



“THE INTEGRATED FOREST ECOSYSTEM MANAGEMENT PROJECT IN THE KYRGYZ
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CONSULTING SERVICES

NATIONAL FOREST INVENTORY EXECUTION AND CAPACITY BUILDING

Contract № KG/IFEMP/QCBS/NFI/01/2018

REPORT №4 ON FIELD WORK CONTROL NFI#2

Duration: 11.09. - 25.10.2021



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REPORT № 4 ON FIELD WORK CONTROL NFI #2

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ACRONYMS

DBH	Diameter at breast height (1.3 m)
DFED	Department of forest ecosystem development
LU	Forest management planning (Lesoustroistvo)
GIS	Geographic Information System
IFEMP	Integrated Forest Ecosystem Management Project
SPA	Specially Protected Area
Leskhoz	State Forest Enterprise
NP	National Park
NFI	National Forest Inventory
NFI#1	1 st National Forest Inventory of the Kyrgyz Republic
NFI#2	2 nd National Forest Inventory of the Kyrgyz Republic
SAEPF	State Agency for Environmental Protection and Forestry
GU KLOU	State enterprise «Kyrgyzlesokhotustroystvo»
TTFI	Technical Team for Forest Inventory
QA	Quality assurance
QC	Quality control
SP	Sample pot

1 GENERAL CONCEPTS FOR FIELD WORK CONTROL

Continuous supervision and monitoring of NFI#2 field operations is important for ensuring the quality of data on field assessments and measurements. This is important for ensuring the quality of data for the data processing and analysis process.

Control of the field work is carried in two ways:

- **Hot control** - control of field work during measurements directly by field teams. At the same time, a member of the control team closely monitors the process of making measurements by the field team and conducts training and data correction;
- **Cold control** - this control method involves re-measuring the sample areas that have already been assessed by field teams and the data is stored in the server. On the part of the control team, the assessed sample areas are selectively selected and re-assessed, and the data is compared.

During the first month, only hot controls were performed, since planned control requires data from field operations and is checked by the Database team.

Table 1: Planned distribution of field work control between hot and cold inspections.

Number of the supervision and control team	The number of field teams, under the supervision	Number of controlled tracts		Total
		Hot controls	Cold controls	
1	3	21	12	33
2	3	21	12	33
3	3	21	12	33
4	3	21	12	33
Bcero	12	84	48	132 (± 10%) *
* additional control is possible, depending on the performance of work by field groups				

The control teams should control between 8-10 % of the total number of NFI #2 tracts. The minimum number of tracts to check is 100 tracts and the maximum number of tracts to check is 132.

The selection of tracts for monitoring (hot and cold controls) is based on the following criteria:

- balanced distribution among all field groups;
- coverage of all strata and regions;
- erroneous field data that should be rechecked.

The above-stated information is obtained from the Technical guideline for data quality assurance, pages 8 and 11 (Annex 2)

Supervision & Control teams

UNIQUE-CAREC forestry experts and TTFI members represent the core of the Supervision & Control teams. The Supervision & Control teams consist of 5 UNIQUE-CAREC experts, 3 experts from

GU KLOU, and 1 expert from the DFED under the SAEPF. Each Supervision & Control team is responsible for the supervision of the 3 field groups, quality control of the respective field groups and the data provided by them. Table 2 shows the key composition of the Supervision & Control teams.

Table 2: Composition of the Supervision & Control teams.

No	Name	Organization	Position	Training in the framework of NFI #2
1	Alexander Gradel	UNIQUE	International coordinator	Organized and conducted online and field trainings together with UNIQUE experts
2	Kuban Matraimov	CAREC	National coordinator	Organized and conducted online and field trainings together with UNIQUE experts
3	Emil Ibraev	CAREC	Supervisor and controller	Participated in online training and conducted field trainings together with UNIQUE-CAREC experts
4	Keneshbek Usenov	CAREC	Supervisor and controller	Participated in online training and conducted field trainings together with UNIQUE-CAREC experts
5	Kaparbek Bekmyrzaev	CAREC	Supervisor and controller	Participated in online training and conducted field trainings together with UNIQUE-CAREC experts
6	Zhenish Ashyrbekov	GU KLOU	Member of TTFI and controlling person	Participated in online training and conducted field trainings together with UNIQUE-CAREC experts
7	Mairambek Taabaldiev	GU KLOU	Member of TTFI and controlling person	Participated in a field training on the territory of the forest Institute with UNIQUE-CAREC experts and passed the introductory theoretical course NFI 2
8	N.T. Dovletov	GU KLOU	Member of TTFI and controlling person	2 days during online training (29.04-09.05). Also participated in the meetings of the TTFI

