

# XV INTERNATIONAL ENVIRONMENTAL FORUM

## “BALTIC SEA DAY”

*St.-Petersburg, March 19-21, 2014*

Roundtable “Creating conditions for transition to environmentally safe agricultural activities and protection of water bodies against nutrient load from rural areas (BASE project and other projects carried out in this direction from the EU funds)”

MARCH 21, 2014

# Results of studies performed by aqua biological research unit of ENPI project SE717

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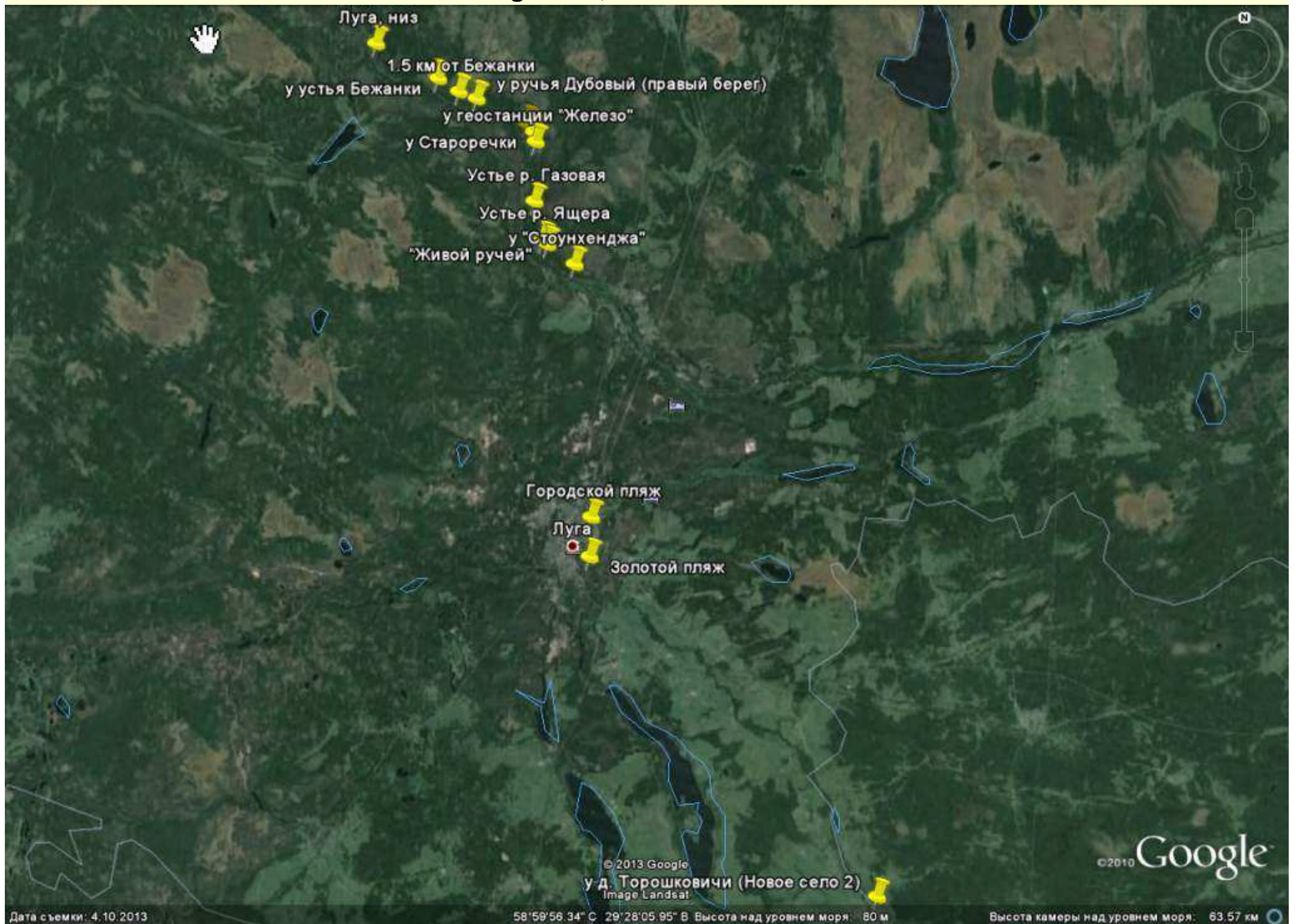
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- During 6 planned and 3 over the plan field trips it was found that the greatest number of species of free-living Metazoa and macrophytes is confined to the middle flow of river Luga.
- In the lower and middle flow of river Saba number of these species is some lower.
- In the lower and middle reaches flow of river Yaschera the number of species was the least.
- If we take the number of species in the middle flow of river Luga as 100%, then in river Saba it is represented about 70-90% of species depending on the group, and in river Yaschera – 50-85% depending on the group.
- In spring of 2013 there were 3 planned field trips, in summer – 2, and in autumn – 1. Work was on 18 basic and several additional sampling locations.
- On the web page of the Laboratory of Brackish Water Hydrobiology ZIN RAS (<http://www.zin.ru/labs/brackish/presentations.html>) there are 13 presentations relating directly fieldwork and related activities.
- On the site of ZIN RAS there is info about Aqua-biological research unit Project SE 717 (<http://www.zin.ru/projects/se-717/>)

