Gulf of Finland tri-lateral Forum

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Main results of the two-year studies made by Aqua biological research unit under umbrella of ENPI Project SE717

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- The objects of the two-year studies (2013-2014) by aqua-biological research division of ENPI Project SE-717 were the main biological components - fish fauna, zooplankton, zoobenthos and macrophytes of ecosystems of Luga River and its tributaries Saba and Yaschera.

  The purpose of this study was to assess their current state. This required:

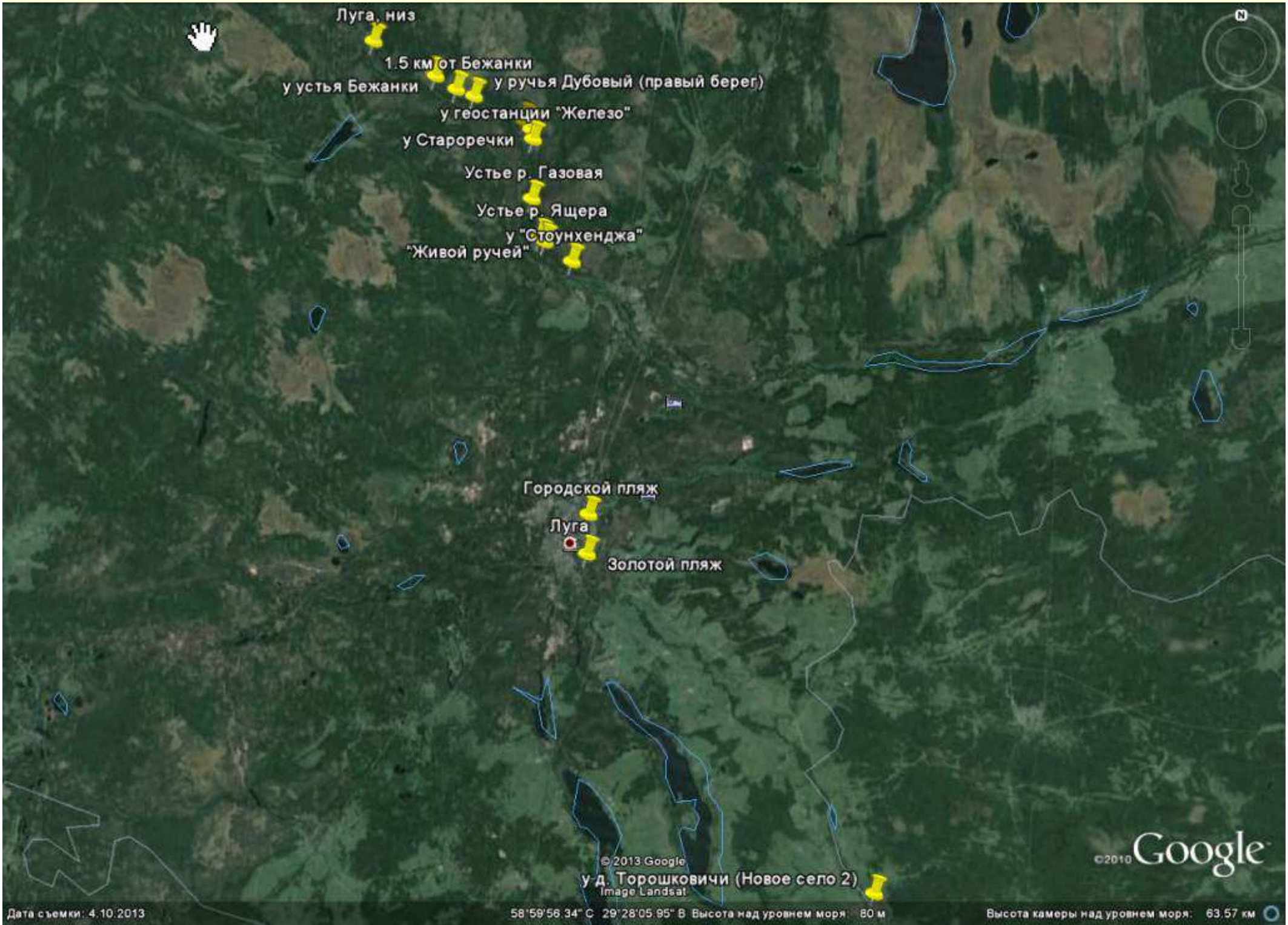
  1. the study of the species diversity of fish and assessment of spawning areas;