According to the order of SAEPF, the following people will also take part in the control work:

- S. Chukumbaev – Director of GU «Kyrgyzlesoukhotustroystvo»
- Marta Barkybaeva – Head of GIS and Database department of GU «Kyrgyzlesoukhotustroystvo»
- Muslim Rajapbaev - Institute of biology, NAS KR

2 CONTROL OF THE FIELD WORK OF NFI#2

2.1 Work package

According to the Implementation Plan and Technical guidelines for data quality assurance, field teams work according to the developed work packages (monthly or two-months work volumes,

map data and GIS data of tracts). The work packages for the 2021 field teams were composed of the following tracts:

- tracts not completed in 2020 mainly due to weather conditions
- tracts necessary to clarify the accessibility (there was no primary data on accessibility in the database)
- new tracts for the juniper stratum (according to the requirements of SIKFHIP)

Field work in 2021 began on September 11, 4 field teams were involved and an additional control group also laid test plots.

Table 3. Scope of work of field teams

Team №	Team leader	Region and district	Number of tracts	Required working days	Duration of work
15	Mederbek Bakit	Jalal-Abad region (Toktogul and Aksy districts)	20	36	11.09-08.10
16	Moldobaev Kanat	Naryn region (Naryn district), Chui region (Chui district)	18	31	11.09 - 10.10
17	Kozubaev Rustam	Osh region (Nookat district)	11	30	11.09-02.10
18	Osmonov Sapar	Batken region (Kadamjay district)	19	49	11.09 - 25.10
19	Bekmurzaev Kapar	Batken region (Kadamjai district)	2	6	
TOTAL:			70	152	

The initial number of tracts was 1248. However, during the compilation of the last work packages it became clear that two tracts are very remote and hardly accessible. Therefore, 1246 tracts were distributed. The planning for 2021, which was discussed with the client included also some redistribution of tracts.

2.2 The Supervision & Control Team's responsibility over field teams

The fieldwork in 2021 began with field teams and control teams working jointly together. This approach was useful to get the field teams back to work with the NFI's tools and methodology, and to provide the new team members in each group with the needed on-site training.

Table 4. Distribution of field teams among the Supervisors & Controllers in 2021.

№	Supervision & Control	Organization	Controlled teams
1	Kuban Matraimov	CAREC	Group 16, TL Moldobaev Kanat
2	Эмиль Ибраев	Эксперт РЭЦЦА	Group 15, TL Mederbekov Bakit
3	Бекмырзаев Капарбек	Эксперт РЭЦЦА	Group 17, TL Kozubaev Rustam

4	Кенешбек Усенов	Эксперт РЭЦЦА	Group 18, TL Osmonov Saparbek
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Each member of the Supervision & Control team works with the Database team to analyze field data, identify errors, and make decisions.

The Database team is responsible for preparing work packages (work maps and sample plots data), verifying field data, and processing and analyzing verified and corrected data.

Table 5: Connection between Supervision & Control and data base team.

№	Supervision & Control	Database group	Field teams
1	Kuban Matraimov	Eric Jeentaev and Rahat Januzakova	Bolot Asanakunov, Azamat Konkuev, Bachtiyar Soltonkulov, Kanat Moldobaev
2	Emil Ibraev		Kuban Ibraimov, Akmat Nuraliev, Kairat Kuliev
3	Keneshbek Usenov	Alexander Zubovich (Alfiya) and Kunduz Damirbekova	SM. Jarkynbaev, Bakai Uchkurtkaev, Ramis Anarbek uulu, Rustam Kozubaev
4	Kaparbek Bekmyrzaev		Kubat Jamankulov, Nurgazy Aliev, Maksat Andashbaev

The control groups traveled largely with the field groups, conducted on the job training during the establishment of plots, conducted hot controls. During the hot control, a member of the control group observes the work of the field team members from and, if necessary, corrects errors or suggests correct decisions. The Supervision & Control teams also conducted cold controls, which means to approach and re-measure the plot after the data submission of the field teams.

