



# Preliminary results from the volunteer spring monitoring

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allikad.info

WaterAct EN

## SPRING OBSERVATIONS DATABASE

Let's map the springs together!



**Why volunteer monitoring of springs?**

The purpose of mapping the spring locations and assessing water quality is to help scientists and governmental institutions to collect new information. The data obtained this way helps to manage and protect springs. Without your contribution, this would not be possible!



SPRINGS

avoti.info

WaterAct LT

## AVOTU NOVĒROJUMU DATU BĀZE

Pētīsim avotus kopā!



**Kāpēc brīvprātīgais avotu monitorings?**

Avotu kartēšanas un ūdens kvalitātes novērtēšanas mērķis ir palīdzēt zinātniekiem un valsts institūcijām iegūt jaunu informāciju. Šādā veidā iegūtie dati palīdz pārvaldīt un aizsargāt avotus. Bez Jūsu ieguldījuma tas nebūtu iespējams!



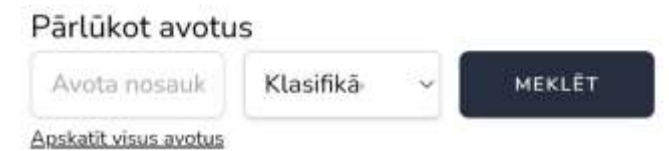
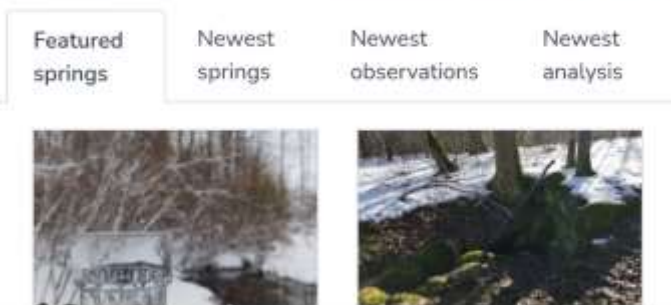
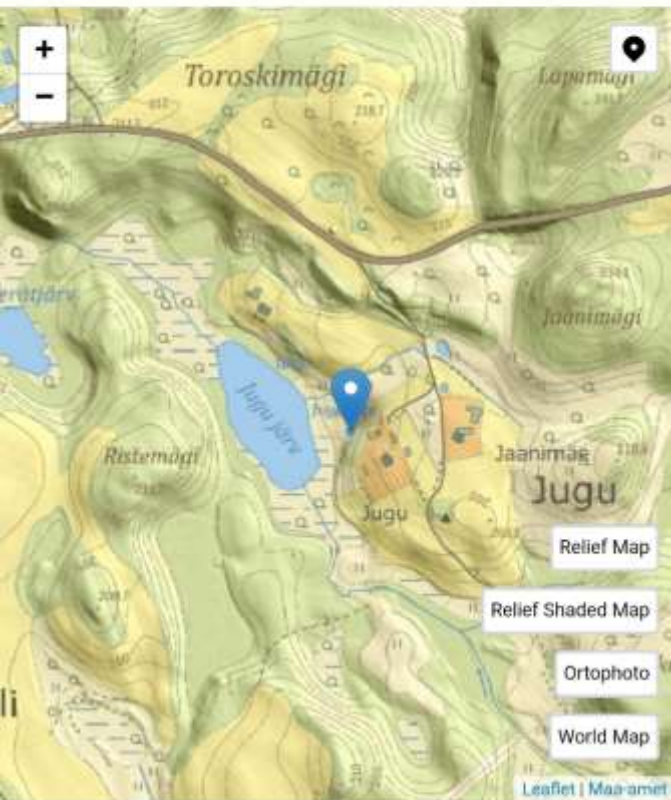
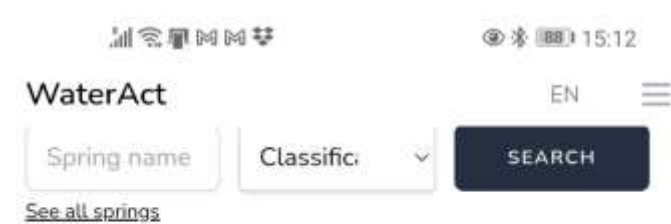
AVOTI

<https://allikad.info/>  
<https://avoti.info/>

- allikad.info/avoti.info is browser based map application for finding, describing, observing and measuring of the springs.
- Support for the 5 language – English, Estonian, Latvian, Russian and French.
- All springs from government databases are already there. Users can check the correctness of information, upload pictures and make observations (describe, measure etc).
- Users can add new springs and information.
- New and revised spring will end up in governmental databases.







<https://allikad.info/>  
<https://avoti.info/>

- 🌸 Different maps for Estonia (Landborad) and Latvia (Jāņa sētas).
- 🌸 In Estonia it is possible to use Orthophoto and Relief shaded map.
- 🌸 When adding new spring, all location information (coordinates, country, local municipality) will come automatically from map.
- 🌸 At first all springs will have status „Submitted“ („Kinnitamata“/„Iesniegts“) and will get status „Confirmed“ („Kinnitatud“/„Apstiprināts“) only after rechecking by other users or administrator.



# General principles of the allikad.info / avoti.info

1. Without user account you can see springs, add information and observations.

2. If you want to add springs or observations you have to register. [Register](#) [Login](#)

3. After the logging in you see buttons [Create new spring](#) and [Add new observation](#) .

3. After the logging in you have access to the dashboard, where you all springs and observations inserted by you.

4. Both new springs and observations can be saved as draft for editing or be submitted.

SAVE AS DRAFT

SUBMIT

5. After adding new spring it will go the editor dashboard for checking it over.

6. Under the button [Leave Feedback](#) you can leave feedback – suggest corrections of the location or other information.





# Spring monitoring manual for volunteers

Authors: J. Terasmaa, M. Vainu, O. Koit,  
K. Sisask, P. Abreldaal, L. Puusepp

Web application:  
**allikad.info**



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Download the spring  
monitoring manual for  
volunteers!



Lejupielādēt avotu  
monitoringa rokasgrāmatu!



Lae alla allikate  
vabatahtliku seire juhend!



## WP3 AT3.2 - Establishment of voluntary spring monitoring

- **Spring voluntary monitoring** will be introduced to general public as the overall awareness of groundwater protection is low.
- **Easy to understand guide how to carry out voluntary spring monitoring** will be developed.
- **Web application** will be developed by TU to gather the data online.
- Best cost-effective measures **how to carry out spring monitoring by non-experts** and **how to engage public** will be tested.



# Why spring monitoring?

Advantages for springs being included into national groundwater monitoring networks:

- there are no installation or maintenance costs
- sampling does not require time consuming water pumping compared to wells and boreholes.

Obstacles to use springs as representative monitoring points:

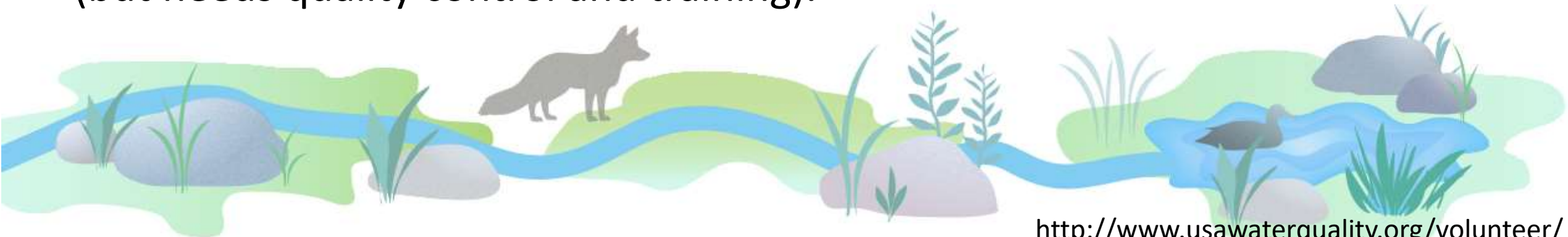
- Water quality can be seasonally changing, thus they need to be screened at least four times a year to identify appropriate sampling frequency