  2. determination of the species composition, spatial distribution, abundance and biomass, as well as the seasonal dynamics of zooplankton and zoobenthos;

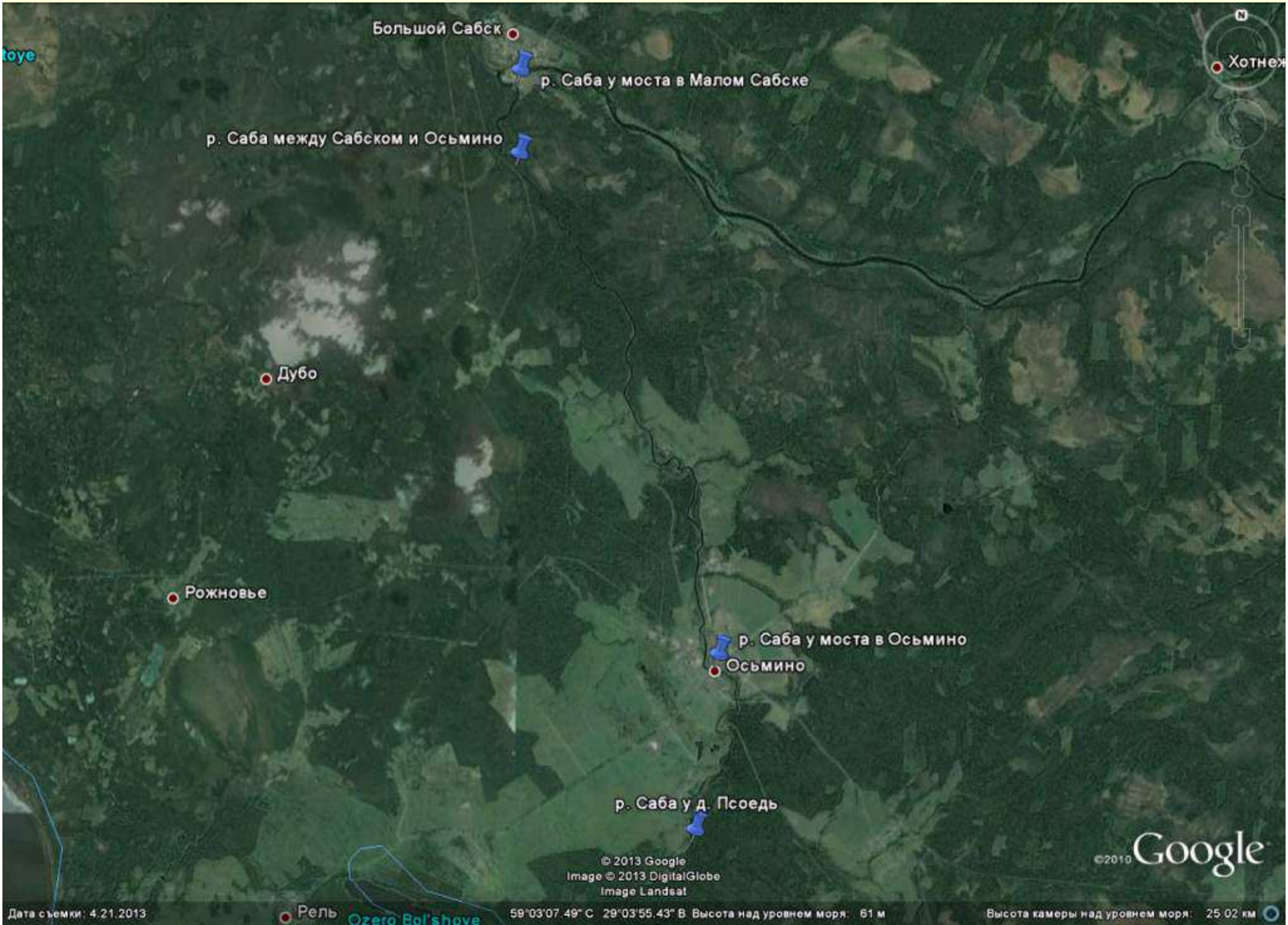
  3. study of structural features in aquatic habitats with different degrees of anthropogenic load for the detection of characteristic visual and quantitative characteristics of the disturbance phytocenoses using bioindication methods.