3 FIELD TEAM CONTROL RESULTS

The field work started on September 11 and the next 2-3 days were spent on conducting field trainings and setting up the camp with the support of the administrations of local forestry enterprises and national parks. The scope of field work is provided in the form of a work package No. 4. The working package consists of paths and trial plots with temporary work rates for each trial plot, working maps based on space images and loaded into the field team tablets. The results of the 2021 fieldwork are as follows:

Table 6: Completed fieldwork of field teams during the first three months (according to database).

Group	Region and district	Assessed tracts	Sample plots
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№15	Naryn region (Naryn district), Chui region (Chui and Yssik-Atinskii district)	17	33
№16	Jalal-Abad region (Togtoktogulskii and Aksiiskii district)	17	30
№17	Osh region (Aravanskii and Nookat district)	11	30
№18	Batken region (Kadamshaiskii district)	19	49
№19	Batken region (Kadamshaiskii district)	2	6
TOTAL:		66	148

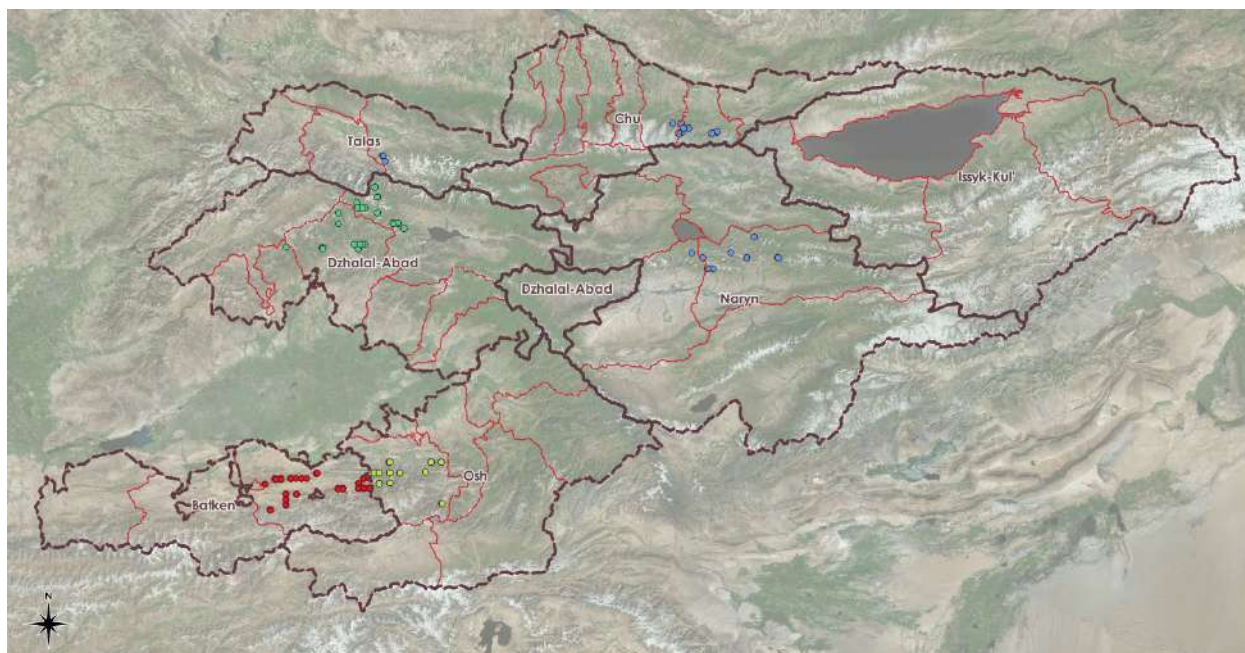


Fig. 1. Map of tracts of the NFI#2 "": Field work in 2021. Blue - tracts of group No. 16; yellow - tracts of group No. 17; green - tracts of group No. 15; red - tracts of groups No. 18 and 19

Based on the results of field work in 2021, 66 tracts (148 plots) were measured. 4 tracts that were included in the scope of work had been already finished in 2020, which was identified when approaching the plots in 2021.

Inaccessible tracts (sample plots), indicated as “forested”, are really inaccessible for various reasons:

- due to the proximity to the borders of other states;
- natural inaccessibility (destroyed roads, the location of the SP over rocks, on very steep slopes, a big river obstruction).