# Why citizen science (volunteer monitoring)?

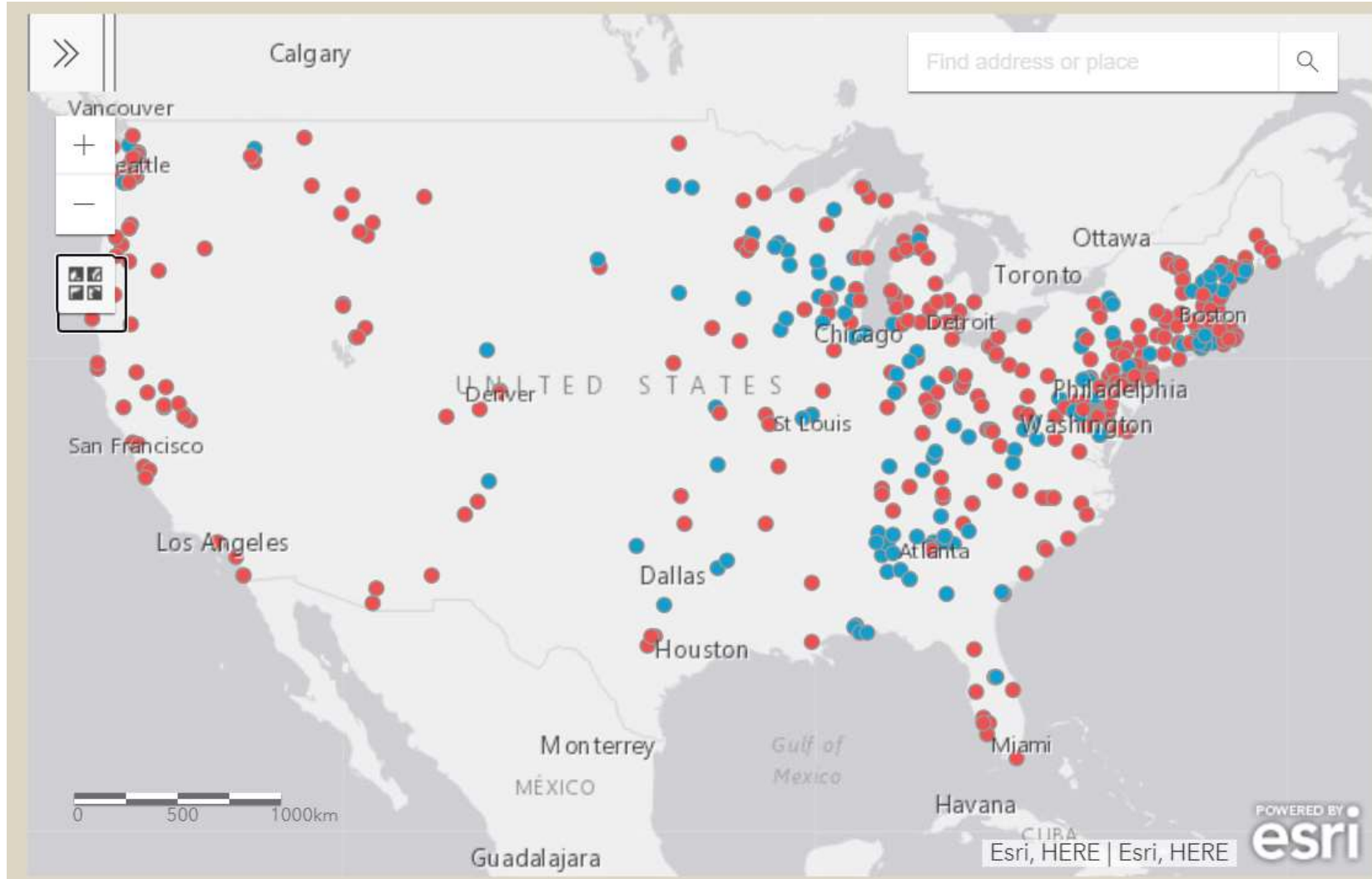
- **Increases the awareness** of and interest in local water quality issues.
- **Helps to educate** - through monitoring, volunteers learn how the quality of water is affected by our actions and how we can protect water resources.
- Volunteer water quality monitoring is a **great tool for youth environmental education**.
- Obtains **long-term data or new data** on waterbodies that otherwise may go unmonitored.
- Water quality data collection by volunteers is **time and cost efficient**.
- **Research shows, that volunteer water quality monitoring data is credible** (but needs quality control and training).





# Why citizen science (volunteer monitoring)?

**US National Water Quality Monitoring Council** <https://acwi.gov/monitoring/>



# Good practices from Estonia

## Nature observations database (Loodusvaatluste andmebaas – LVA)

<https://lva.keskkonnainfo.ee/>

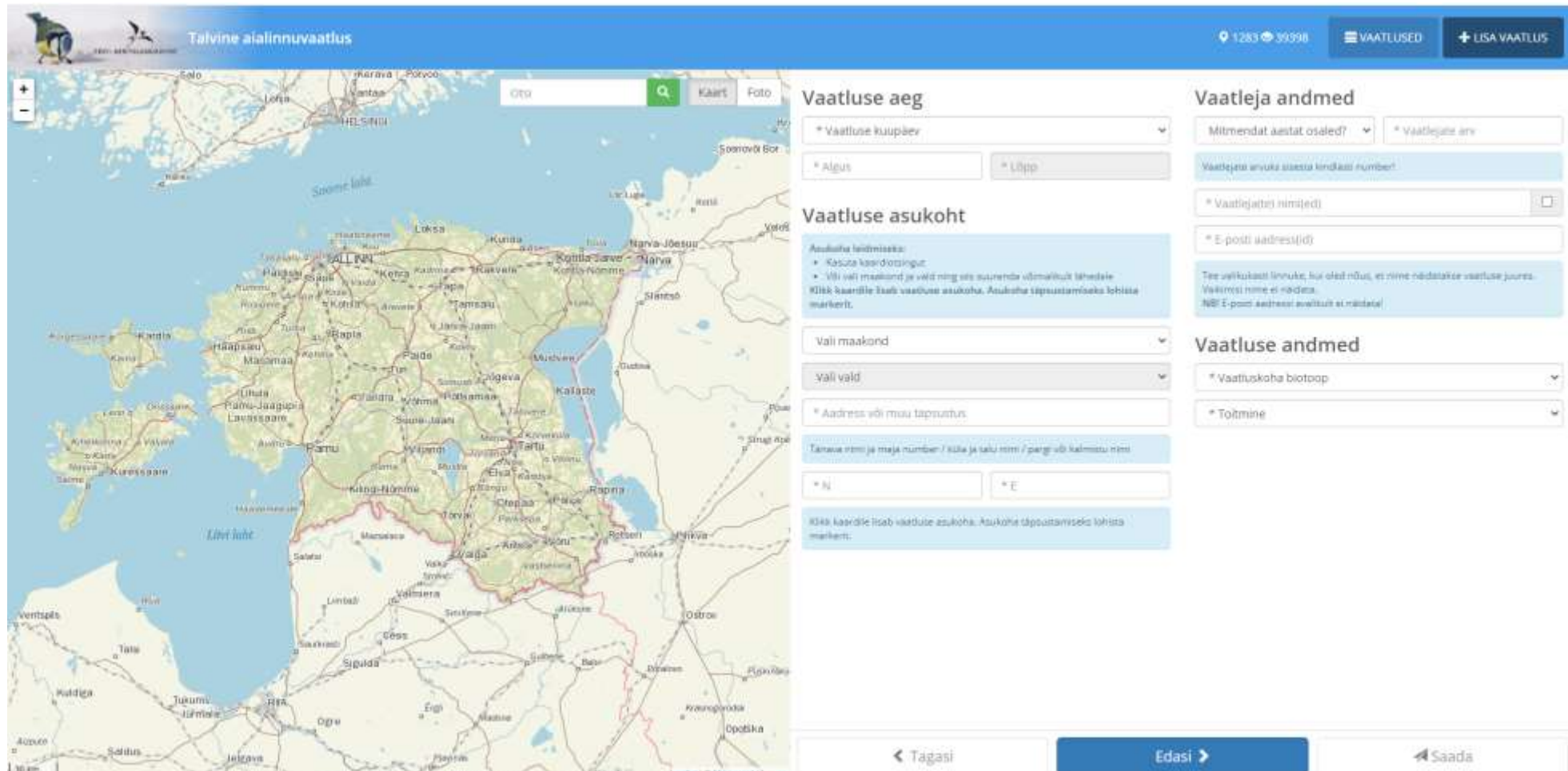
The screenshot shows the homepage of the Estonian Nature Observations Database (LVA). The header features the LVA logo and the text "Loodusvaatluste andmebaas". Below the header, there are navigation links: "About database", "Useful stuff", "Summaries", and "Insert observations". The main content area is titled "WELCOME TO THE WEBPAGE OF NATURE OBSERVATIONS DATABASE" and includes a welcome message: "We invite everyone to report observations. All sightings are welcome, e. g. I saw the first Hepatica in spring or roe deer in forest. In addition to living individuals you can also report observations of traces of activity or died individuals." Below this, it states: "Nature observations database has now Nature observations application for smartphone and tablet. Application is working in android and IOS environment." The page features a grid of 12 images representing various nature observations: a fox, a yellow warbler, a yellow flower, a mushroom, a snake, a frog, a fish, a beetle, a butterfly, a dragonfly, a spider, and a grasshopper. On the left side, there is a sidebar with a list of categories: "All observations", "Protected species", "Amphibians", "Birds", "Butterflies", "Dragonflies", "Fishes", "Fungi", "Insects", "Mammals", "Molluscs", "Reptiles", "Spiders", and "Vascular plants". At the bottom, there are logos for "KESKKONNAINFOTO" and "ESTI LVS".