- In spring 2013 there were 3 field trips, in summer - 2, and in the autumn - 1. In summer 2014 there were 2 field trips, in autumn - 1. The work was carried out in 18 main and several additional sampling locations.

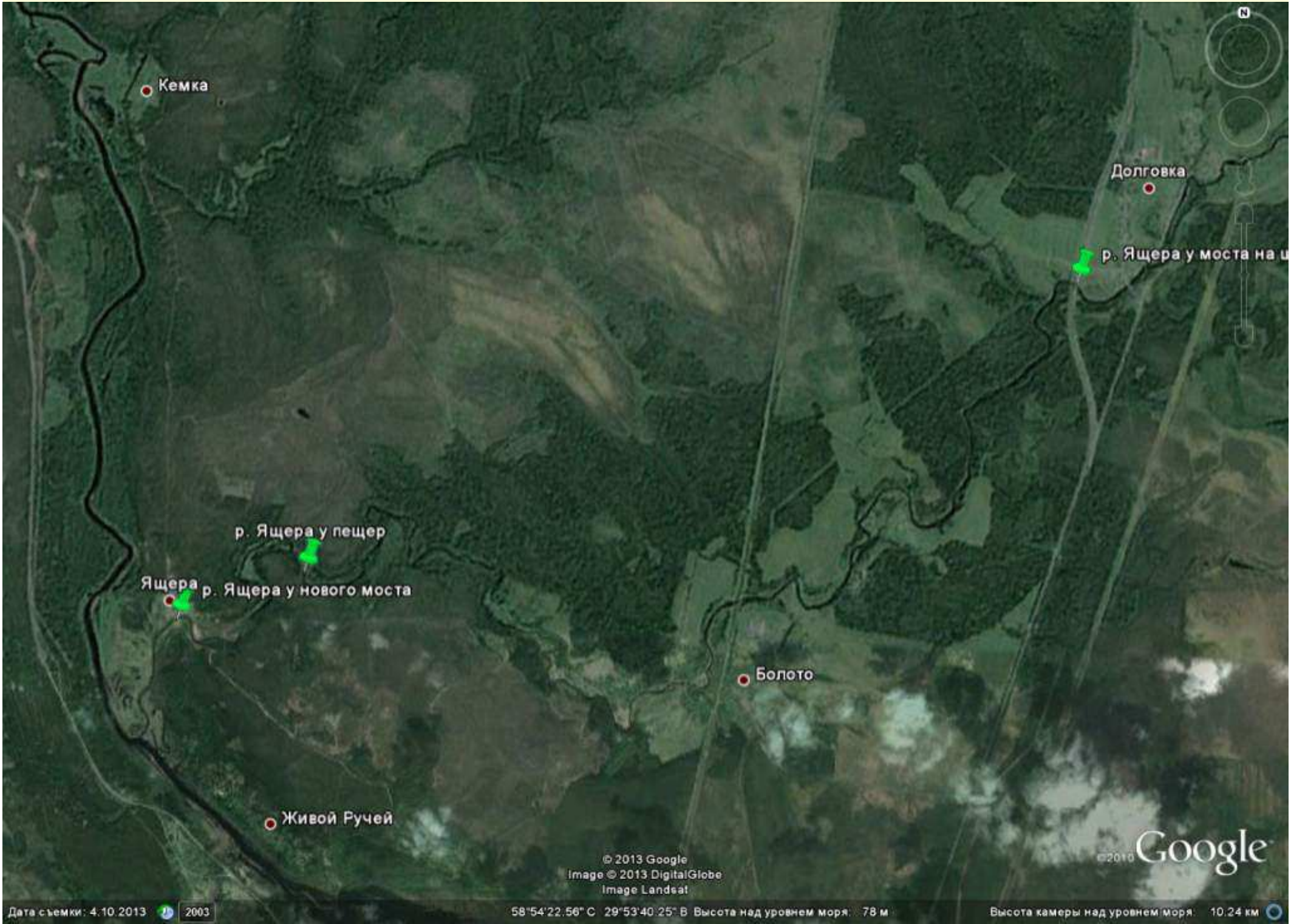
Luga River, 13 main stations



Saba River, 4 main stations



Yaschera River, 3 main stations



Common invertebrates inhabiting rivers Luga, Saba and Yaschera

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.