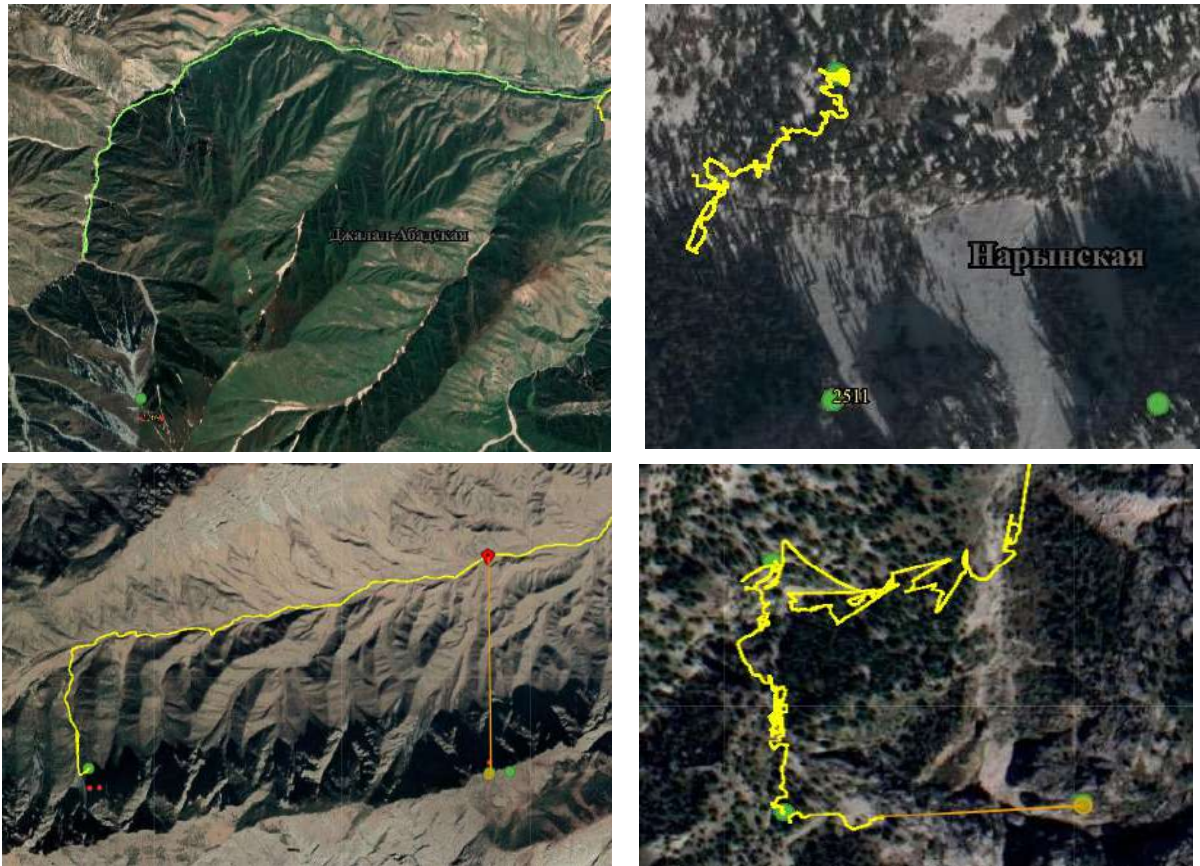


Fig. 1. Examples of inaccessible plots.

Initially, the accessibility of tracts and sample plots was determined theoretically (using satellite images and topographic maps) when preparing working maps. But the final decision on accessibility and the actual condition of the sample plots were made by field teams. Figure 2 shows examples how the field teams went, their route. If it is impossible to reach the center of the SP, the field team notes the reason for the inaccessibility and takes photographs of the area.

However, one of the tasks of the control teams is to check the teams that showed a large number of inaccessible sample plots. The following table shows the results of the database analysis, where inaccessible tracts and SPs were identified by the field teams, i.e. on-site field teams determined inaccessibility. In this case, one or two SPs of the tract area may be inaccessible, but one of the SPs is available, or vice versa. Table 7 shows the results of the database analysis where inaccessible tracts were identified by the field teams.

Table 7. Results of analysis of inaccessible tracts of the field teams.