1. Cruise on Luga River made on preparation of Project SE717, September, 2011.  
[http://www.zin.ru/labs/brackish/presentations/Luga\\_2011.pdf](http://www.zin.ru/labs/brackish/presentations/Luga_2011.pdf)
2. Mission to Finland June 17-20, 2013.  
[http://www.zin.ru/labs/brackish/presentations/Finland\\_June\\_17-20\\_2013.pdf](http://www.zin.ru/labs/brackish/presentations/Finland_June_17-20_2013.pdf)
3. Project SE 717 and its significance for the catchment area of Gulf of Finland. 2013.  
[http://www.zin.ru/labs/brackish/presentations/BSD\\_2013.pdf](http://www.zin.ru/labs/brackish/presentations/BSD_2013.pdf)
4. Description of video filmed material during one summer and one autumn fieldtrips of experts and volunteers of Aqua biological Scientific-Research unit of Project SE717.  
[http://www.zin.ru/labs/brackish/presentations/Description\\_of\\_video\\_filming.pdf](http://www.zin.ru/labs/brackish/presentations/Description_of_video_filming.pdf)
5. Free of charge field trips made by the Head of aqua biological scientific research unit (N.V. Aladin). Project SE717, 2013.  
[http://www.zin.ru/labs/brackish/presentations/Luga\\_Gruzinka\\_2013.pdf](http://www.zin.ru/labs/brackish/presentations/Luga_Gruzinka_2013.pdf)
6. Field trips of experts and volunteers of Aqua biological Scientific-Research unit of Project SE717 spring-autumn 2013.  
[http://www.zin.ru/labs/brackish/presentations/Luga\\_2013.pdf](http://www.zin.ru/labs/brackish/presentations/Luga_2013.pdf)
7. Sampling stations in river Luga that was visited during field trips of experts and volunteers of Aqua biological Scientific-Research unit of Project SE717 spring-autumn 2013.  
[http://www.zin.ru/labs/brackish/presentations/Luga\\_sampling\\_stations\\_2013.pdf](http://www.zin.ru/labs/brackish/presentations/Luga_sampling_stations_2013.pdf)
8. Sampling stations in river Saba that was visited during field trips of experts and volunteers of Aqua biological Scientific-Research unit of Project SE717 spring-autumn 2013.  
[http://www.zin.ru/labs/brackish/presentations/Saba\\_sampling\\_stations\\_2013.pdf](http://www.zin.ru/labs/brackish/presentations/Saba_sampling_stations_2013.pdf)
9. Sampling stations in river Yashera that was visited during field trips of experts and volunteers of Aqua biological Scientific-Research unit of Project SE717 spring-autumn 2013.  
[http://www.zin.ru/labs/brackish/presentations/Yaschera\\_sampling\\_stations\\_2013.pdf](http://www.zin.ru/labs/brackish/presentations/Yaschera_sampling_stations_2013.pdf)
10. Structure, Terms of References, duties and Curriculum Vitae of experts and volunteers of aqua-biological and scientific-research unit of Project SE717.  
[http://www.zin.ru/labs/brackish/presentations/Structure\\_SE717.pdf](http://www.zin.ru/labs/brackish/presentations/Structure_SE717.pdf)
11. VI Nevsky International Ecological Congress May 21-22, 2013, St.-Petersburg.  
[http://www.zin.ru/labs/brackish/presentations/VI\\_Nevsky\\_EcoCongress.pdf](http://www.zin.ru/labs/brackish/presentations/VI_Nevsky_EcoCongress.pdf)
12. Baltic Sea Forum St.-Petersburg April 5-6, 2013.  
[http://www.zin.ru/labs/brackish/presentations/Baltic\\_Sea\\_Forum.pdf](http://www.zin.ru/labs/brackish/presentations/Baltic_Sea_Forum.pdf)
13. Project SE-717 – Clean rivers to healthy Baltic Sea.  
<http://www.zin.ru/projects/se-717/>