The screenshot shows the map application of the Estonian Nature Observations Database (LVA). The header displays "Estonian Nature Observations Database" and includes a search bar, "Log in", and "Help" buttons. The main interface is divided into several sections: "Distribution of species", "Map Layers", "Inserting data", "Map", and "Aerial". The "Distribution of species" section includes a dropdown menu for "Choose group of species" (set to "Amphibians"), a dropdown for "Choose species (LAD | ENG)" (set to "Common toad (Bufo bufo)"), a text field for "Description of location", a date picker for "Time on observation", a dropdown for "Location of observation", a dropdown for "Habitat", and a dropdown for "Status". Below these fields are buttons for "Show on map with utm grids" and "Specific outputs". The "Map" section shows a map of Estonia with a grid overlay. A legend titled "Number of observa" indicates the number of observations per grid cell, with color-coded ranges: 1-8 (red), 9-15 (orange), 16-22 (yellow), 23-29 (green), 30-36 (blue), and 37-44 (dark blue). A tooltip on the map shows coordinates: "N: 6446035 E: 363100" and "N: 58.13403 E: 21.67566". The map also shows major cities and regions like Soome, Kärđla, Haapsalu, Paide, Jõgeva, Pärnu, Viljandi, Tartu, Põlva, Võru, Valmiera, and Aluskaart: Maa-amet. At the bottom, there is a "Help to identify" button and a footer with the text "Using data please refer to Estonian Nature Observations Database" and logos for "ESTI LVS" and "REGIO".

# Good practices from Estonia

Garden birdwatch – already 11 years in more than ten country.

<https://www.eoy.ee/talv/>



The screenshot shows the website interface for "Talvine aialinnuvaatlus" (Winter Garden Birdwatch). The top navigation bar includes the logo, the title, and user statistics (1283 users, 39398 observations). A search bar and navigation tabs (Otsi, Kaart, Foto) are also present.

The main content area is divided into a map of Estonia on the left and a registration form on the right. The map shows various regions and cities across the country.

The registration form is titled "Vaatluse aeg" (Observation time) and "Vaatluse asukoht" (Observation location). It includes the following fields and sections:

- Vaatluse aeg:** \* Vaatluse kuupäev (Observation date), \* Algus (Start), \* Lõpp (End).
- Vaatluse asukoht:** \* Asukohta loetlistest (Location from list), \* Kasuta kasidotsingut (Use search), \* Vali maakond (Select county), \* Vali vald (Select municipality), \* Aadress või muu täpsustus (Address or other specification), \* Tänuks nimi ja maja number / küla ja talu nimi / pang- või kalmeistu nimi (Name and house number / village and farm name / bank or cemetery name), \* N (North), \* E (East), \* Kõik koordinaadid lisab vaatluse asukohta. Asukohta täpsustamiseks lohistage märkerit. (All coordinates are added to the observation location. For more precise location, move the marker).
- Vaatleja andmed (Observer information):** \* Mitmendat aastat osaled? (How many years participating?), \* Vaatleja arv (Number of observers), \* Vaatleja(te) nimis(ed) (Observer name(s)), \* E-posti aadressid (Email address(es)), \* Tee avalikult linnute, kui oled nõus, et nime näidatakse vaatluse juures. Vahelised nime ei näidata. NB! E-posti aadressid avalikult ei näidata! (Publicly show birds if you agree, names will be shown with the observation. Sometimes names are not shown. NB! Email addresses are not shown publicly!).
- Vaatluse andmed (Observation details):** \* Vaatluskoha biotoop (Observation site biotope), \* Toitmine (Feeding).

At the bottom of the form, there are navigation buttons: "Tagasi" (Back), "Edasi" (Next), and "Saada" (Submit).



# Good practices from Estonia

Mapping of the two different type of cowslip (*Primula veris*) species

<https://www.nurmenukk.ee/>

The image displays three parts of the 'Looking for Cowslip' website. The left part is the main landing page, featuring a large yellow cowslip flower background. It includes the 'Looking for Cowslip' logo, navigation links for 'About the Cowslip', 'Instructions', 'Contact', and language options 'ET', 'RUS', 'EN', 'LV'. A prominent red 'OBSERVE' button is visible. The main heading is 'Looking for Cowslip' with the subtext 'Participate in the biggest cowslip observation in 2020!'. A central image shows a smartphone displaying the 'Observe' app interface with a camera view of a cowslip flower. Below this, two dark blue boxes contain the text: 'Go outside and do an observation right away!' and 'Cowslips' flowering time is May!'. The middle part is the 'Make an observation' page, which thanks the user and provides instructions. It includes a 'How to?' section with links for 'Video' and 'Download observation instructions'. The right part shows the observation details page, featuring a table with 'Observation ID' (20d2eafcg5c4) and 'Date' (21.07.2020), and a 'Location' section with a map of Estonia and a 'Locate automatically' link.

**Looking for Cowslip**

About the Cowslip Instructions Contact ET RUS EN LV **OBSERVE**

## Looking for Cowslip

Participate in the biggest cowslip observation in 2020!

Go outside and do an observation right away!

Cowslips' flowering time is May!

### Make an observation

Thank you for your effort! To make the observation fill in the form on the right.

For more info see the video or instruction below.

**How to ?**

- Video
- Download observation instructions

**Observation ID** **Date**

20d2eafcg5c4	21.07.2020
--------------	------------

**Location**

Move the location pointer and mark your location on the map. [Locate automatically](#)

Map Satellite

Tallinn

Estonia

Google

Insert the coordinates manually

# Good practices from Estonia

## Mapping of the invasive species - portuguese slug (*Arion lusitanicus*)

<https://survey123.arcgis.com/share/f50da40017564ae28439e93aefc44159>

**Lusitaania teetigu leviku kaardistamine**


Lusitaania teetigu on võõrlik, keda esimest korda leiti Eestis 2008. aastal. Nüüdseks leevivad need väikesed perekonnad juba maastikust, selleks, et anda paremaid tingimusi ja edasiseks kohalikele organismidele ja loodusele ning hoida ära, et need ei leviksid teistesse looduskaitsealadesse. Märgi kaardile kohad, kus Sa oled Lusitaania teetigu näinud. Võib-olla, et Sa ei ole näinud ühtegi Lusitaania teetigu näidatavat kohta.

**Картографирование распространения испанского слизня**

Испанский лесной улитка является чужеродным видом, который был впервые замечен в Эстонии в 2008 году. На сегодняшний день в некоторых регионах он встречается уже массово. Для того, чтобы дать лучшие рекомендации по борьбе с данным видом и помочь местным самоуправлениям и домохозяйствам организовать эффективное уничтожение слизней необходимо знать areas распространения испанской лесной улитки. Отметь на карте все места, где ты встретил испанского слизня. Уведомь, что ты увидел этого слизня в этом месте, показав место с отмеченными примерами испанского слизня.

- Lusitaania teetigu. Испанский слизень
- Must-seatigu. Черно-синий слизень
- Suur-seatigu. Большой придорожный слизень

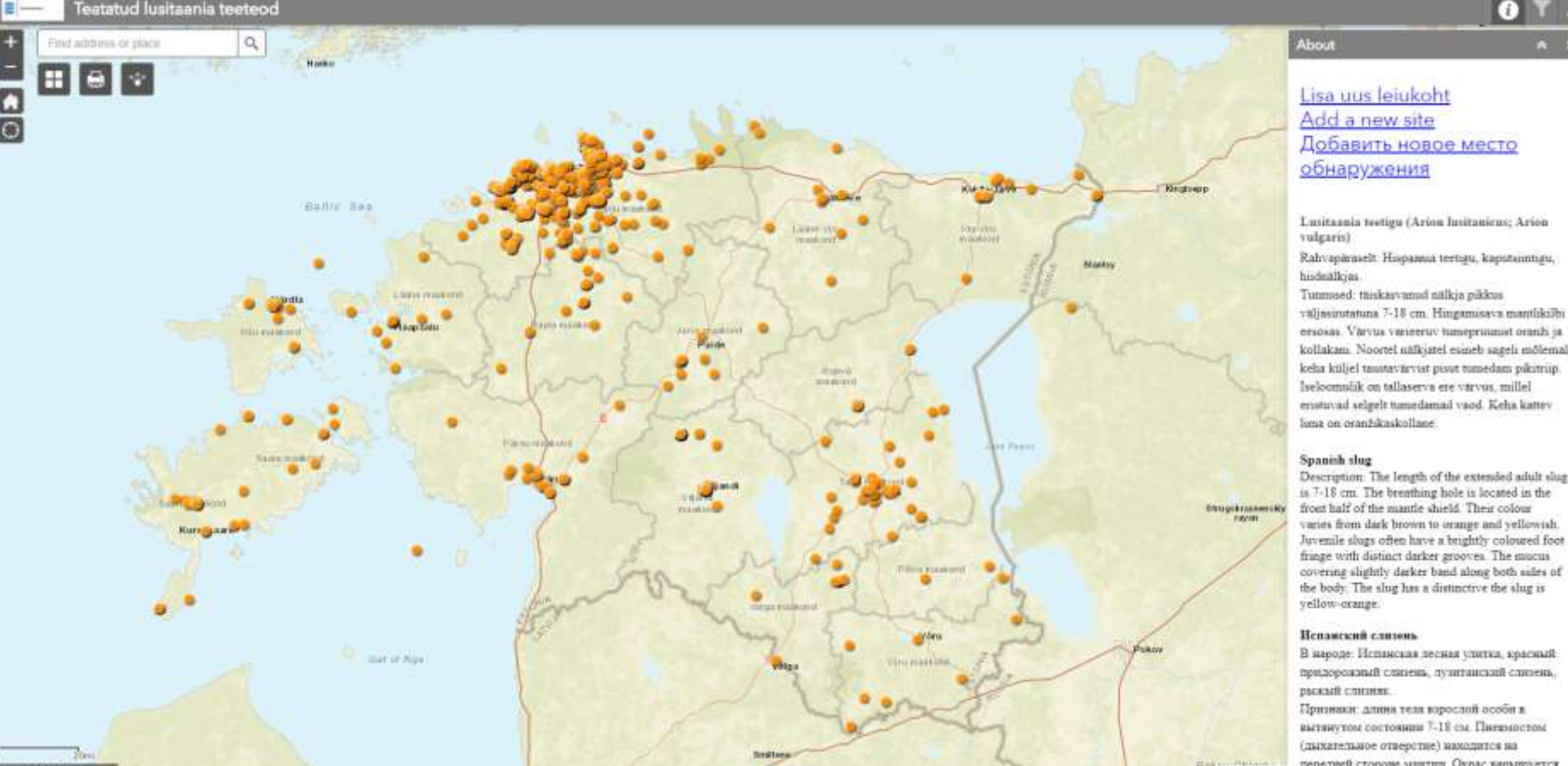
Märgi tigu kaardile. Отметь слизня на карте.