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. Miiller, 1774)
Neopisidium conventus Cles.
Euglesa conica (Baudon, 1857)
Unio longirostris Rossmässler, 1836
Dreissena sp.
Valvata depressa C. Pfeiffer, 1821
Viviparus viviparus (Linnaeus, 1758)
Lymnaea stagnalis (Linnaeus, 1758)

During our field studies on Luga River was found for the first time zebra mussel (*Dreissena*) - a representative of the Ponto-Caspian fauna.

The species composition of fish and cyclostomes in watercourses flowing into the southern part of the Gulf of Finland

PETROMYZONTIDAE
River lamprey – *Lampetra fluvialis* (L.)
SALMONIDAE
Atlantic salmon – *Salmo salar* L.
Brown trout – *Salmo trutta* L.
THYMALLIDAE
Grayling – *Thymallus thymallus* (L.)
COREGONIDAE
Common whitefish – *Coregonus lavaretus* (L.)
ANGUILLIDAE
European eel – *Anguilla anguilla* (L.)
OSMERIDAE
Smelt – *Osmerus eperlanus* (L.)
SILURIDAE
Wels – *Silurus glanis* L.
LOTIDAE
Burbot – *Lota lota* (L.)
ESOCIDAE
Pike – *Esox lucius* L.
PERCIDAE
Perch – *Perca fluviatilis* L.
Ruff – *Gimnocephalus cernuus* (L.)
Zander – *Stizostedion lucioperca* (L.)

CYPRINIDAE
Bream – *Abramis brama* (L.)
Blue bream – *Abramis ballerus* (L.)
Bleak – *Alburnus alburnus* (L.)
Silver bream – *Blicca bjoerkna* (L.)
Prussian carp – *Carassius gibelio* (Bloch)
Crucian carp – *Carassius carassius* (L.)
Gudgeon – *Gobio gobio* (L.)
Belica – *Leucaspius delineatus* H.
Chub – *Leuciscus cephalus* (L.)
Ide – *Leuciscus idus* (L.)
Dace – *Leuciscus leuciscus* (L.)
Sabrefish – *Pelecus cultratus* (L.)
Minnow – *Phoxinus phoxinus* (L.)
Roach – *Rutilus rutilus* L.
Rudd – *Scardinius erythrophthalmus* (L.)
Tench – *Tinca tinca* (L.)
Asp – *Aspius aspius* (L.)
Vimba bream – *Vimba vimba* (L.)

Other vertebrates

Birds

Grey heron - *Ardea cinerea* Linnaeus
Osprey - *Pandion haliaetus* (Linnaeus)
Common buzzard - *Buteo buteo* Linnaeus
European herring gull - *Larus argentatus* Pontoppidan
Common kingfisher - *Alcedo atthis* (Linnaeus)
Eurasian wryneck - *Jynx torquilla* (Linnaeus)
Great spotted woodpecker - *Dendrocopos major* (Linnaeus)
Common house martin - *Delichon urbica* (Linnaeus)
White wagtail - *Motacilla alba* (Linnaeus)
Red-backed shrike - *Lanius collurio* Linnaeus
Eurasian jay - *Garrulus glandarius* (Linnaeus)
Common magpie - *Pica pica* (Linnaeus)
Carrion crow - *Corvus corone* (Linnaeus)
Chiffchaff - *Phylloscopus collybita* (Vieillot)
Robin - *Erithacus rubecula* Linnaeus
Eurasian blue tit - *Cyanistes coeruleus* (Linnaeus)
Great tit - *Parus major* Linnaeus

Mammals

Weasel - *Mustela* sp.
Common otter - *Lutra lutra* (Linnaeus)
Raccoon dog - *Nyctereutes procyonoides* (Gray)

Plants

BRIOPHYTA
Fontinalis antipyretica L. ex Hedw.
POLYPODIOPHYTA
Matteuccia struthiopteris (L.) Tod.
Thelypteris palustris Schott
EQUISETOPHYTA
Equisetum fluviatile L.
MAGNOLIOPHYTA
MAGNOLIOPSIDA
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.

