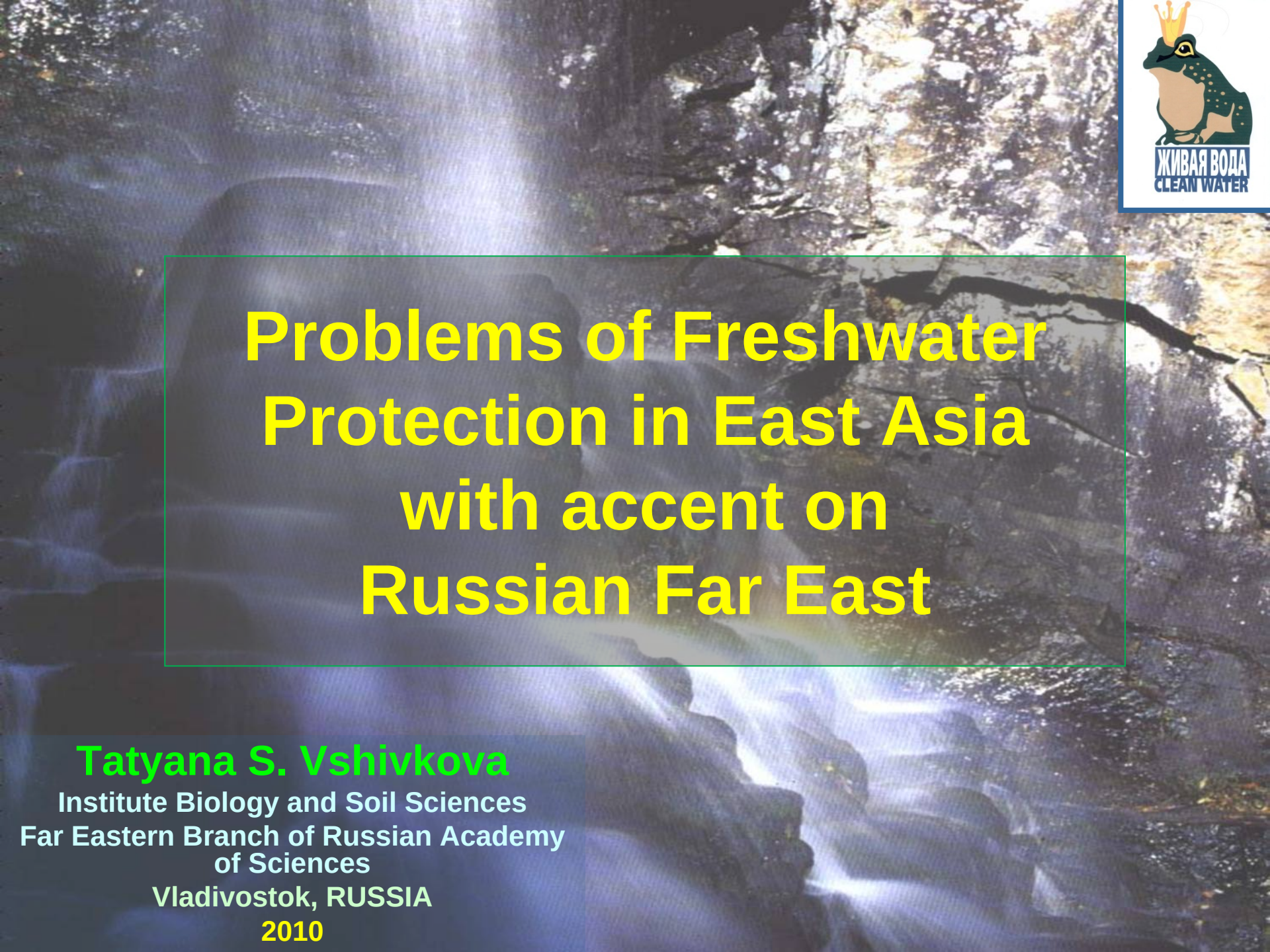

Problems of Freshwater Protection in East Asia with accent on Russian Far East

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2010

President of Scientific-Public “Clean Water Center”

Head of Scientific-Educational Center of IIBSS FEBRAS

General Director of LTD “Ecological Bureau “Eco-Expertize”

Tatyana Sergeyevna Vshivkova

PhD, Senior researcher of Laboratory of Freshwaters Institute of Biology and Soil Sciences Vladivostok