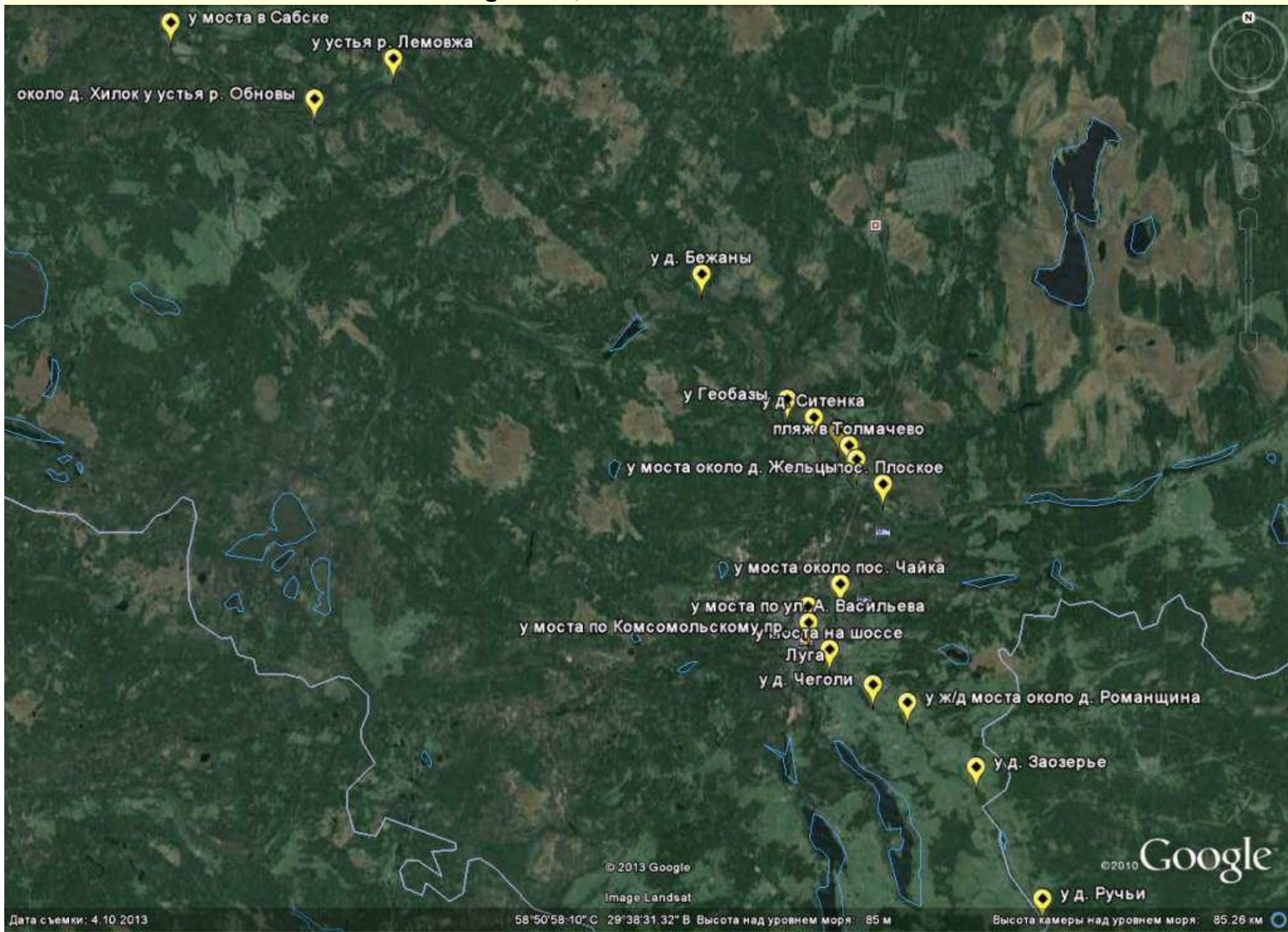


# Luga river, 13 basic stations



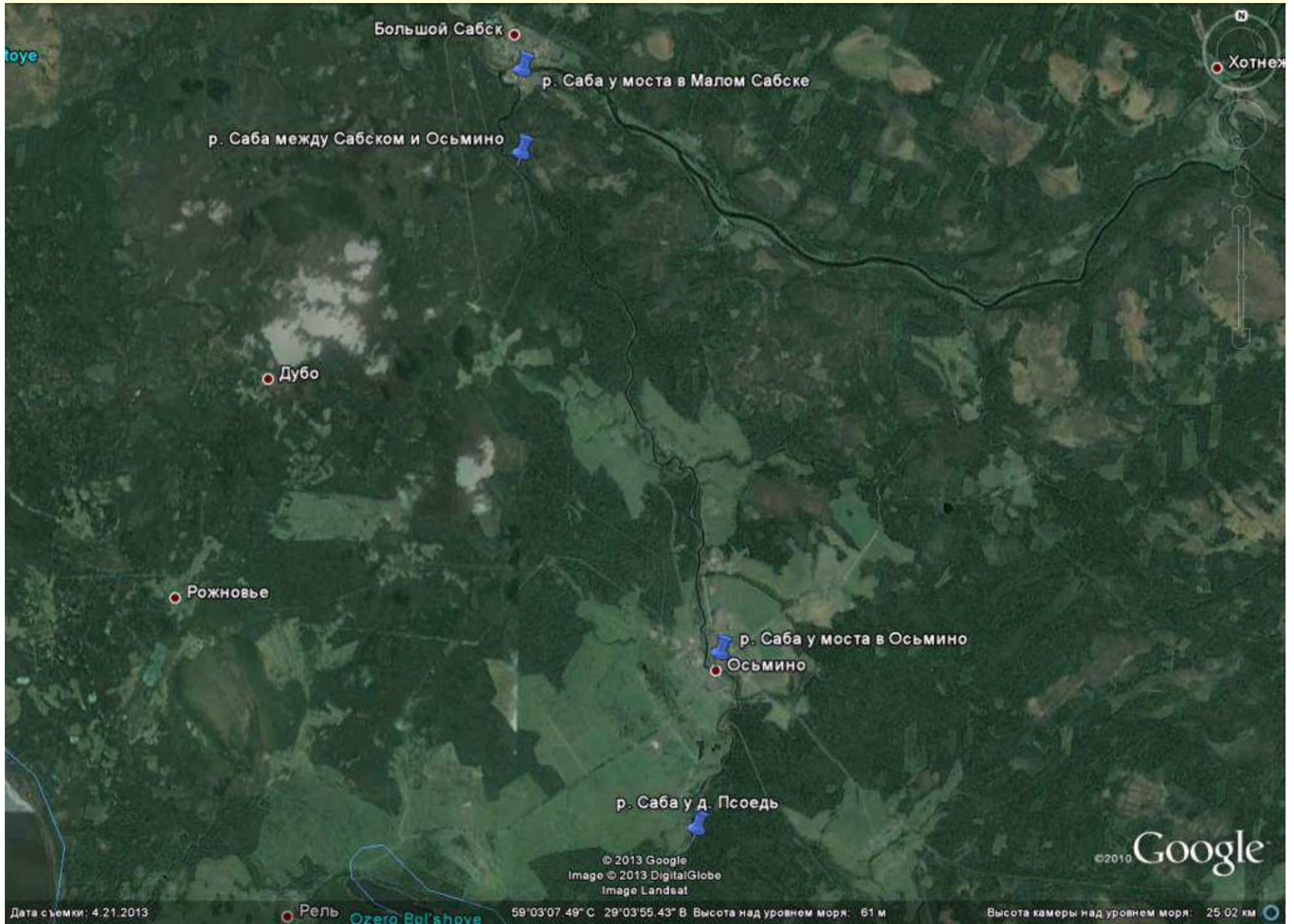


# Luga river, 18 additional stations



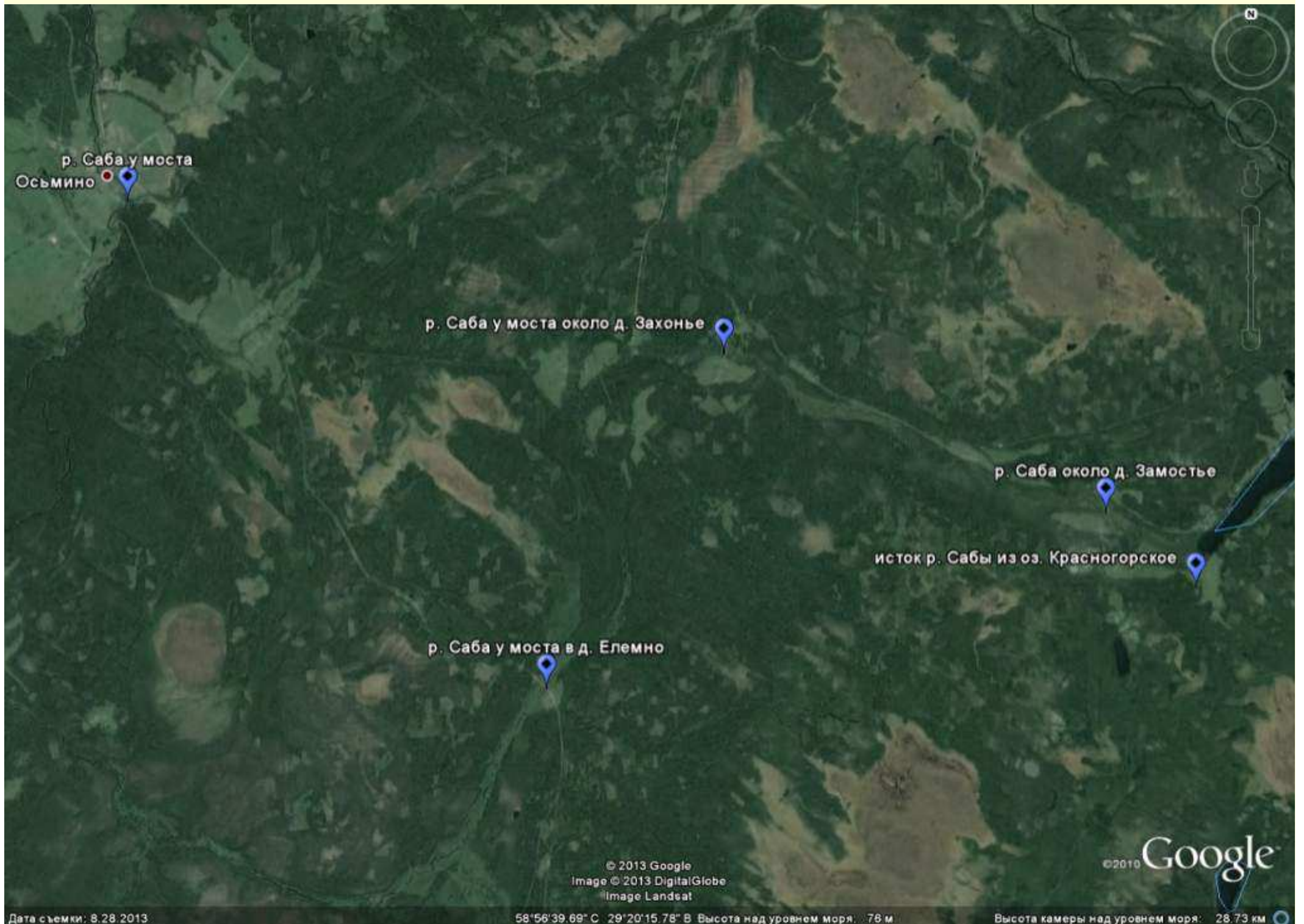


# Saba river, 4 basic stations



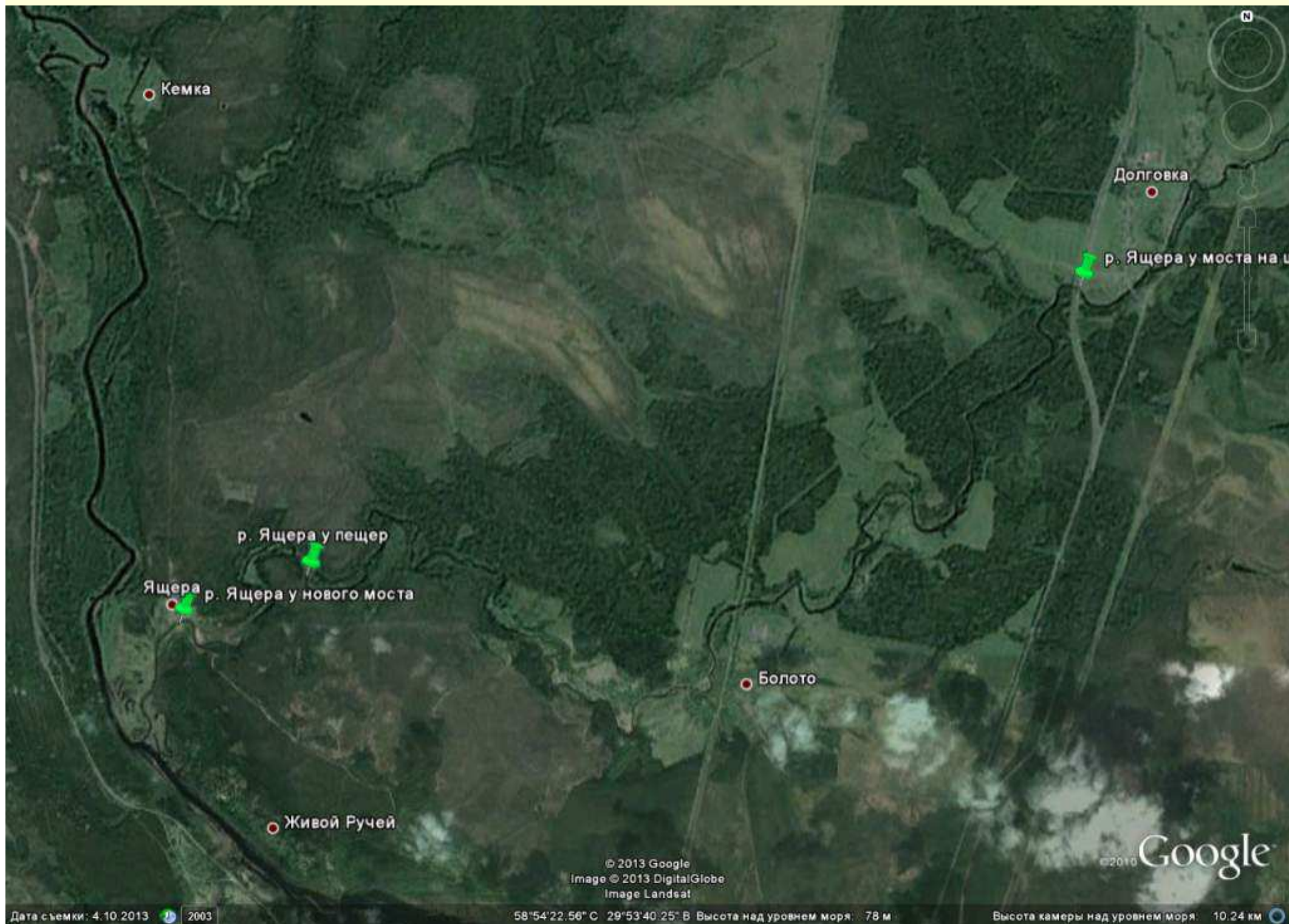


# Saba river, 5 additional stations



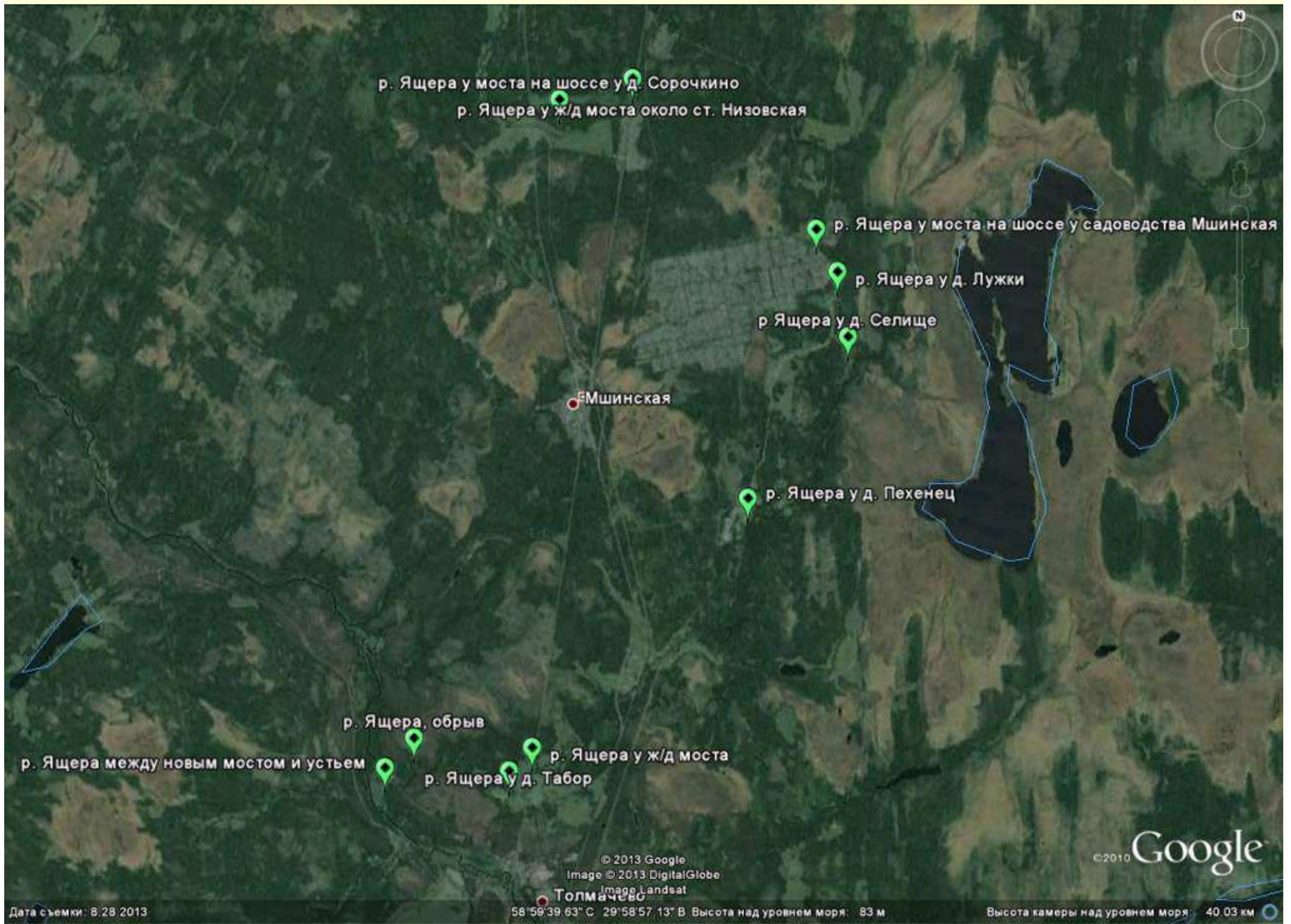


# Yaschera river, 3 basic stations





# Yaschera river, 10 additional stations



- During planned field trips it was made inventory of macrophytes, zooplankton, zoobenthos, cyclostomes, fish, wading birds and vertebrates.
- Both experts and volunteers of our unit have shown convincingly that in the surveyed areas of the three rivers catastrophically low biodiversity is not observed. It is high enough.
- Besides, it is also noted that the bioresource potential apparently meets standards for streams of Leningrad region. More precisely this can be said for this year after the quantitative researches on these three rivers.