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 Rehmann
Sparganium erectum L.
Spirodela polyrhiza (L.) Schleid.
Typha latifolia L.

Common species of macrophytes

Species		Ecological group
Sagittaria sagittifolia	Arrowhead	helophyte
Lysimachia vulgaris	Yellow loosestrife	hygrohelopyte
Sium latifolium	Wideleaf waterparsnip	hygrohelopyte
Lythrum salicaria	Purple loosestrife	hygrohelopyte
Alisma plantago-aquatica	Common water-plantain	helophyte
Carex acuta	Acute Sedge	hygrohelopyte
Rorippa amphibia	Great yellowcress	hygrohelopyte
Nuphar lutea	Yellow Water-lily	hydrophyte
Sparganium emersum	European bur-reed	helophyte
Phalaroides arundinacea	Reed canary grass	hygrophyte
Stachys palustris	Marsh woundwort	hygrophyte

- The greatest number of species of free-living Metazoa and macrophytes is confined to the middle reaches of Luga River.
- In the lower and middle reaches of the Saba River number of such species was somewhat smaller.
- In the lower and middle reaches of the Yaschera River the number of species was the least.

Saprobity indicator species

Nymphaea candida

Spirodela punctata

Lemna minor

Lemna trisulca

Ceratophyllum demersum

Utricularia vulgaris

Sagittaria sagittifolia

Nuphar lutea

Hydrocharis morsus-ranae

Elodea canadensis

Fontinalis antipyretica

Myriophyllum spicatum

Persicaria amphibia

Potamogeton crispus

Potamogeton perfoliatus

Potamogeton pectinatus

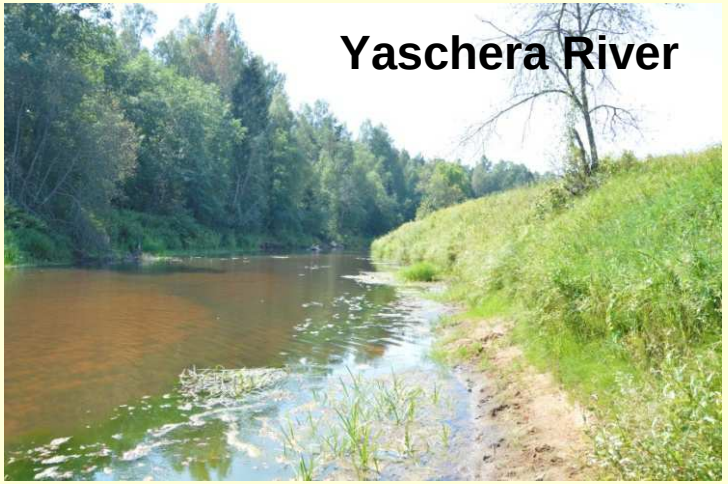
Potamogeton natans

Equisetum fluviatile

Potamogeton lucens

Characteristic of saprobity indicator species in **Yaschera River**

No.	Species	Indicator weight	Saprobity index	Saprobity zone
1	*Persicaria amphibia*	3	1.75	β-mesosaprobe
2	*Nuphar lutea*	3	1.7	β-o-mesosaprobe
3	*Spirodela punctata*	4	2	β-mesosaprobe
4	*Potamogeton natans*			β-mesosaprobe
5	*Lemna minor*	4	2	β-mesosaprobe
6	*Equisetum fluviatile*	4	0.8	oligosaprobe
7	*Bidens tripartita*	3	1.4	o-β-mesosaprobe
8	*Elodea canadensis*	4	2	β-mesosaprobe