Team number	Number of finished plots	Number of inaccessible plots
№15	33	17
№16	30	10
№17	30	0

№18	49	14
№19	6	3
Total:	148	44

In 2021, the control works of the field work were carried out by experts of the UNIQUE-CAREC consortium without the participation of the TTFI members, although there were official letters from the side of the consortium to the SIKFHP about the upcoming control works.



Fig. 3. Impressions from the field work.

Main results of the Supervision & Control

Based on the results of supervision and control, work quality protocols are drawn up and field teams were monitored 2 times:

- The first trip of the control groups (experts: K. Matraimov, K. Bekmyrzaev, E. Ibraev and K. Usenov) was carried out jointly with field groups, meetings with the administrations of ayyl aimaks, forestry enterprises and national parks (reserves) were organized. On the part of the administrations of forestry enterprises and PAs, support for field groups was formed: escorting foresters during field work, provision of horses. The date of the trip was from 11.09 to 15.09.2021. During the trip, the TTFI did not participate due to the need of the specialists in their main job.

- The second trip of the control group took place from 27.09 to 04.10.2021. The following experts participated: K. Bekmyrzaev, E. Ibraev and K. Usenov, without the participation of TTFI members. The second trip was mainly devoted to the Planned Control, when the control groups check the already established test plots.