- As mentioned above 6 planned field trips were supplemented with 3 unplanned during which it was used not traditional plankton nets and bottom samplers but dredges, traps for fish and crayfish and direct diving observation.
- These 3 field trips not only confirmed the high biodiversity of three rivers, but also significantly expanded the list of species of planktonic and benthic Metazoa.
- As you know, traditional plankton nets and bottom samplers collect not all invertebrates. Many of them simply escape from. Just a few examples. It is well known skaters (*Gerris* sp.), but catching them with plankton net is possible only by accident. Rarely get into these nets aquatic mites, spiders, beetles, bugs, etc. Also in the bottom samplers never get crayfish. It is needed to catch them with special traps.
- These observations have increased species lists almost by half.

# Invertebrates

## ROTATORIA

*Keratella quadrata* (O.F. Müller, 1776)

*Filinia longiseta* (Ehrenberg, 1834)

## OLIGOCHAETA

*Nais* sp.

## HIRUDINEA

*Herpobdella octoculata* (Linnaeus,  
1758)

## CLADOCERA

*Bosmina coregoni* Baird, 1857

*Bosmina longirostris* (O.F. Müller, 1776)

*Daphnia longispina* (O.F. Müller, 1776)

*Daphnia magna* Straus, 1820

*Sida crystallina* (O.F. Müller, 1776)

## COPEPODA

*Eudiaptomus graciloides* (Lilljeborg, 1888)

*Macrocyclops albidus* (Jurine 1820)

*Mesocyclops leuckarti* (Claus, 1857)

*Mesocyclops oithonoides* (G.O. Sars,  
1863)

## ARACHNIDA

Acari gen. sp.

## HEMIPTERA

*Gerris* sp.



# Invertebrates

## CHIRONOMIDAE

*Procladius ferrugineus* Kieffer, 1919

*Cryptochironomus* gr. *anomalis*

*Cryptochironomus defectus* (Kieffer, 1913)

*Cryptochironomus conjunctus* (Walker, 1856)

*Chironomus plumosus* (Linnaeus, 1758)

*Chironomus plumosus* (Linnaeus, 1758)

*Polypedium nubeculosum* Meigen

*Polypedium convictum* Walker

*Limnochironomus nervosus* (Staeger, 1839)

## TRICHOPTERA

Trichoptera gen. sp. larvae

## EPHEMEROPTERA

Ephemeroptera gen. sp. larvae

## COLEOPTERA

Dytiscidae gen. sp. larvae

## MOLLUSCA

*Pisidium amnicum* (O.F. Müller, 1774)

*Neopisidium conventus* Cles.

*Euglesa conica* (Baudon, 1857)

*Unio longirostris* Rossmässler, 1836

*Valvata depressa* C. Pfeiffer, 1821

*Viviparus viviparus* (Linnaeus, 1758)

*Lymnaea stagnalis* (Linnaeus, 1758)

# Vertebrates

## CYCLOSTOMATA

*Lampetra fluviatilis* (Linnaeus, 1758)

## PISCES

*Abramis brama* (Linnaeus, 1758)

*Rutilus rutilus* (Linnaeus, 1758)

*Blicca bjoerkna* (Linnaeus, 1758)

*Alburnus alburnus* (Linnaeus, 1758)

*Phoxinus phoxinus* (Linnaeus, 1758)

*Leucaspius delineatus* (Heckel, 1843)

*Leuciscus leuciscus* (Linnaeus, 1758)

*Leuciscus idus* (Linnaeus, 1758)

*Esox lucius* Linnaeus, 1758

*Perca fluviatilis* Linnaeus, 1758

*Gymnocephalus cernuus* (Linnaeus, 1758)

*Lota lota* (Linnaeus, 1758)

*Thymallus thymallus* (Linnaeus, 1758)

## AVES

*Ardea cinerea* Linnaeus, 1758

*Pandion haliaetus* (Linnaeus, 1758)

*Buteo buteo* Linnaeus, 1758

*Larus argentatus* Pontoppidan, 1763

*Alcedo atthis* (Linnaeus, 1758)

*Jynx torquilla* (Linnaeus, 1758)

*Dendrocopos major* (Linnaeus, 1758)

*Delichon urbica* (Linnaeus, 1758)

*Motacilla alba* (Linnaeus, 1758)

*Lanius collurio* Linnaeus, 1758

*Garrulus glandarius* (Linnaeus, 1758)

*Pica pica* (Linnaeus, 1758)

*Corvus corone cornix* (Linnaeus, 1758)

*Phylloscopus collybita* (Vieillot, 1817)

*Erythacus rubecula* Linnaeus, 1758

*Parus coeruleus* Linnaeus, 1758

*Parus major* Linnaeus, 1758

## MAMMALIA

*Mustela* sp.

*Lutra lutra* (Linnaeus, 1758)

*Nyctereutes procyonoides* (Gray, 1834)



# Plants

## BRIOPHYTA

*Fontinalis antipyretica* L. ex Hedw.

## POLYPODIOPHYTA

*Matteuccia struthiopteris* (L.) Tod.

*Thelypteris palustris* Schott

## EQUISETOPHYTA

*Equisetum fluviatile* L.

## MAGNOLIOPHYTA

## MAGNOLIOPSISIDA

*Bidens tripartita* L.

*Caltha palustris* L.

*Ceratophyllum demersum* L.

*Cicuta virosa* L.

*Galium palustre* L.

*Lysimachia vulgaris* L.

*Lythrum salicaria* L.

*Mentha arvensis* L.

*Menyanthes trifoliata* L.

*Myosotis palustris* (L.) L.

*Naumburgia thyrsiflora* (L.) Rchb.

*Nuphar lutea* (L.) Sm.

*Nymphaea candida* J. Presl & C.  
Presl

*Persicaria amphibia* (L.) Gray

*Persicaria lapathifolia* (L.) Gray

*Ptarmica vulgaris* Hill

*Ranunculus lingua* L.

*Rorippa amphibia* (L.) Besser

*Sium latifolium* L.

*Solanum dulcamara* L.

*Stachys palustris* L.

*Utricularia vulgaris* L.

*Valeriana officinalis* L.

# Plants

## LILIOPSIDA

*Agrostis stolonifera* L.

*Alisma plantago-aquatica* L.

*Butomus umbellatus* L.

*Carex acuta* L.