Lisa pilt. Добавь фотографию

Select image file

**Teatatud lusitaania teetead**



**About**

[Lisa uus leiukoht](#)  
[Add a new site](#)  
[Добавить новое место обнаружения](#)

**Lusitaania teetigu (*Arion lusitanicus*; Arion vulgaris)**

Rahvaraselt: Naapurna teetigu, kaputaanitu, hindaalkjas.

Tunnused: taaskarvitud nalkja pikkus väljasaatanuna 7-18 cm. Hingusava mantlakuubi eesosas. Värvus varieerub tumepunast oranži ja kollakani. Noortel näkjatel esineb sageli mõlemal keha küljel taustavärvist pisut tumedam pikiatriip. Iseloomulik on tallaserva ere värvus, millel esinevad selgelt tumedamad vaod. Keha kattev lima on oranžikasollane.

**Spanish slug**

Description: The length of the extended adult slug is 7-18 cm. The breathing hole is located in the front half of the mantle shield. Their colour varies from dark brown to orange and yellowish. Juvenile slugs often have a brightly coloured foot fringe with distinct darker grooves. The mucus covering slightly darker band along both sides of the body. The slug has a distinctive the slug is yellow-orange.

**Испанский слизень**

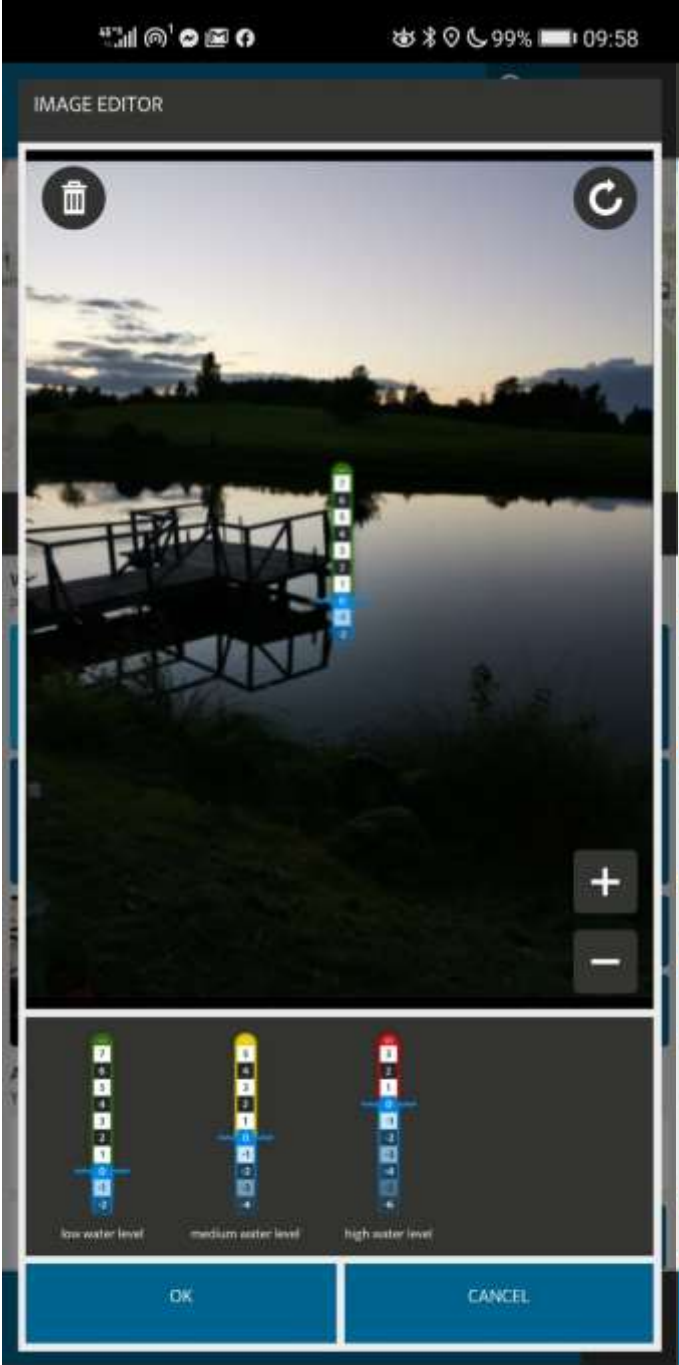
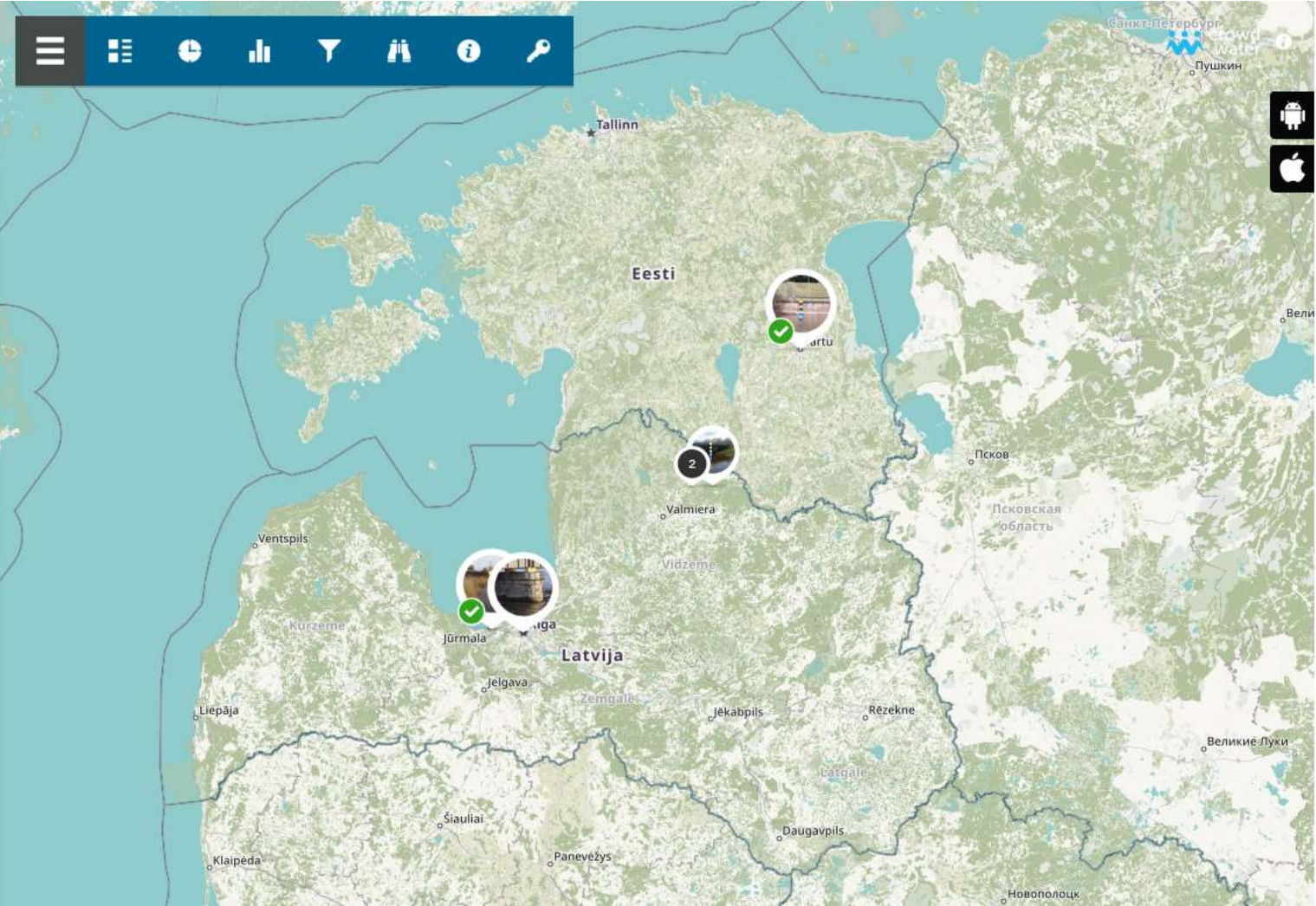
В народе: Испанская лесная улитка, красный придорожный слизень, лунтанский слизень, расский слизень.