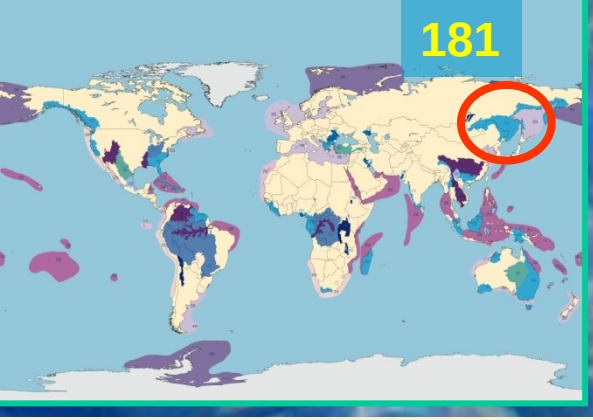
expert in freshwater biomonitoring aquatic entomologist

Scientific interests:

- fauna, systematics, evolution, distribution of caddisflies (Trichoptera) and alderflies (Megaloptera)

- spatial and longitudinal distribution of macrozoobenthos, composition and structure of bottom communities

- bioindication and biomonitoring of freshwaters, problems of freshwater pollution



Global Ecoregion 181:

Russian Far East Rivers & Wetlands - A Global Ecoregion

This is one of the richest freshwater ecoregions in Eurasia, particularly for fish species and ancient river systems.

The Amur River supports more fish species than any other Russian river with over 120 species.

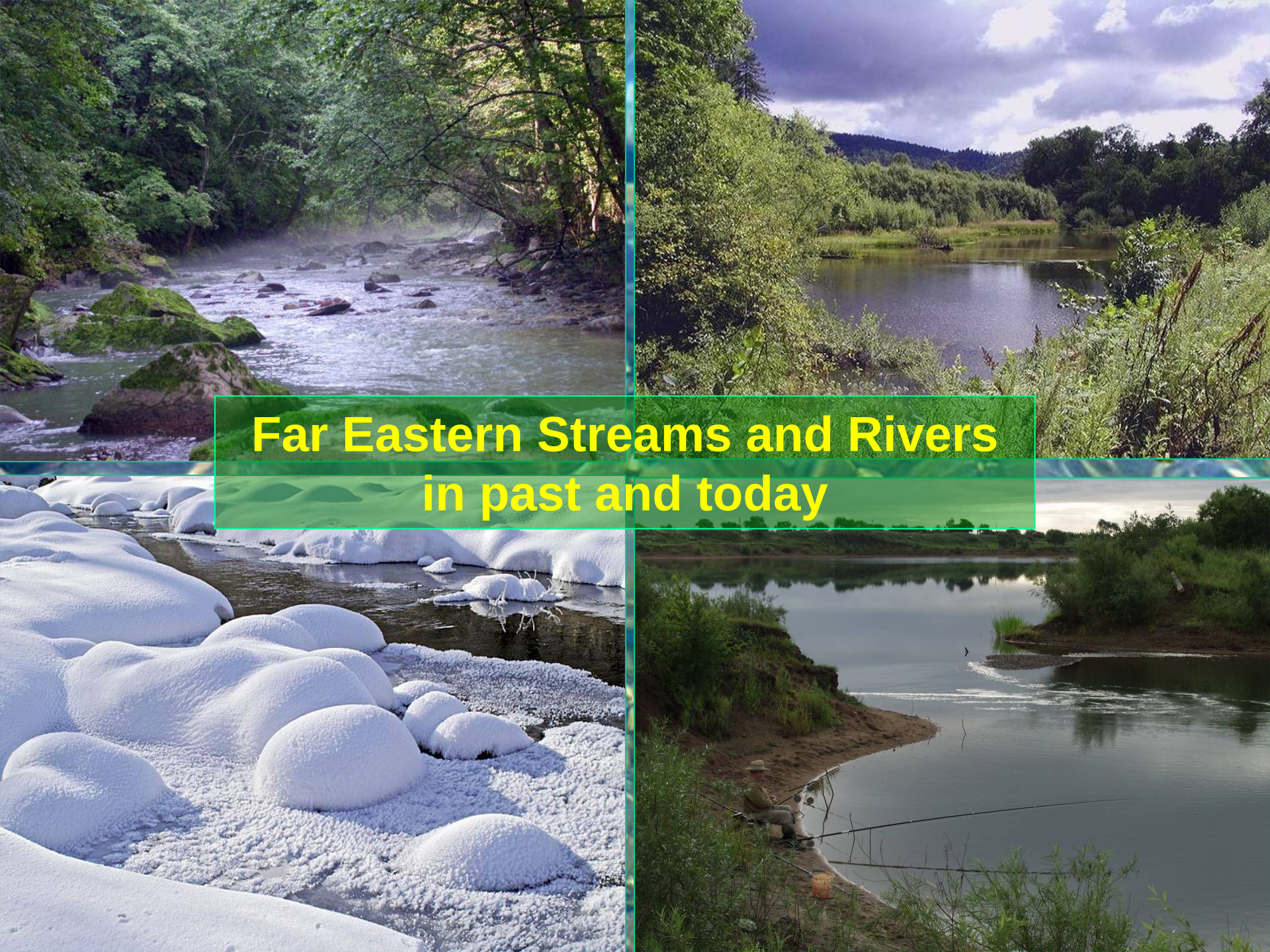
Mollusks, crustaceans, many other groups of aquatic invertebrates are especially diverse, comprising a special Far East complex.