*Carex aquatilis* Wahlenb.

*Carex* sp.

*Eleocharis palustris* (L.) Roem. & Schult.

*Elodea canadensis* Michx.

*Glyceria maxima* (Hartm.) Holmb.

*Hydrocharis morsus-ranae* L.

*Iris pseudacorus* L.

*Juncus bufonius* L.

*Juncus filiformis* L.

*Lemna minor* L.

*Lemna trisulca* L.

*Phalaroides arundinacea* (L.) Rauschert

*Phragmites australis* (Cav.) Trin. ex Steud.

*Potamogeton lucens* L.

*Potamogeton natans* L.

*Potamogeton pectinatus* L.

*Potamogeton perfoliatus* L.

*Sagittaria sagittifolia* L.

*Scirpus lacustris* L.

*Scirpus sylvaticus* L.

*Sparganium emersum* Rehmman

*Sparganium erectum* L.

*Spirodela polyrhiza* (L.) Schleid.

*Typha latifolia* L.



Summarizing field research in this year we can conclude that biological diversity in the surveyed areas of these 3 rivers can be considered quite high, and available bioresource potential satisfies real standards for watercourses of Leningrad region.

Now let to say a few words about our recommendations for improving the aqua biological status of these rivers.

1. It is needed to reduce nutrient loading in the catchment area of Luga river middle flow, which tributaries are rivers Saba and the Yaschera.
2. During the field season 2014 studies of our unit should be carried out together with colleagues from our project which are carrying out hydrochemical researches to find “hot spots”.
3. As it was said at the end of April 2013, we need to work on a single coordinated network of stations. We hope that such agreement finally will take place.



- It is necessary to carry out explanation to local farmers and agribusiness in Luga district. We propose to develop a series of seminars for them on the basis of three research and teaching institutions:
  1. Geostation “Zhelezo” (director Isaev Maxim Evgenievich);
  2. Geobase of University of Water Communications (director of European Centre for the organization of training practices maritime and river transport of Admiral Makarov State University of Maritime and Inland Shipping Kamelin Alexander Mikhailovich);
  3. Leningrad Regional Institute of Education Development (rector Kovalchuk Olga Vladimirovna).
- Scientific-pedagogical teaching staff of these institutions will give local farmers and agribusiness employees necessary knowledge about the carrying out of their activities without damage to the inhabitants of neighboring rivers and reservoirs.
- These three organizations after request from the leadership of the Luga district could organize refresher courses for teachers in secondary schools, local farmers and agribusiness.

- All that was briefly mentioned above are recommendations how aqua biological state could quickly be improved in the nearest future. However, let us conclude by briefly to say what it will be necessary to undertake in the coming years (until 2020).
- Our Project SE717 is called “Clean Rivers to Healthy Baltic Sea”. This is unoriginal. Many projects referred to in this way. But let us now to remember those who for the first time not only sounded the call, but also filled it with concrete work.
- We are talking about professors Tatu KIRA, Masahisa NAKAMURA and Walter Rast.



**Tatu Kira**  
1919 – 2011



**Masahisa Nakamura**



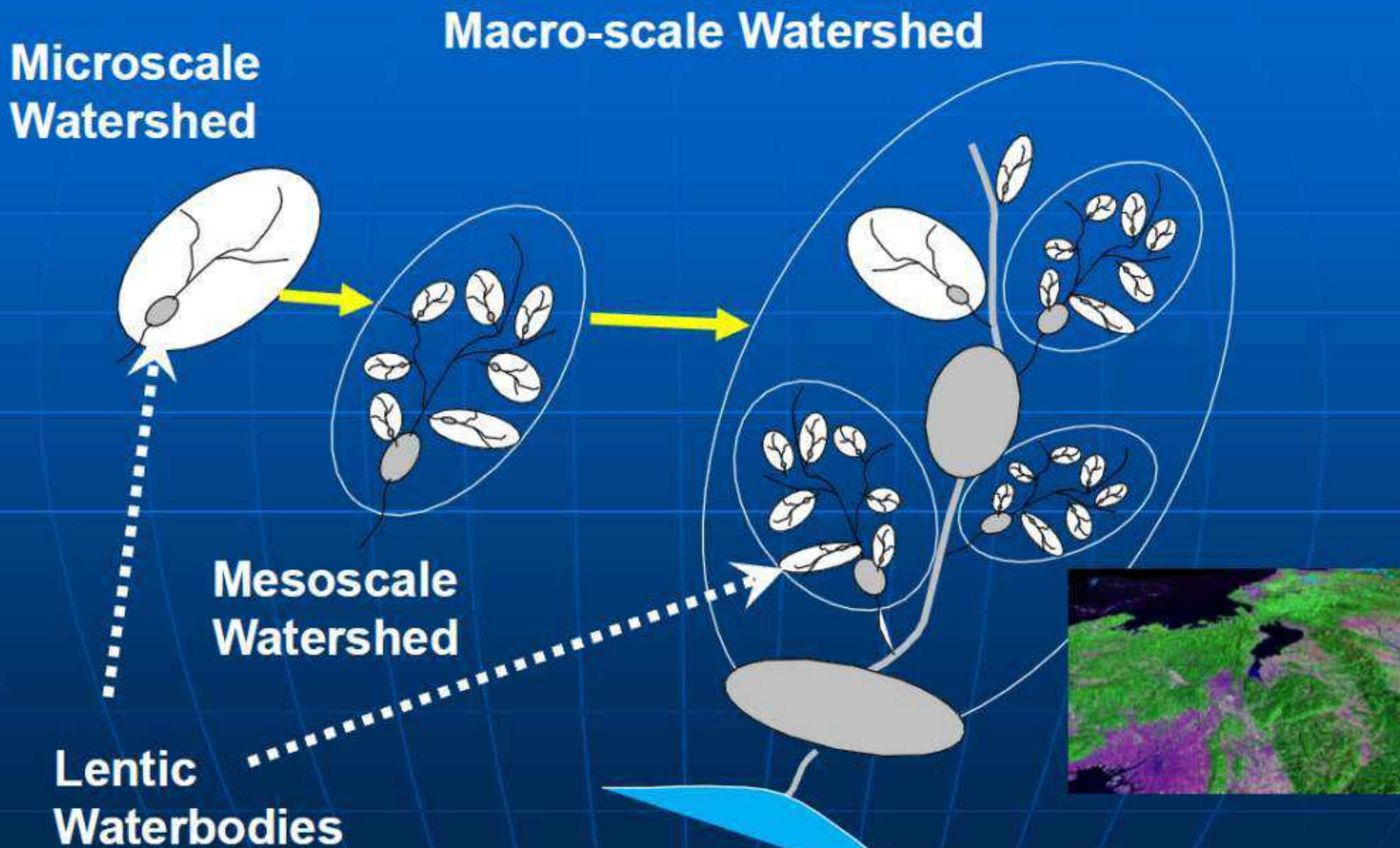
**Walter Rast**



- The first of them, Tatu KIRA, in the late 1970s advanced slogan “Clean rivers in the Lake Biwa healthy”, and then together with his student Masahisa NAKAMURA quickly realized it.
- In 1984, thanks to the successful implementation of this slogan which had implications not only for Japan but also for the whole world the idea of creating the World Organization for Study Lakes (ILEC). After 2 years, thanks to the support of the Japanese government and the Imperial family, the organization started its activities.
- In summer 2008, the Leningrad region and adjacent territories were included in the work plans ILEC. Masahisa NAKAMURA and Walter RAST suggested by the results of his first visit 5 years ago, a separate program for the Baltic Sea and its catchment area.
- These scientists as we believe the Baltic “newborn” sea, which has more features lake than sea. Indeed, only a few thousand years ago, Baltic Sea was glacial lake and had no connection with the oceans. Therefore, all the methodology developed for the ILEC catchment areas of lakes, can be successfully applied also to the Baltic Sea.