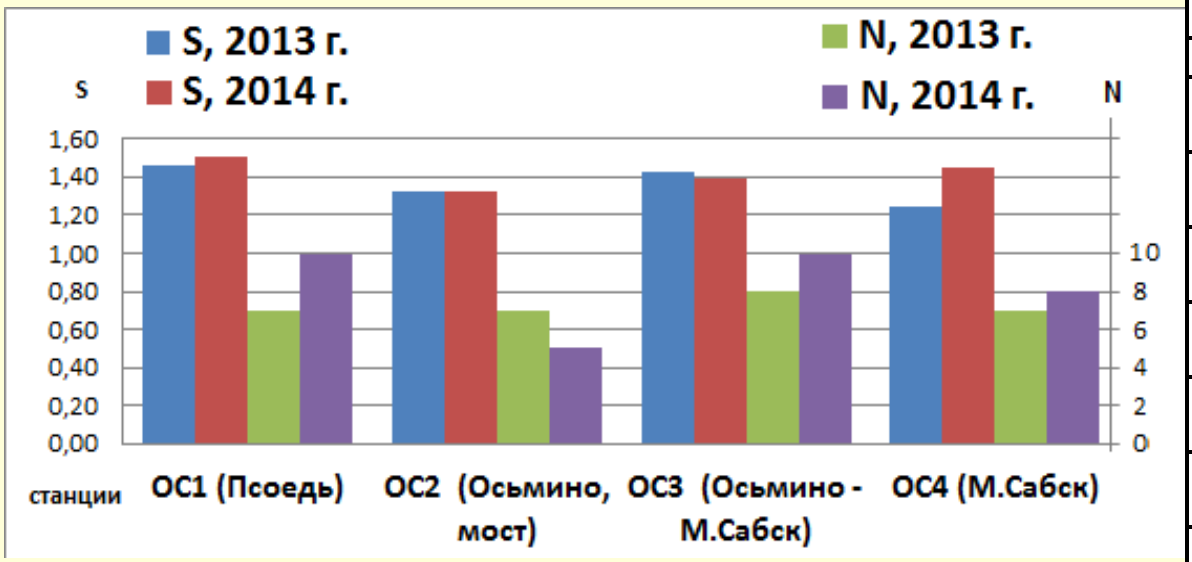


Pantle-Buck saprobity index (S) on beach near village N. Dolgovka in July, 2014

S = 1.7

What conforms to Class 3 классу – “moderately polluted”

Number of saprobity indicator species (N) and Pantle-Buck saprobity index (S) on the stations on **Saba River**



