	N	N	N	N	N	N			
CULS__141__Romania_Capra_spruce__NA	CULS	141	Romania_Capra_spruce	NA	-9999	N	N	N	N	N	N	N			
CULS__142__Romania_Doamnei_spruce__NA	CULS	142	Romania_Doamnei_spruce	NA	-9999	N	N	N	N	N	N	N			
CULS__143__Romania_Sambata_spruce__NA	CULS	143	Romania_Sambata_spruce	NA	-9999	N	N	N	N	N	N	N			
CULS__144__Romania_Ucea Mare_spruce__NA	CULS	144	Romania_Ucea Mare_spruce	NA	-9999	N	N	N	N	N	N	N			
CULS__145__Romania_Ucisoara_spruce__NA	CULS	145	Romania_Ucisoara_spruce	NA	-9999	N	N	N	N	N	N	N			
CULS__146__Romania_Vistea Mare_spruce__NA	CULS	146	Romania_Vistea Mare_spruce	NA	-9999	N	N	N	N	N	N	N			
CULS__147__Romania_Giumalau_spruce__NA	CULS	147	Romania_Giumalau_spruce	NA	-9999	N	N	N	N	N	N	N			
CULS__148__Slovakia_Janosikova Kolkaren_spruce__NA	CULS	148	Slovakia_Janosikova Kolkaren_spruce	NA	-9999	Y	N	Y	Y	Y	Y	N	insects only saproxylic beetles		
CULS__149__Slovakia_Smrekovica_spruce__NA	CULS	149	Slovakia_Smrekovica_spruce	NA	-9999	Y	N	Y	Y	Y	Y	N	insects only saproxylic beetles		
CULS__150__Slovakia_Bielovodska dolina_spruce__NA	CULS	150	Slovakia_Bielovodska dolina_spruce	NA	-9999	Y	N	Y	Y	Y	Y	N	insects only saproxylic beetles		
CULS__151__Slovakia_Hlina_spruce__NA	CULS	151	Slovakia_Hlina_spruce	NA	-9999	Y	N	Y	Y	Y	Y	N	insects only saproxylic beetles		
CULS__152__Slovakia_Javorova_spruce__NA	CULS	152	Slovakia_Javorova_spruce	NA	-9999	N	N	N	N	N	N	N			
CULS__153__Slovakia_Koprova dolina_spruce__NA	CULS	153	Slovakia_Koprova dolina_spruce	NA	-9999	Y	N	Y	Y	Y	Y	N	insects only saproxylic beetles		
CULS__154__Slovakia_Osobita_spruce__NA	CULS	154	Slovakia_Osobita_spruce	NA	-9999	N	N	N	N	N	N	N			
CULS__155__Slovakia_Tomanova dolina_spruce__NA	CULS	155	Slovakia_Tomanova dolina_spruce	NA	-9999	Y	N	Y	Y	Y	Y	N	insects only saproxylic beetles		
CULS__156__Slovakia_Zadne Medodoly_spruce__NA	CULS	156	Slovakia_Zadne Medodoly_spruce	NA	-9999	N	N	N	N	N	N	N			
CULS__157__Slovakia_Bystra_spruce__NA	CULS	157	Slovakia_Bystra_spruce	NA	-9999	Y	N	Y	Y	Y	Y	N	insects only saproxylic beetles		
CULS__158__Slovakia_Dumbier_spruce__NA	CULS	158	Slovakia_Dumbier_spruce	NA	-9999	Y	N	Y	Y	Y	Y	N	insects only saproxylic beetles		
CULS__159__Slovakia_Pilsko_spruce__NA	CULS	159	Slovakia_Pilsko_spruce	NA	-9999	Y	N	Y	Y	Y	Y	N	insects only saproxylic beetles		
CULS__160__Slovakia_Polana_spruce__NA	CULS	160	Slovakia_Polana_spruce	NA	-9999	Y	N	Y	Y	Y	Y	N	insects only saproxylic beetles		
CULS__161__Ukraine_Gropha1_spruce__NA	CULS	161	Ukraine_Gropha1_spruce	NA	-9999	N	N	N	N	N	N	N			
CULS__162__Ukraine_Gropha2_spruce__NA	CULS	162	Ukraine_Gropha2_spruce	NA	-9999	N	N	N	N	N	N	N			
CULS__163__Ukraine_Gropha3_spruce__NA	CULS	163	Ukraine_Gropha3_spruce	NA	-9999	N	N	N	N	N	N	N			
CULS__164__Ukraine_Syvulya1_spruce__NA	CULS	164	Ukraine_Syvulya1_spruce	NA	-9999	N	N	N	N	N	N	N			
CULS__165__Ukraine_Syvulya2_spruce__NA	CULS	165	Ukraine_Syvulya2_spruce	NA	-9999	N	N	N	N	N	N	N			
CULS__167__Czech Republic_Jizera Mountains_beech__NA	CULS	167	Czech Republic_Jizera Mountains_beech	NA	-9999	N	N	N	N	N	N	N			
CULS__168__Slovakia_Kundracka_beech__NA	CULS	168	Slovakia_Kundracka_beech	NA	-9999	Y	N	Y	Y	Y	Y	N	insects only saproxylic beetles		
CULS__169__Slovakia_Padva_beech__NA	CULS	169	Slovakia_Padva_beech	NA	-9999	Y	N	Y	Y	Y	Y	N	insects only saproxylic beetles		
CULS__170__Slovakia_Skalna Alpa_beech__NA	CULS	170	Slovakia_Skalna Alpa_beech	NA	-9999	Y	N	Y	Y	Y	Y	N	insects only saproxylic beetles		
CULS__171__Austria_Altenburg_thermophilic__NA	CULS	171	Austria_Altenburg_thermophilic	NA	-9999	N	N	N	N	N	N	N			
CULS__172__France_Gedre-Barrada_beech__NA	CULS	172	France_Gedre-Barrada_beech	NA	-9999	N	N	N	N	N	N	N			
CULS__173__France_Marignac-Burat_beech__NA	CULS	173	France_Marignac-Burat_beech	NA	-9999	N	N	N	N	N	N	N			
CULS__174__France_Saint Mamet-Bois Neuf_beech__NA	CULS	174	France_Saint Mamet-Bois Neuf_beech	NA	-9999	N	N	N	N	N	N	N			
CULS__176__Slovakia_Ploska_thermophilic__NA	CULS	176	Slovakia_Ploska_thermophilic	NA	-9999	N	N	N	N	N	N	N			
CULS__177__Slovenia_Kobile_thermophilic__NA	CULS	177	Slovenia_Kobile_thermophilic	NA	-9999	N	N	N	N	N	N	N			
CULS__178__Slovenia_Strug_thermophilic__NA	CULS	178	Slovenia_Strug_thermophilic	NA	-9999	N	N	N	N	N	N	N			
CULS__179__Slovenia_Podrta gora_thermophilic__NA	CULS	179	Slovenia_Podrta gora_thermophilic	NA	-9999	N	N	N	N	N	N	N			
CULS__180__Slovakia_Kasne_spruce__NA	CULS	180	Slovakia_Kasne_spruce	NA	-9999	N	N	N	N	N	N	N			
CULS__181__Slovakia_Zadna Ticha_spruce__NA	CULS	181	Slovakia_Zadna Ticha_spruce	NA	-9999	Y	N	Y	Y	Y	Y	N	insects only saproxylic beetles		