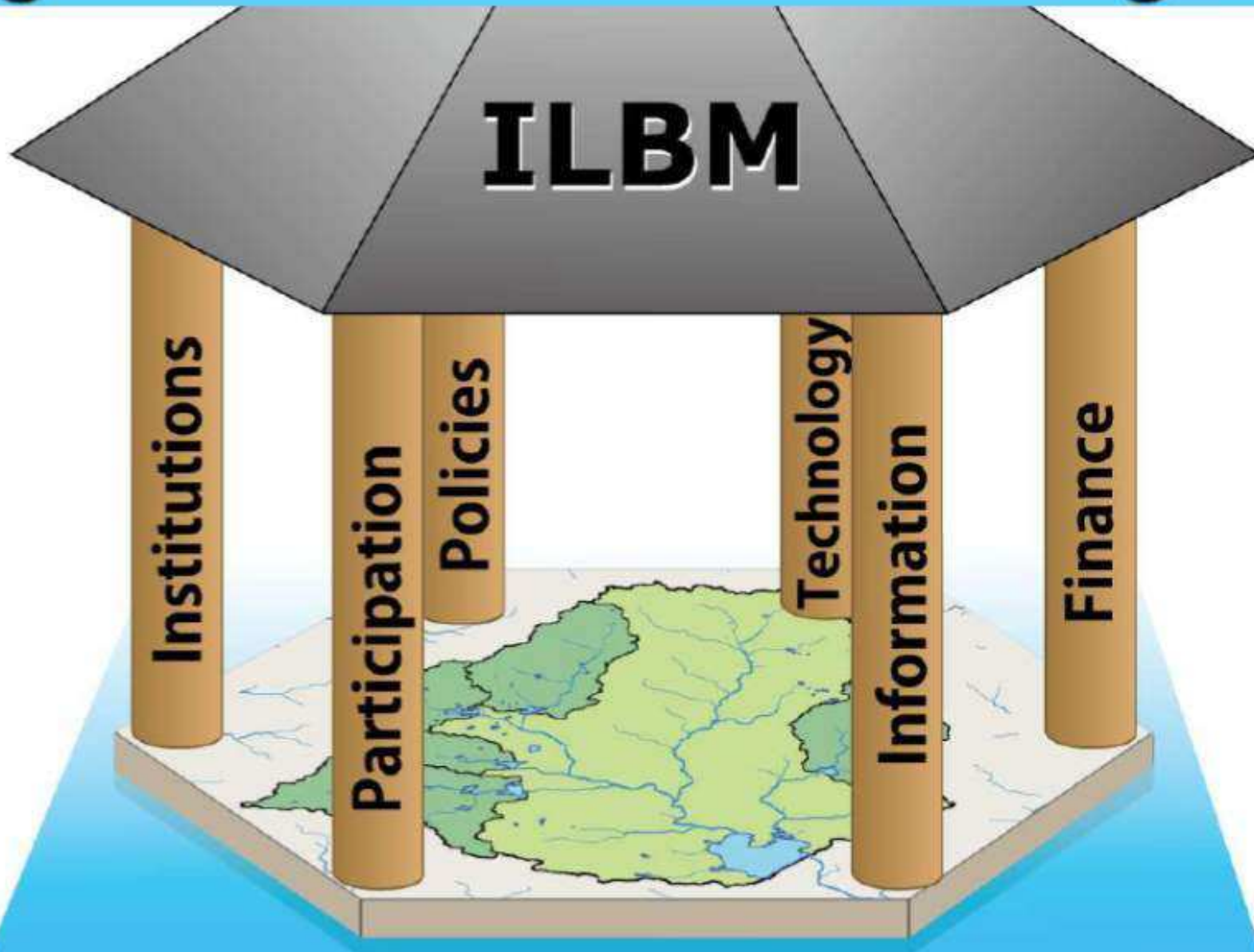
- During the years of successful work of ILEC on lakes in various countries it was formulated the ILBM principle (Integrated Lake Basin Management) to be applied to the Baltic Sea as a whole and to its individual bays in particular.
- Several years ago, at Baltic Sea Day Masahisa NAKAMURA gave a proposal to apply the ILBM principles to the catchment area of this “newborn” sea the leader and organizer of this forum L.K. KOROVIN.
- Let me briefly touch on six fundamental ILBM principles.