Size:
2,500,000 sq. km (1,000,000 sq. miles)

Habitat type:
Small Rivers

Geographic Location:
Eastern coast of north Asia: China, Mongolia, and Russia

Conservation Status:
Relatively Stable/Intact


Far Eastern Streams and Rivers
in past and today

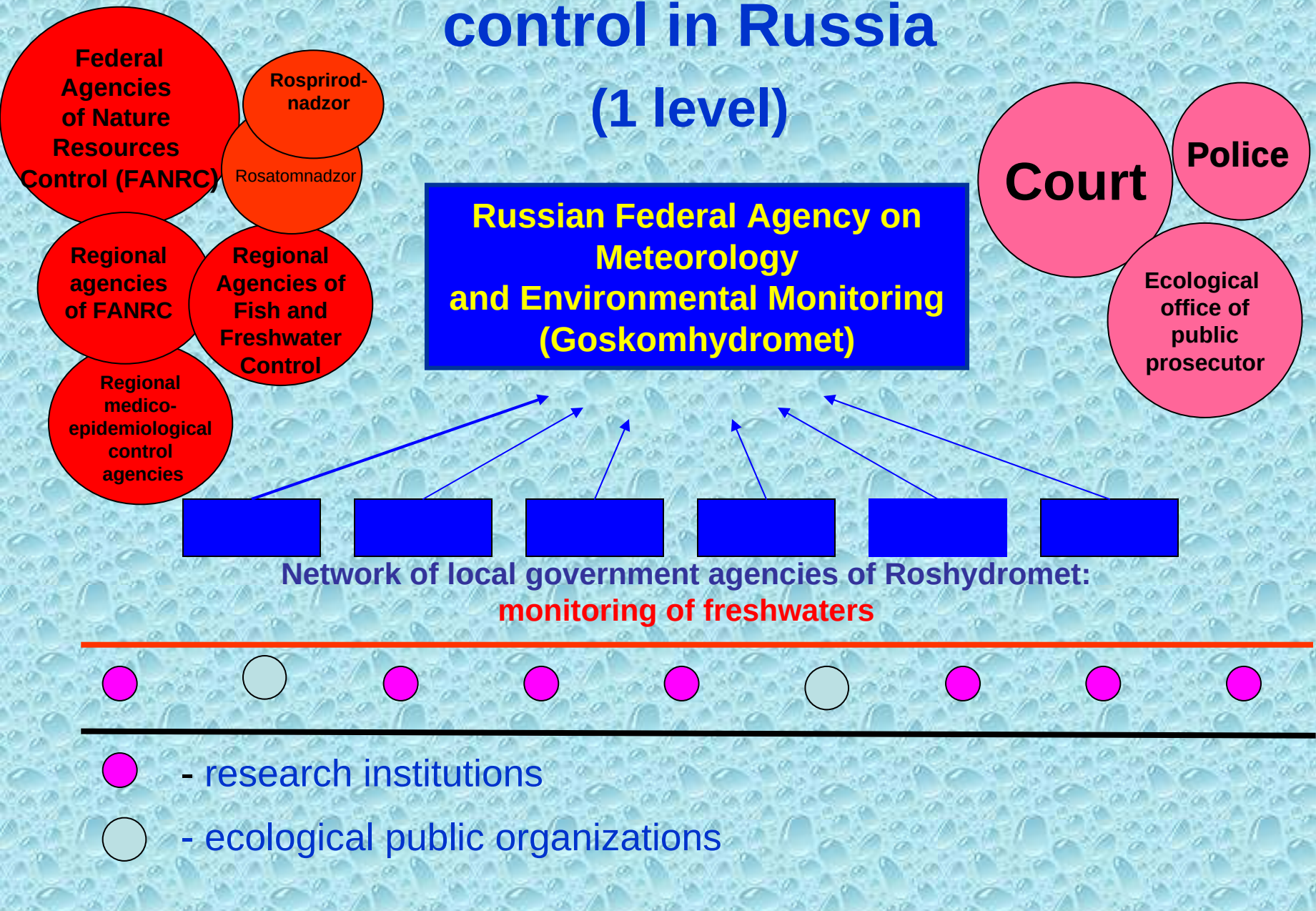
Far Eastern Lakes and Wetlands in past and today

Today...