Признаки: длина тела взрослых особей в вытянутом состоянии 7-18 см. Пневмостом (дыхательное отверстие) находится на передней стороне мантии. Окрас варьируется



# Good practice from Europe

Crowd Water – <https://crowdwater.ch/>



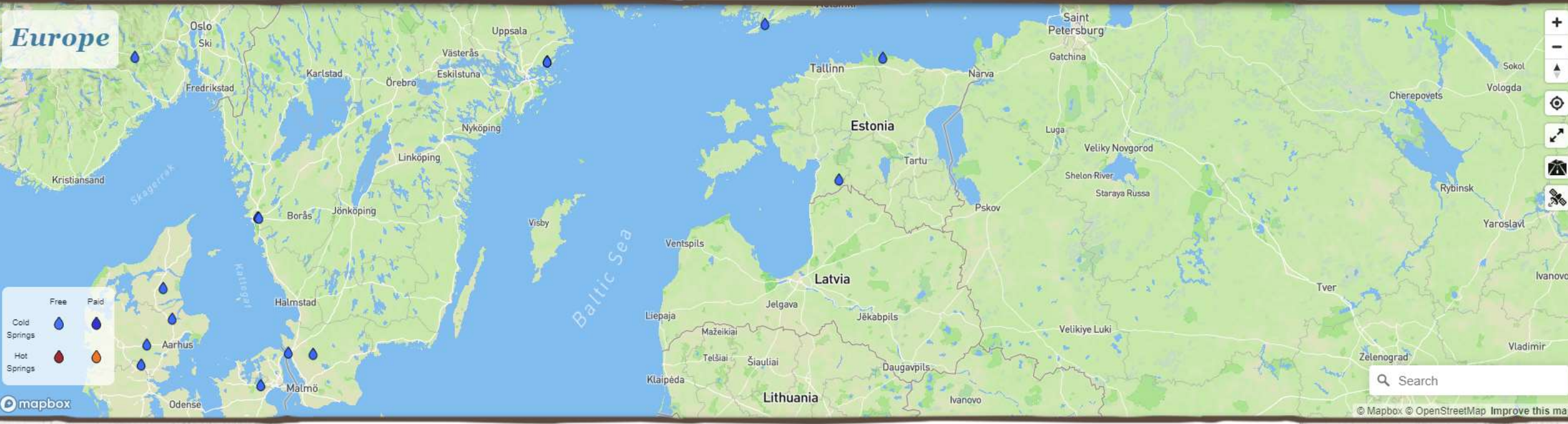


# Find a Spring - <https://findaspring.com/>

[Locate A Spring](#) [Submit A Spring](#)  [About Us](#) · [Why Spring Water](#)

English

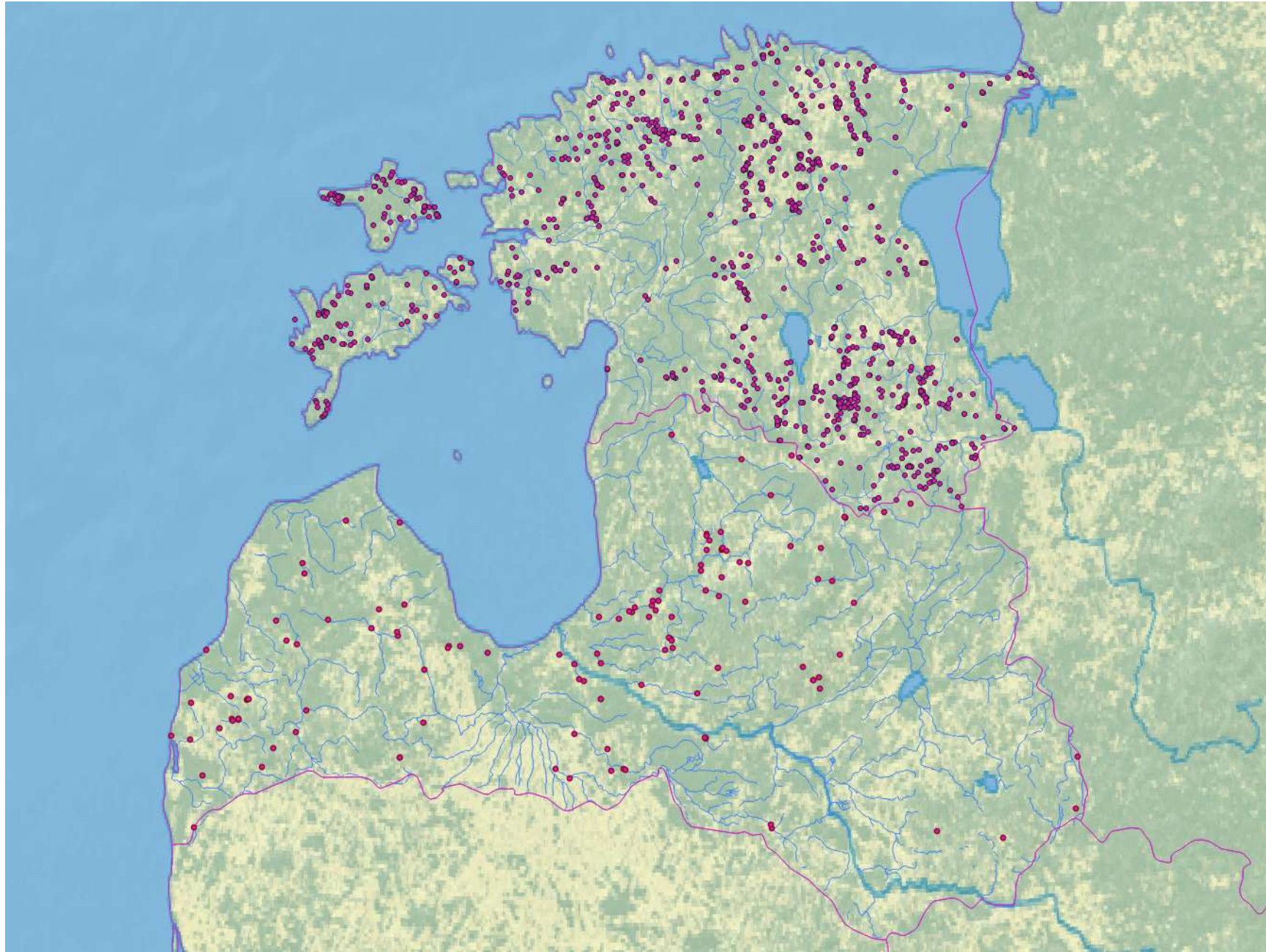
Europe



[Login or create an account to make comments.](#)

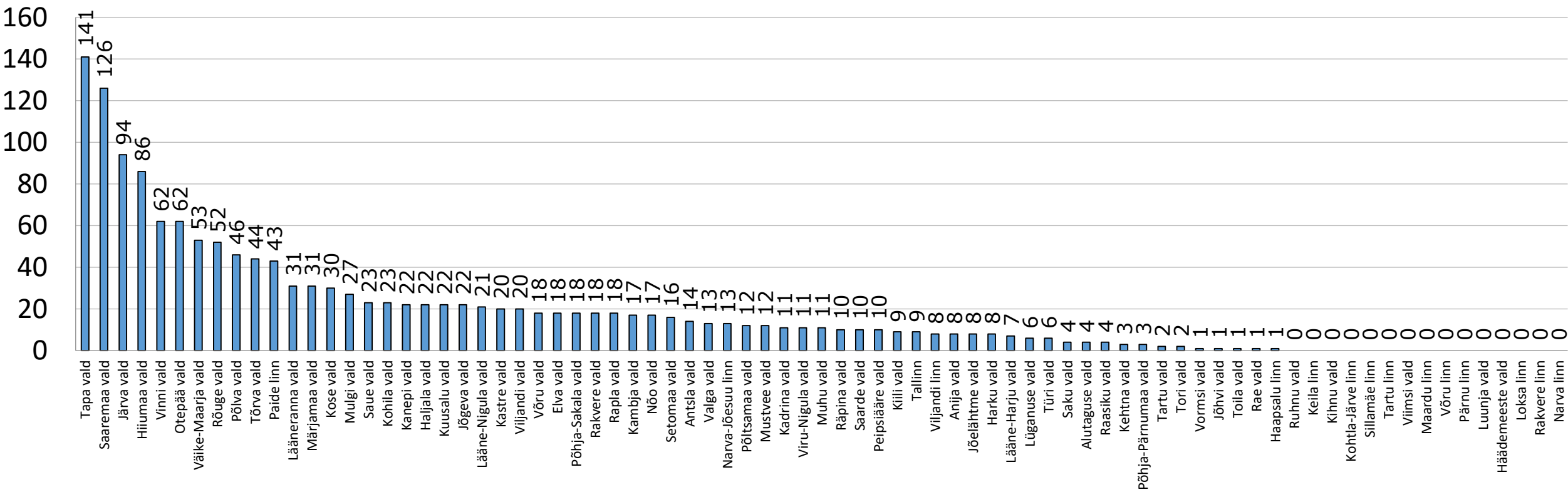
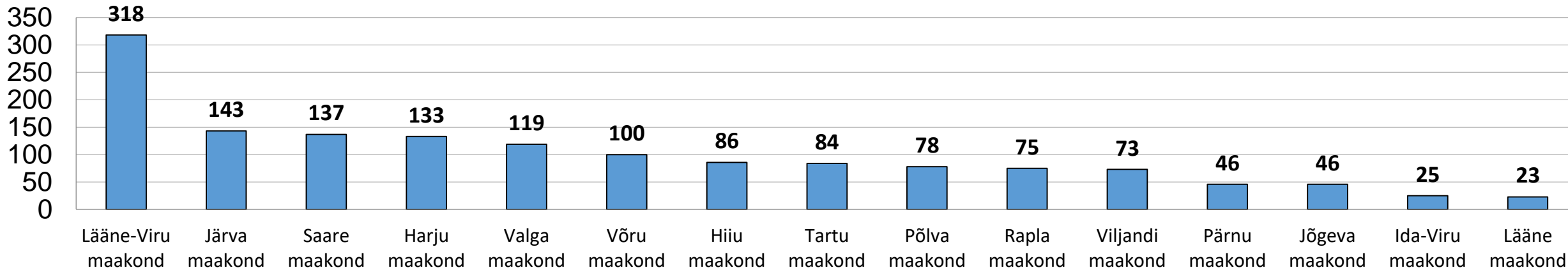