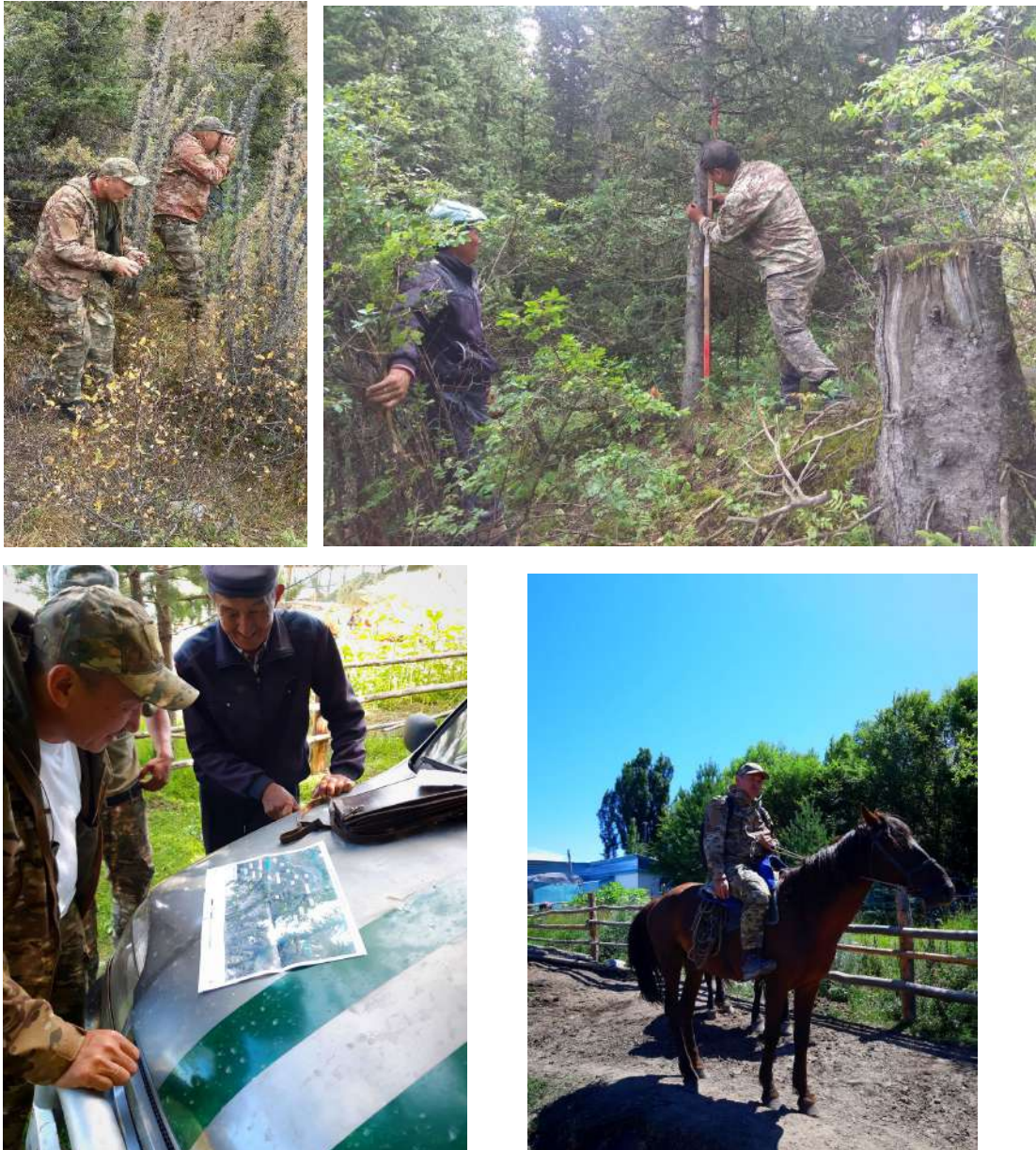


Fig. 4. Field control: Some impressions.

The results of each field team differ individually, the groups have mastered very well the methodology of NFI# 2 and there were no problems when establishing plots. Difficulties in field work are mainly related to the accessibility of SPs, which takes up most of the working time of the field teams. The performance of each field team's work assignments was assessed against the following parameters:

- Navigation to the SP and finding the center of the SP (NFI #1, FMP and NFI #2);

- General data of the sample plot, description of the sample plot;
- Reference points ;
- Influencing factors and stand resistance ;
- Ground cover ;
- Shrubs and regeneration ;
- Assessment of live trees, data on stumps, data on dead trees (fallen and standing): height, diameter, growth, age, trunk length, quality of stumps and dead trees;
- Collection, assessment and transportation of bore core samples.

These indicators are evaluated on a 3-point system (1-error, correction required, 2-satisfactory, 3-very good).

The main results of the field team verification are shown in Table 7, where the following explanations are available:

Type of control: hot control, cold control. Rating: 1=not accepted (not acc.); 2 -, 3 =accepted (acc.);

Abbreviations: KM= Kuban Matraimov; KU= Keneshbek Usenov; EI= Emil Ibraev; KB= Kaparbek Bekmyrzaev.

Table 8. Main results of field teams control (quality of work within the SP) in the 2021 field season.

Number	Team Leader name	Number of Control (per group)	Type of control	Date	Result	Track №	sample plot №	Controlled by
№15	Медербеков Бакыт	1	hot control	12.09.2021	accepted	Ущелье Чычкан	1	EI
		2	hot control	13.09.2021	accepted	1908	1	
№16	Молдобаев Канат	1	hot control	12.09.2021	accepted	2507	1	KM
		2	hot control	13.09.2021	accepted	4371	2	KM
№17	Козубаев Рустам	1	трен-г	12.09.2021	Совместно с группой №18			
		2	hot control	13.09.2021	accepted	9164	1	KB
		3	hot control	13.09.2021		9181	1	KB
№18	Осмонов Сапар	1	трен-г	12.09.2021	Совместно с группой №17			
		2		14.09.2021	accepted	8914	1,2,3	KU
№15	Медербеков Бакыт	3	hot control	28.09.2021	accepted	5392	2	EI
		4	cold control	29.09.2021	accepted	4129	2	EI

№17	Козубаев Рустам	4	cold control	28.09.2021	accepted	9168	1	KB, KU
		5	cold control	29.09.2021	accepted	9168	2	KB, KU
№18	Осмонов Сапар	3	cold control	27.09.2021	accepted	10136	1, 2	KB, KU

4 CURRENT STATUS OF FIELD WORK

As of December 15th, according to the dashboard the number of assessed tracts in the Database is 1245 or 2475 sample plots, including the main indicators:

- Number of trees measured: **13980**;
- Number of measured stumps: **1309**;
- Number of dead trees: **674**;
- * Number of age and growth cores – **4542** collected samples.