# A Lake Basin consisting of Many Lake Basins





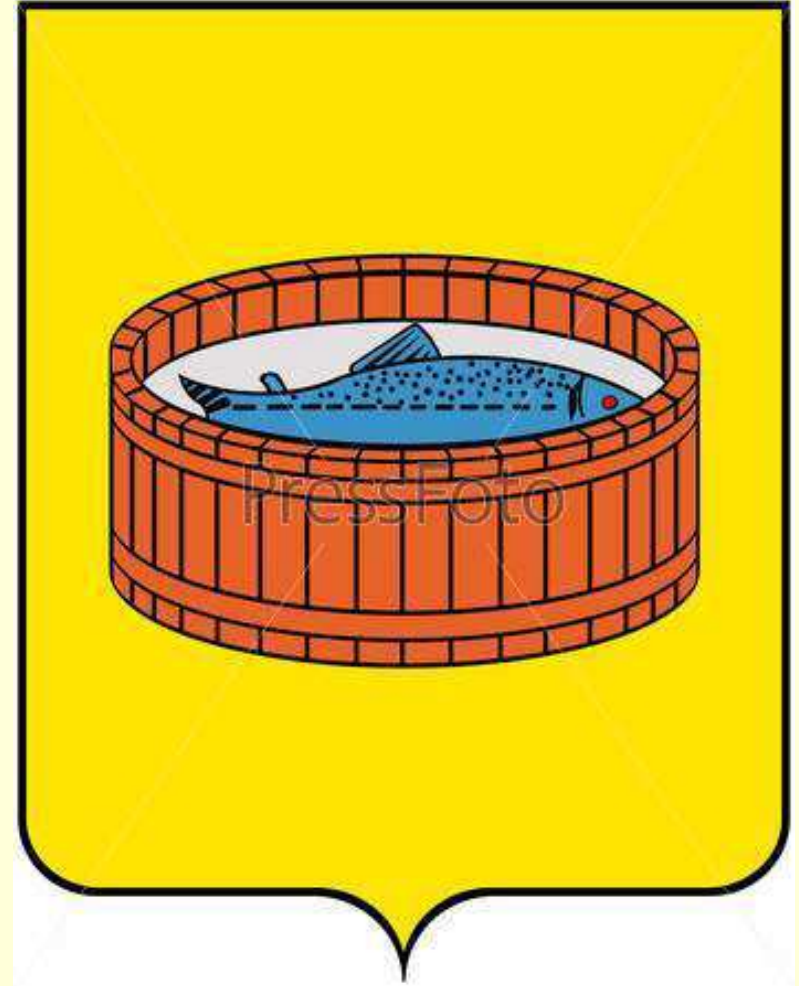
# Integrated Lake Basin Management



## Six pillars of “ILBM Pavilion”

- 1. Institutions.** A management system with an appropriate organizational setup helps ensure sustainable benefits to river basin resource users. Such institutions are in the Luga district.
- 2. Policies.** Policy tools must be better developed to facilitate concerted societal actions for sustainable river basin management. Such policies are in the Luga district.
- 3. Participation.** All river basin stakeholders should participate in decision-making process for sustainable management. Such participation are in the Luga district.
- 4. Technology.** Although their effect often tend to be limited by certain areas and short period of time, physical interventions can play a significant role in improving river environment. Some of such technologies are available in the Luga district.
- 5. Information.** Scientific and public perceptions on river basin management can differ from case to case. Without knowledge generation and sharing, human and financial resources mobilized in river basin management efforts may prove futile. Such information are available in the Luga district.
- 6. Finance.** Financial resources should come from all basin stakeholders benefiting from both direct and indirect use of river resources. Efforts must be made in order to develop innovative approaches for generating locally-usable funds. Such financing is possible in the Luga district.

- As it is seen from the foregoing, without the creation of six fundamental **ILBM pillars**, it is unlikely to achieve perfect health of the Baltic Sea as a whole and in particular Luga River.
- Over the coming years, up to 2020, these six pillars of ILBM principle should be set up. This principle works on all continents. I have no doubt that it will work in the Leningrad region.
- Let's create in the Luga district relevant institutions, seek necessary funds and raise capable staff.
- I am sure that the day will come when the arms of the city of Luga will be true, and salmon will be much more common than now.
- We offer to build the first “ILBM Pavilion” in the city of Luga on the river bank in the indicated by local authorities place.







Project "SE717" Manager Ms. N.A. Selyutina and Captain of boat "Gavryusha" V.L. Pavlov.

Staff of our unit is deeply grateful to Victor Lenidivich. Without his ship and its magnificent seamanship we could not get our job done.



Boat "Gavryusha" on Luga River near Tolmachevo village







Project «SE717» expert Ms. T.V. Nikitina and expeditionary bus driver A.Yu. Toloknov.

Staff of our unit is deeply grateful to Arseniy Yurievich. Without his superb driving and assistance we could not get our job done.



# Expedition bus in Luga



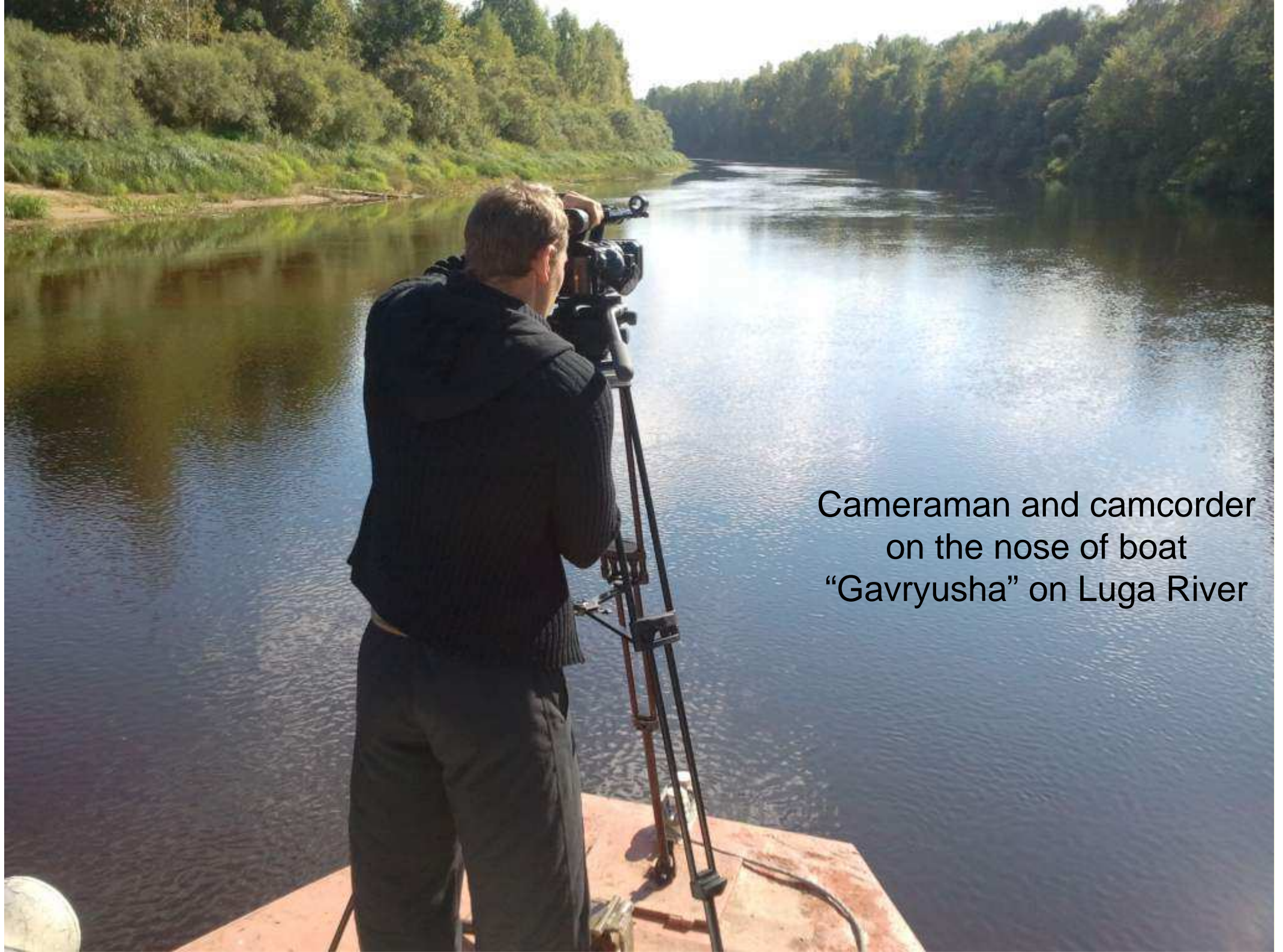




Project “SE717” expert Ms. T.A. Asanova, Volunteer N.V. Zueva and expert operator I.N. Aladin.

The staff of our unit is deeply grateful to Ivan Nikolaevich. Without his professional work we could not document our field work.





Cameraman and camcorder  
on the nose of boat  
“Gavryusha” on Luga River



**Thank you for your attention**