 Initial database – 1486 springs from Estonia, 123 springs from Latvia





# Distribution of Estonian springs (n=1486) by municipalities





# Results so far (as of 07.10.2021)

<https://allikad.info/>

**Users:** 153

**Springs:** 1872 (263 new springs from 02.2021)

**Observations:** 488

**Photos:** 1534

- + Five schools from Koiva are joined
- + GLOBE network
- + At least three school project about local springs
- + Several student thesis fill focus on springs

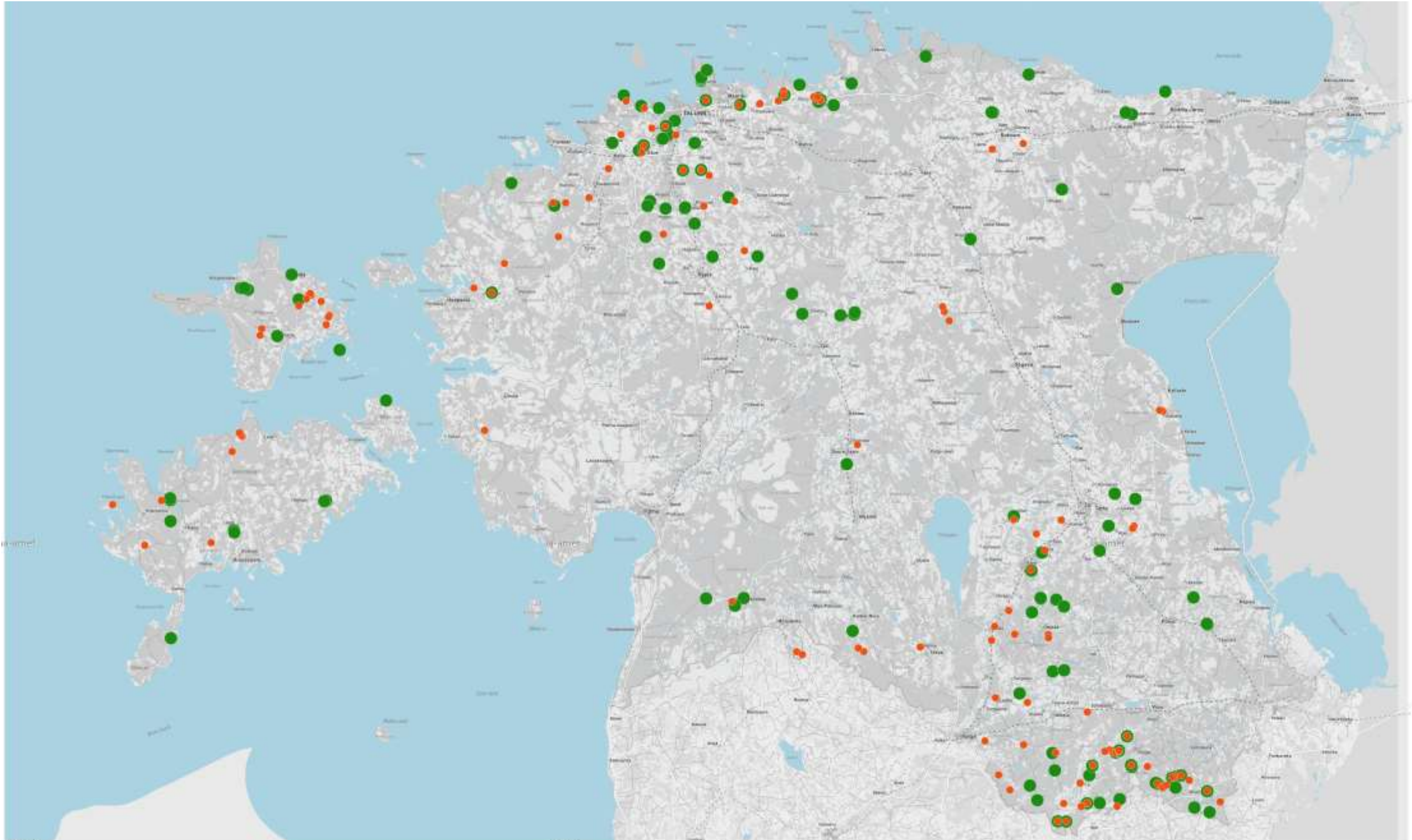
Facebook group “Kaardistame üheskoos allikad”:<https://www.facebook.com/allikad.info> (475 followers)

Instagram: know.your.water <https://www.instagram.com/know.your.water/> (146 followers)

Youtube channel: [https://www.youtube.com/channel/UCT28j3eISSLrJPpm\\_uANg-g](https://www.youtube.com/channel/UCT28j3eISSLrJPpm_uANg-g)



● New springs (n=180) ● Corrected springs (140) (as of 05.2021)

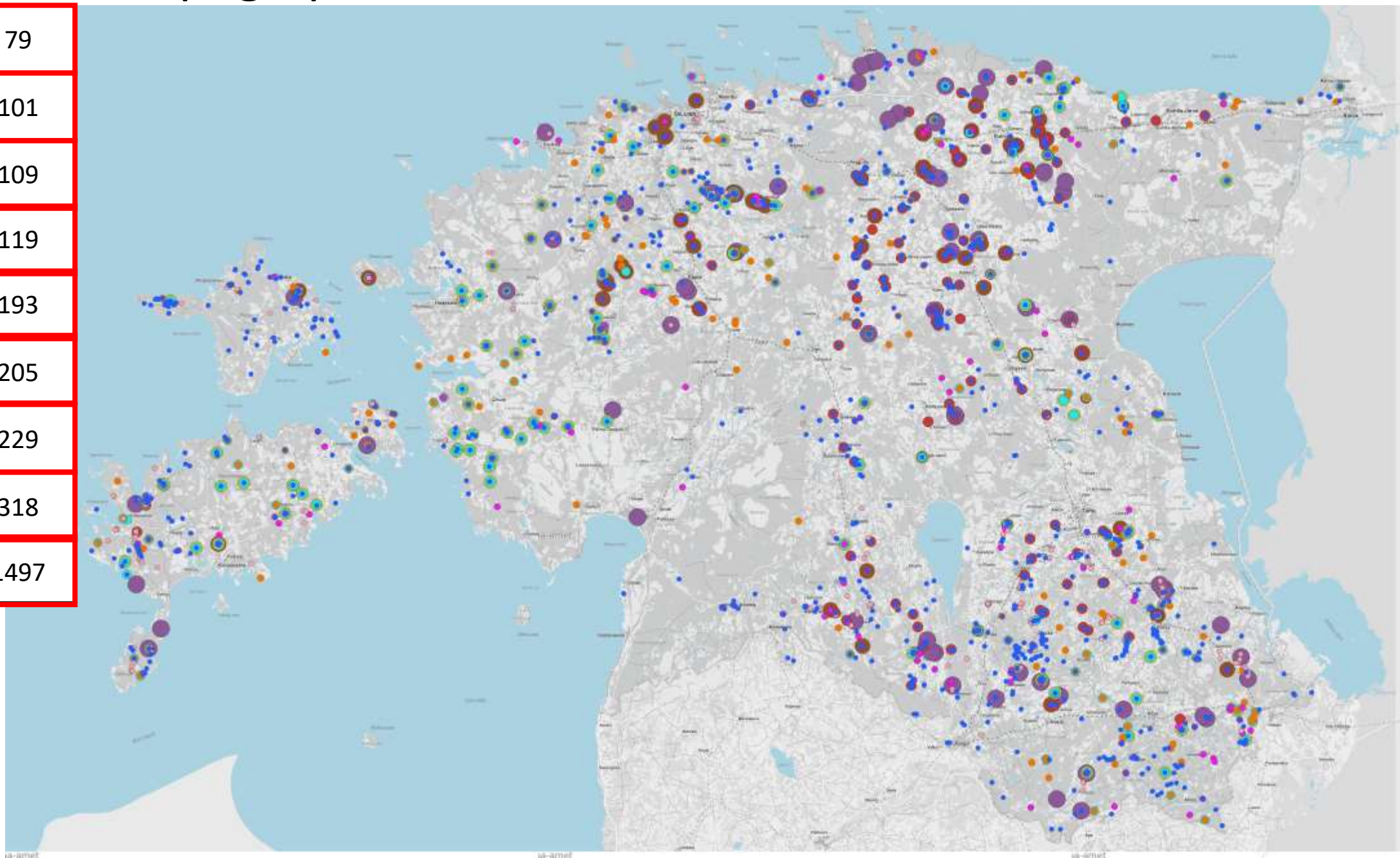






# Estonian Topographic Database VS other databases

Allikaline vääriselupaik	79
Üksikobjektina kaitstud allikas	101
Muinsuskaitsealune allikas	109
Seireallikas	119
Looduslik pühapaik	193
Pärandkultuuri allikas	205
Ürglooduse raamatu allikas	229
Loodusdirektiivi allikaelupaik	318
KKR/ETAK	1497