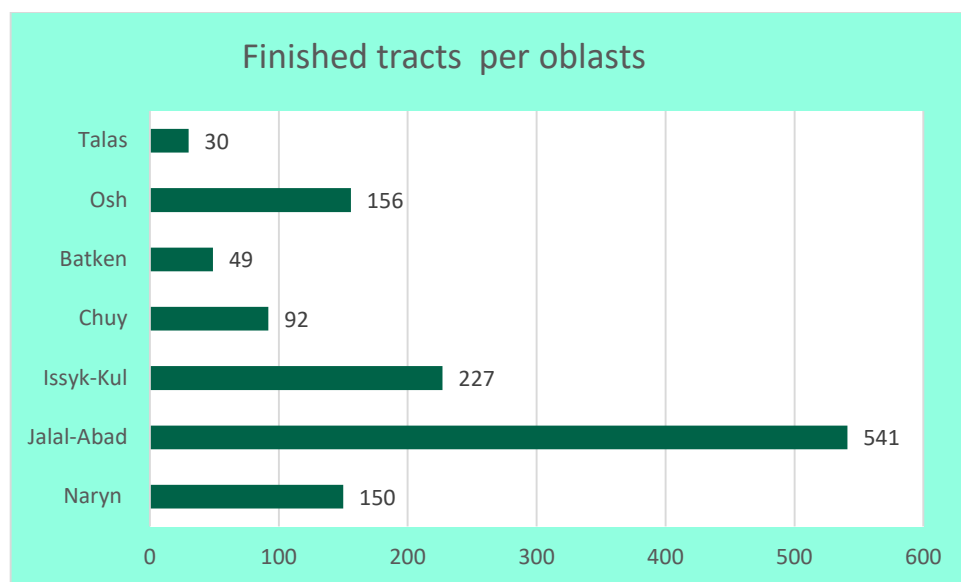


Figure 5: Number of assessed tracts by region (oblast).

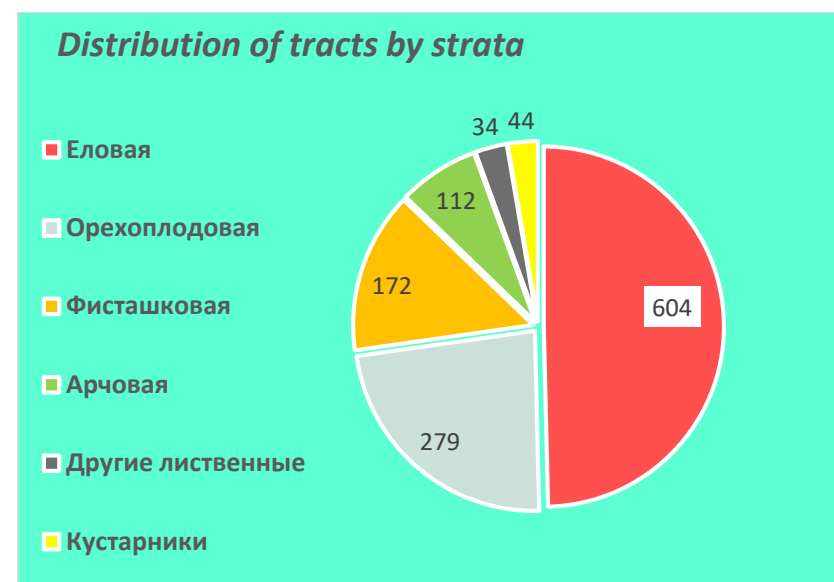


Figure 6: Number of assessed tracts by strata.

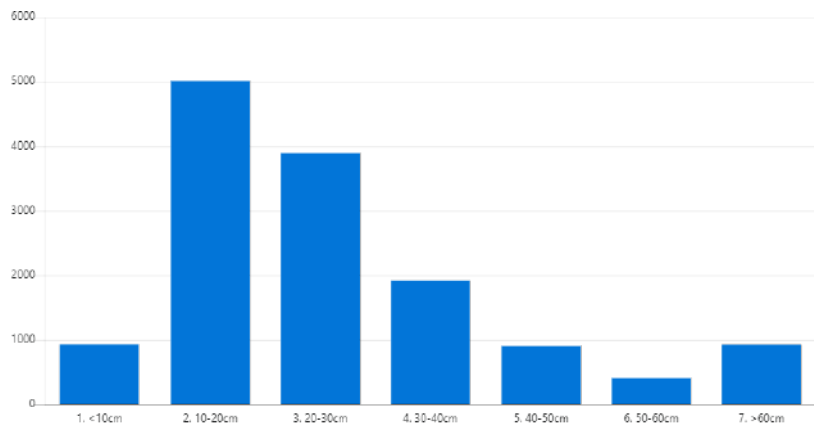


Figure 7: Distribution of trees by diameter classes (development stage)