2013 S = 1.37

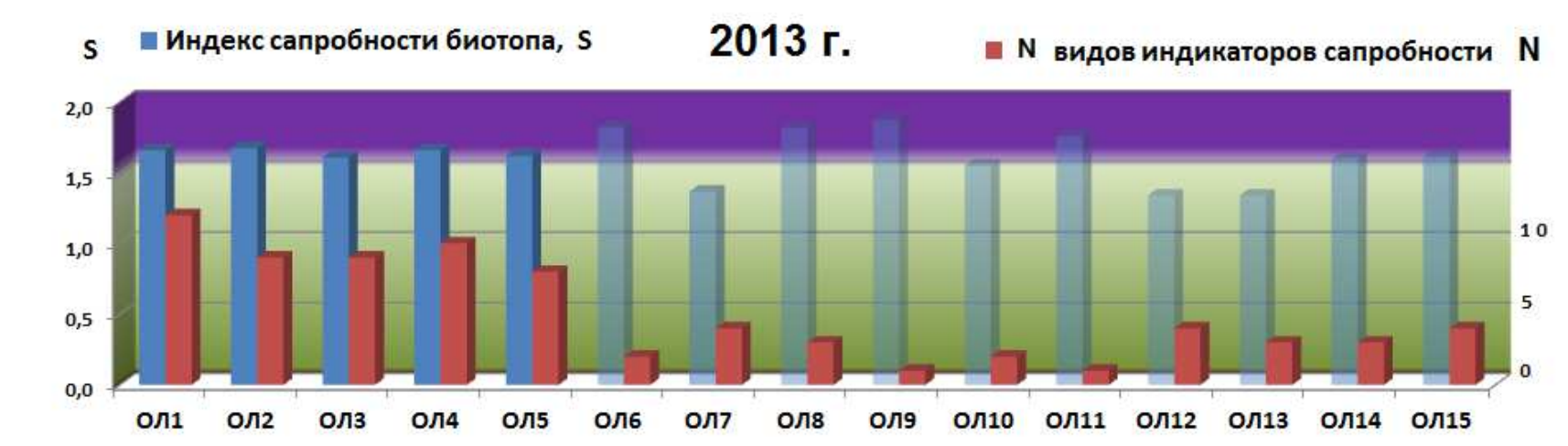
2014 S = 1.42

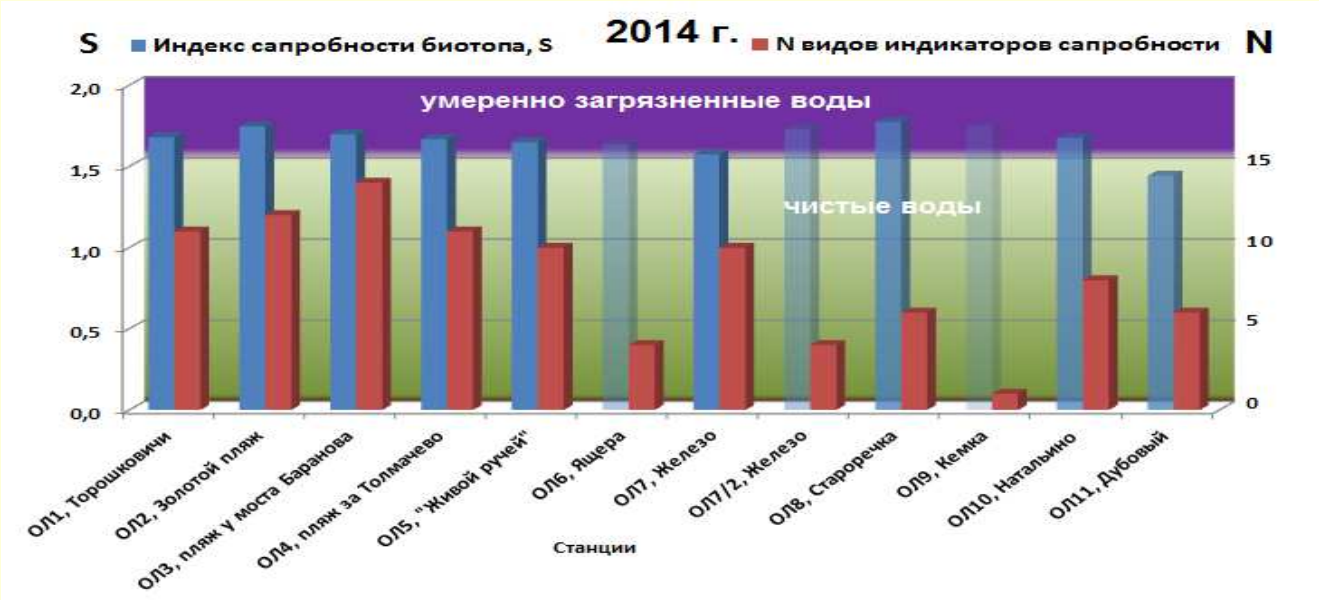
On all stations water quality conforms to Class 2 – “clean”.

Characteristic of saprobity indicator species in **Saba River**

No.	Species	Indicator weight	Saprobity index	Saprobity zone
1	*Hydrocharis morsus-ranae*	3	1.5	o β-mesosaprobe
2	*Nuphar lutea*	3	1.7	β-o-mesosaprobe
3	*Nymphaea candida*	3	1.4	β-o-mesosaprobe
4	*Spirodela punctata*	4	2.0	β-mesosaprobe
5	*Potamogeton lucens*	3	1.4	β-o-mesosaprobe
6	*Potamogeton pectinatus*			β-α-mesosaprobe
7	*Potamogeton natans*			β-mesosaprobe
8	*Potamogeton perfoliatus*	4	1.7	β-mesosaprobe
7	*Typha latifolia*	4	1.7	β-mesosaprobe
10	*Lemna minor*	4	2.0	β-mesosaprobe
11	*Lemna trisulca*	3	1.8	o β-mesosaprobe
12	*Sagittaria sagittifolia*	2	1.4	o β-mesosaprobe
13	*Fontinalis antipyretica*	2	1.35	o β-mesosaprobe
14	*Equisetum fluviatile*	4	0.8	oligosaprobe
15	*Elodea canadensis*	4	2.0	β-mesosaprobe

Number of saprobity indicator species (N) and Pantle-Buck saprobity index (S) on the stations on **Luga River**





Met saprobity indicator species – 19

2013 S = 1.6 – 1.7 *(1.3-1.8)*

2014 S = 1.6 – 1.8 *(1.4-1.8)*

In settlements water quality conforms to **Class 3 – “moderately polluted”**; in the forest part of the river water quality conforms to **Class 2 – “clean”.**

Thank you for your attention