# Water problems and water protection

- In collected water samples during the 2016-2019 pesticides were present also in springs. Sopa spring – which water people are often using as drinking water – had high amount. Nearest field is 1 km away.

www.pollumajandus.ee (2020)

„Seiretulemused viitavad keskkonnamikemikaalide tõusule nii keskkonnas kui toidus“

From Estonian Water Act (Veeseadus):

In order to prevent the erosion of the banks or shores of water bodies, and diffuse emissions into water, the banks or shores of water bodies shall have **water protection zone of 10 m**, where is prohibited:

- cultivation of land, use of fertilizers
- cutting layers of trees and shrubs on the banks
- use of chemical plant protection products
- extraction and geological exploration of mineral resources
- degrading the soil and other activities causing the erosion of shores or banks

**According to the Water Act (§118), water protection zone is only forced if the water body is in the Estonian Topographic Database.**

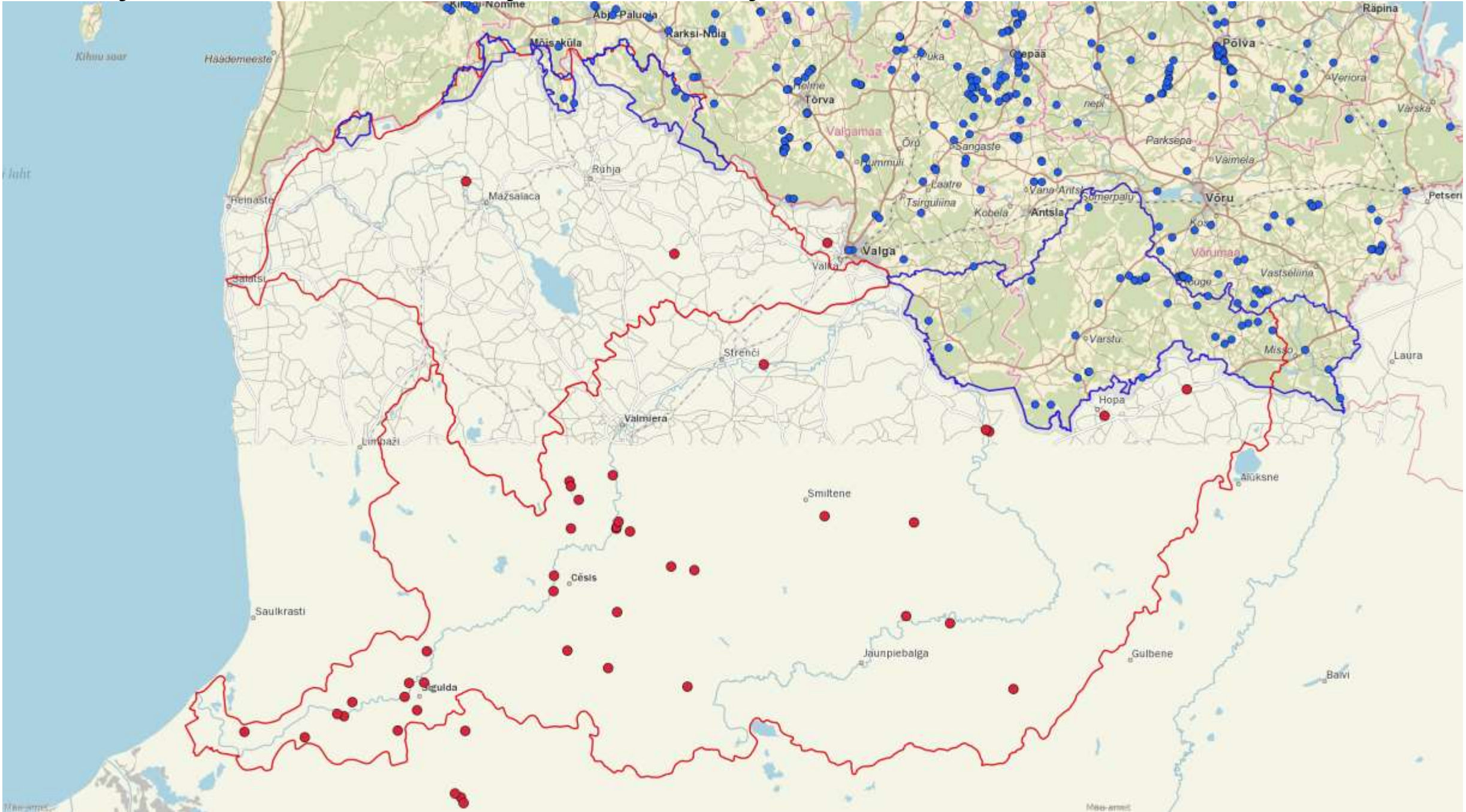


Sopa allikas, august 2016,  
Pestitsiide 0,17 µg/l, AMPA 0,06 µg/l, Glüfosaat 0,06 µg/l,  
Kloridasoon-desfenüül 0,05 µg/l,  
Norra allikas, pestitsiide 0,19 µg/l, AMPA 0,11 µg/l,  
Kloridasoon-desfenüül 0,08 µg/l