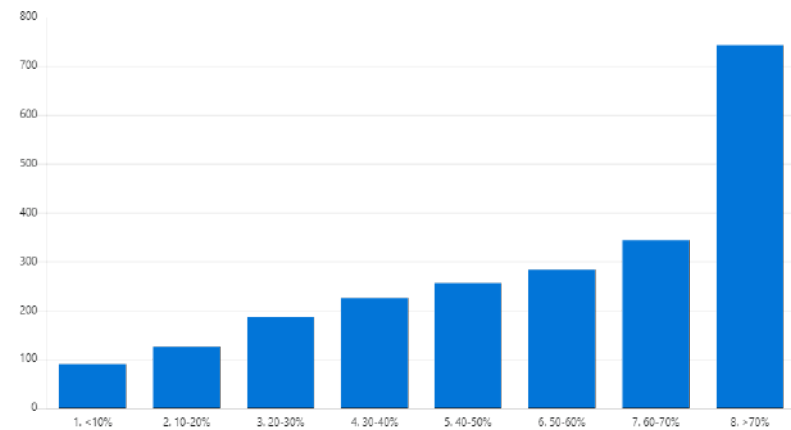


Figure 8: Distribution of sample plots by slope steepness

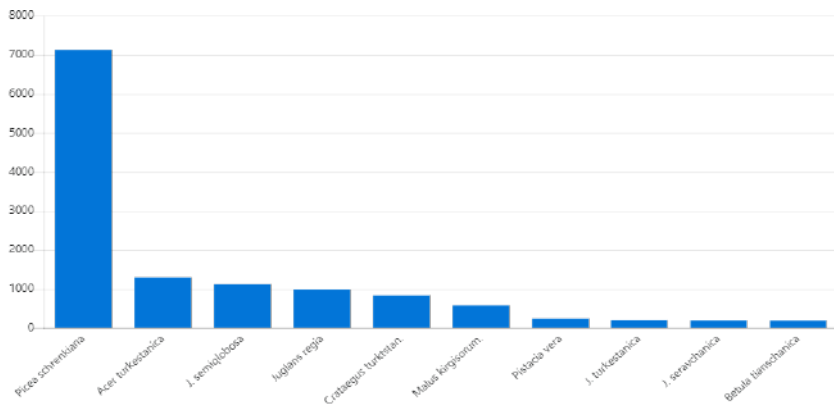


Figure 9: Number of measured tree species

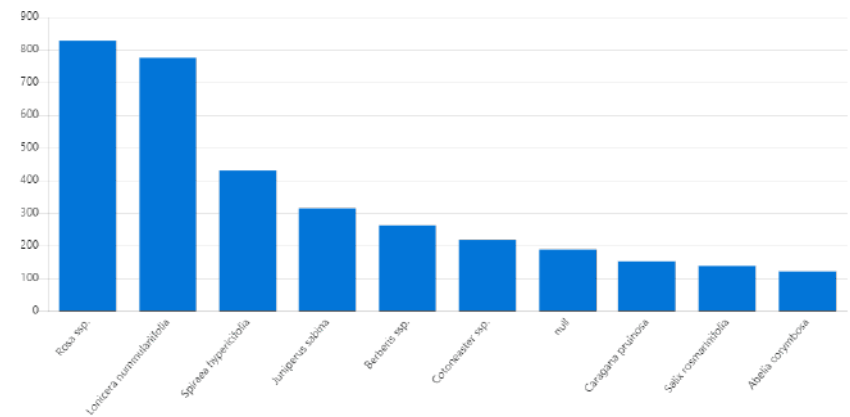


Figure 10: Number of measured shrub species

5 AGE- AND INCREMENT CORES AND THEIR STORAGE

In the course of fieldwork on each sample plot with trees, the average age and growth by species is determined. Field teams extract increment cores by using increment borers which are transported to the SIKFHIP office via the Control teams. From the transferred core samples, a small database of these cores is compiled in the office, which reflects the number of age and incremental cores along the tracts (sample areas), by teams, tree species, regions.

Table 9 provides an overview of the cores that were received by the project office from the field teams. The NFI 2 Database reflects that the field teams collected 82 age and incremental cores in 2021. But the office has not yet received any core samples. The differences have to be clarified after all teams have submitted their bore cores and further data verification.

Table 9. Information about cores from sample plots in 2021.

№ Полевые группы	Number of plots (from which have been collected bore cores)	Number of cores (in office)	Number of cores (in data base)
№15	16	10	23
№16	20	16	16
№17	30	18	20
№18	35	32	34
Всего		76	82

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