Total number of sites 74

Definitions of columns for Attachment No. 2 (List of forest sites)

composed_site_id	Combination of institute, res_ID_inst, reserve_name, WILDCARD_sub_ID. Separated with "_". This link serves as a readable link between the WILDCARD meta data table and the wildcard data base.
institute	Name of the institute (SAME AS IN EUFORIA META DATA)
res_ID_inst	Internal number of reserve at institutional level (SAME AS IN EUFORIA META DATA). In the template table for the data delivery the column is named "SITE_ID"
reserve_name	Local name of the reserve (SAME AS IN EUFORIA META DATA). In the template table for the data delivery the column is named "SITE_NAME"
WILDCARD_sub_ID	An ID for distinguishing between different site conditions within one reserve. Usually this ID differs if there are different Time Since Abandonment (TSA). But other differences are also possible: soil conditions, forest types, legacy effects (e.g., disturbances). There are no restrictions in how this value is given. Combinations of letters and text are possible. It is only important to be defined if there are differences within a sites/entries which is not already a unique combination of reserve, res_ID_inst, reserve_name. In the template table for the data delivery the column is named "WILDCARD_SUB_ID"
year_reserve	Year the reserve was established (must be an integer value) if unkown enter -9999
vegetation	Is observational data of vegetation available at this site?
mosses	Is observational data of mosses available at this site?
fungi	Is observational data of fungi available at this site?
lichens	Is observational data of lichens available at this site?
insects	Is observational data of insects available at this site?
birds	Is observational data of birds available at this site?
bats	Is observational data of bats available at this site?
biodiv_comment	Comments regarding biodiversity data at this site
biodiv_contact	Contact person responsible for biodiversity data delivery
biodiv_email	Email address of contact person responsible for biodiversity data delivery

15th January 2025

Wildcard Project Service Contracts

Pricing Guide for Dendrometric & Biodiversity Data

Dendrometric data

The pricing equation for dendrometric data is made up of the following three sections:

1. EU SME average salary

The EU Grants Annex 2a document provides an average daily amount of €485.85.

2. Country correction coefficients

The Horizon Europe Marie Curie Actions 23-24 document provides country correction coefficients to ensure equal treatment and purchasing power parity. A list of country correction coefficients can be found in Annex 2 of this document.

3. No. of days processing

The amount of days for processing is determined by the number of sites that will be delivered (see Table below).

Number of sites	Amount of expected days for processing
< 10 sites	10
10 - 30 sites	15
> 30 sites	18

Final pricing equation for dendrometric data

€485.85 x CCC x expected days for processing

Biodiversity data

An additional €1,000 is to be added to final dendrometric pricing for the provision of biodiversity data.

Annex 1: Pricing equation example

Example for >30 sites in Germany

€485.85€ x 101.20% x 18 = €9,795.74

In the above example, the total price will rise to €10,795.74 when the contractor provides biodiversity data

Annex 2: Country correction coefficient

Full list available at Horizon Europe Marie Curie Actions 23-24

Country Abbreviation	Correction Coefficient
CZ	94.10%
CH	163.80%
DE	101.20%
DK	132.80%
ES	95.60%
FI	118.00%
FR	118.10%
HU	76.70%
HR	80.10%
IE	136.40%
IT	95.30%
LU	100.00%
NL	111.60%
PL	74.10%
RO	70.70%
SE	125.00%
SI	87.70%
SK	80.90%