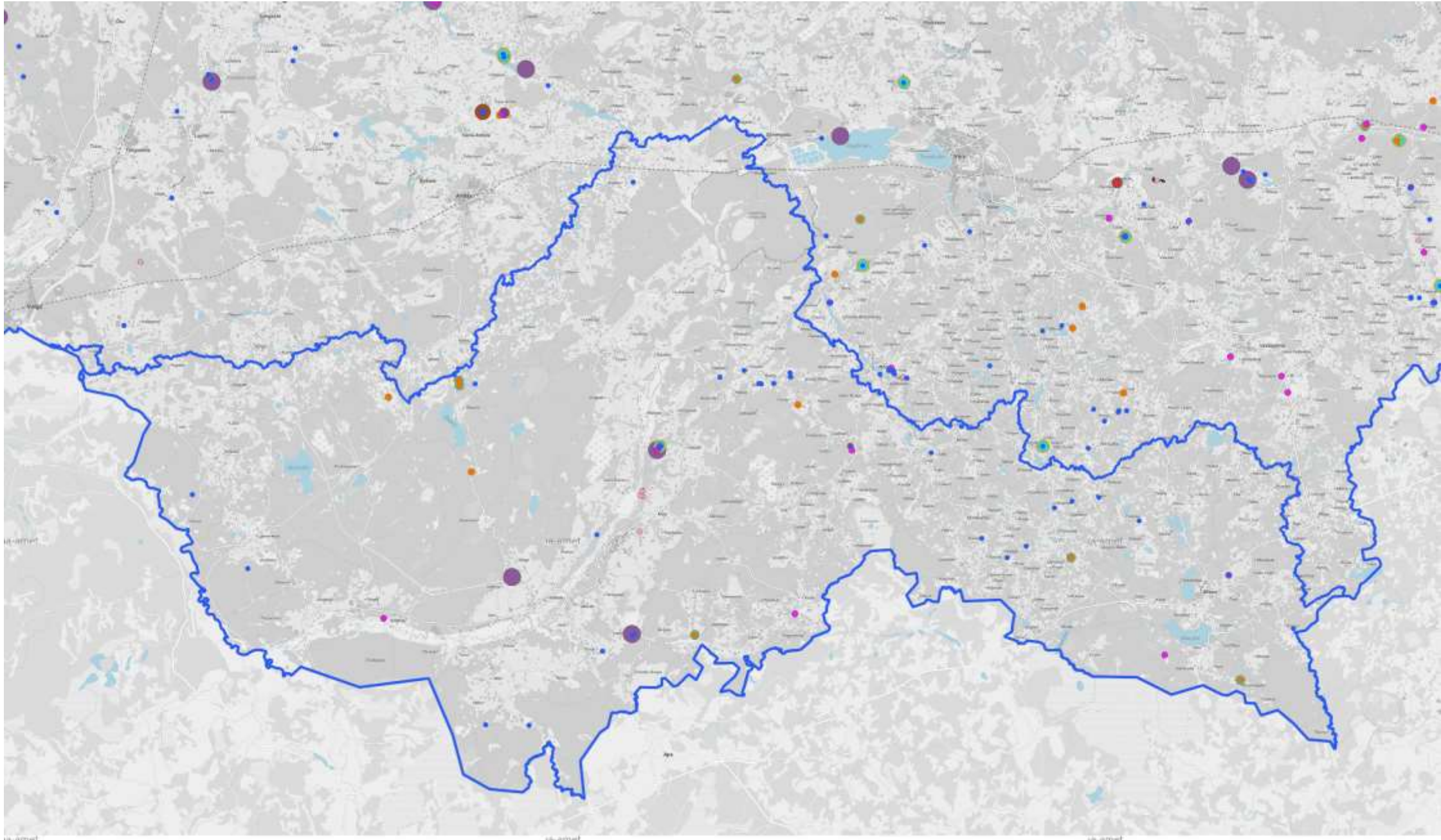


# Project area – Koiva/Gauja river basin ja Salaca/Salatsi river basin



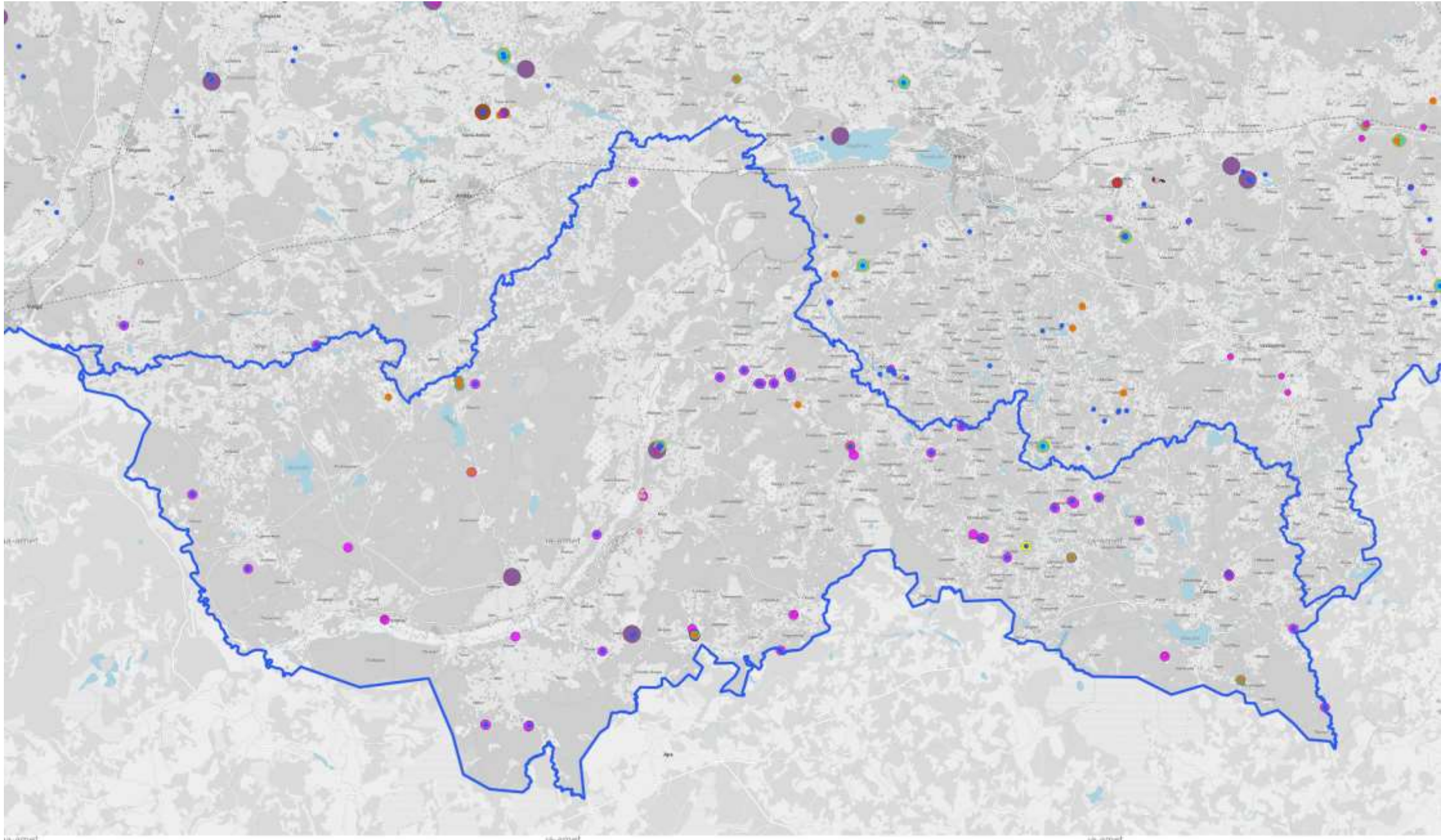


# Results – all known springs



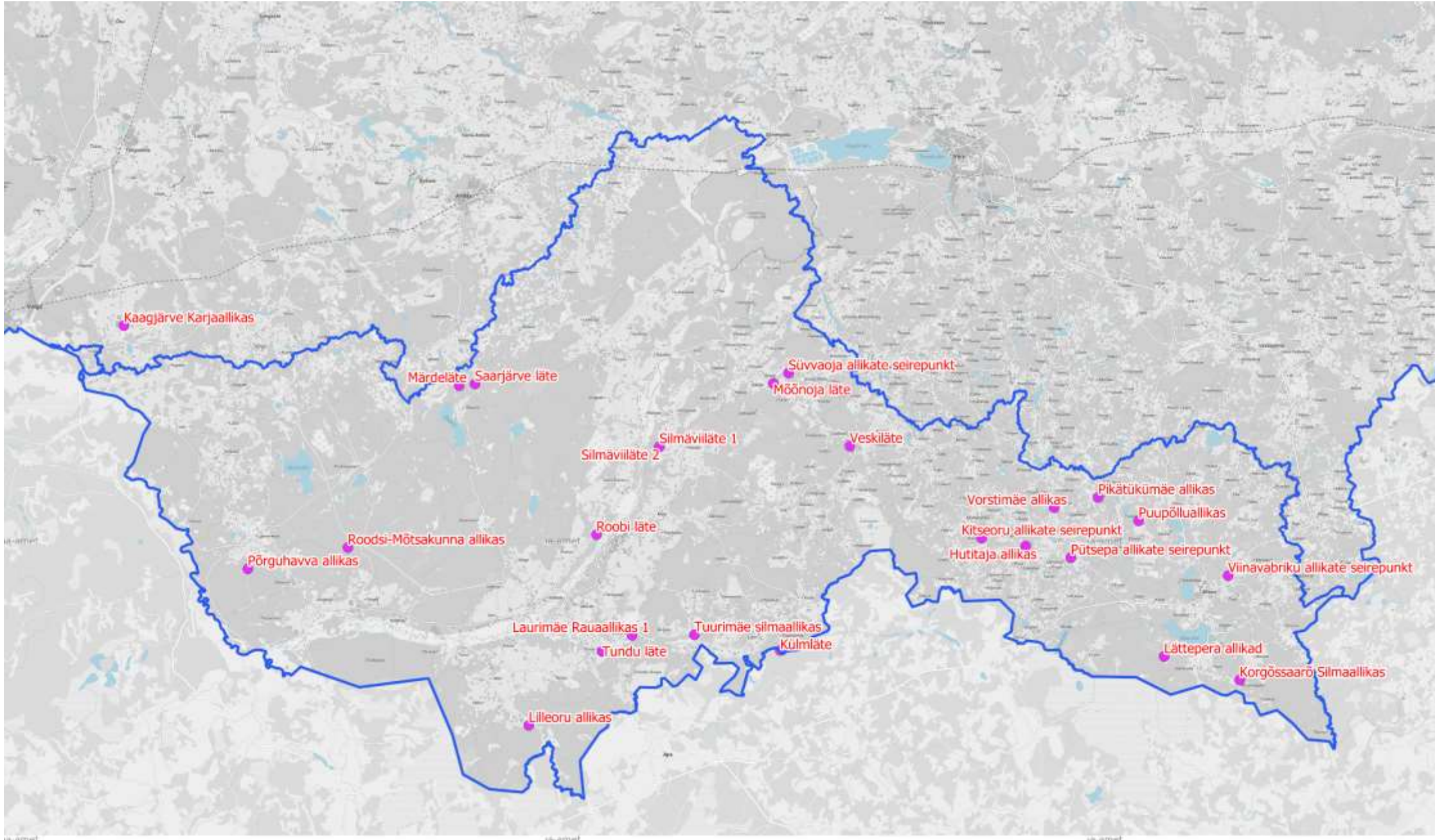


# Results – all known springs + visited springs





# Results – sampled springs







# Thank you for the attention!



bit.ly/WaterAct-project



bit.ly/WaterAct-Researchgate

**JOIN** -> <https://www.facebook.com/groups/197231101712583/>



REPUBLIC OF ESTONIA  
MINISTRY OF THE ENVIRONMENT



Nature  
Conservation Agency  
Republic of Latvia



REPUBLIC OF ESTONIA  
ENVIRONMENT AGENCY



GEOLOGICAL SURVEY OF ESTONIA



## WaterAct

Joint actions for more efficient management  
of common groundwater resources