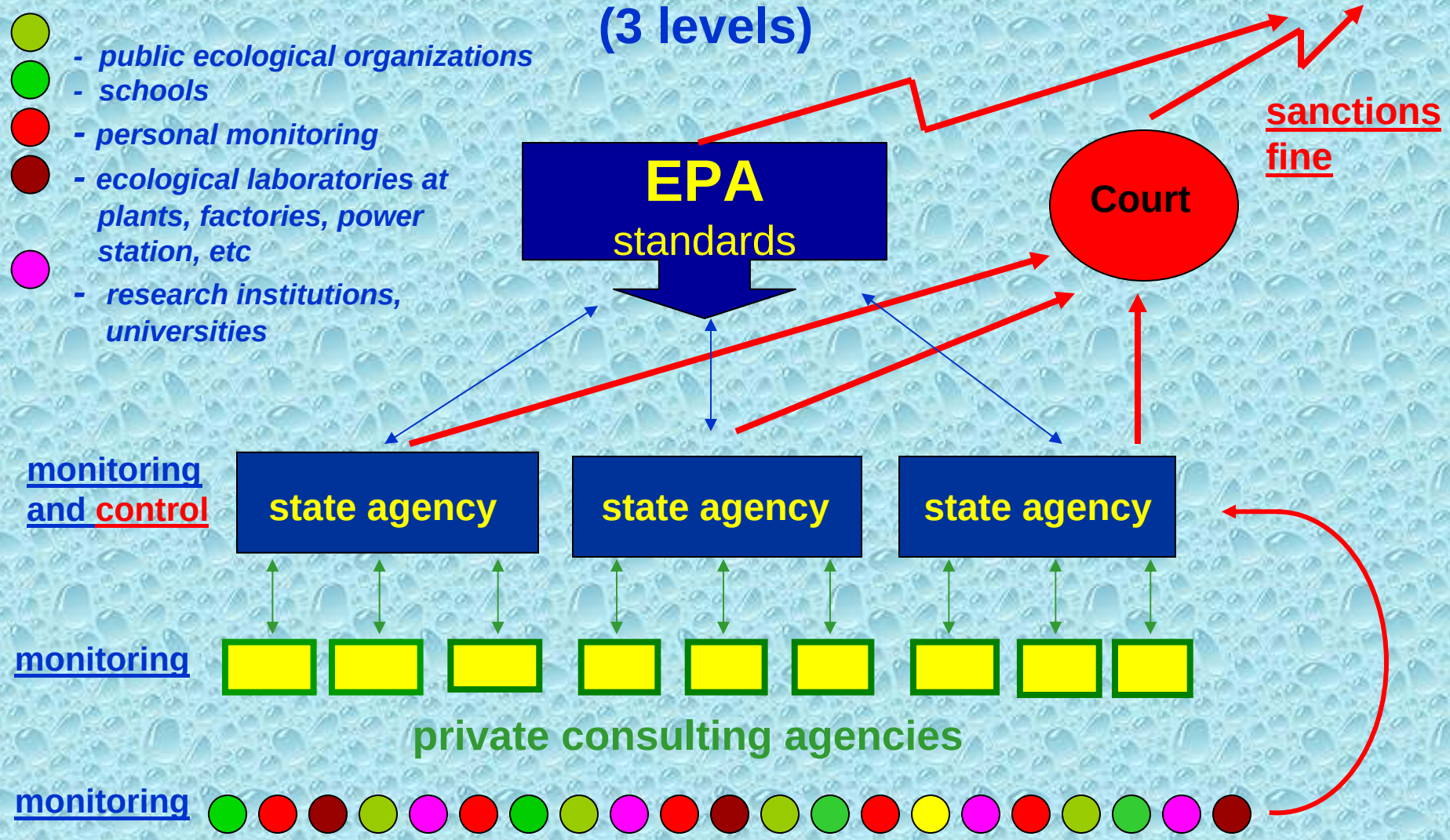
WHY ARE WE HERE?

Rapid population growth, aggressive and unwise exploitation of nature resources, rapid development of extractive and processing industries, agriculture, unregulated deforestation and extensive urbanization – all these activities pose real threats to the unique landscapes and rich nature of the Amur Ecoregion and Russian FE

Systems of freshwater monitoring and control in Russia (1 level)



System of freshwater monitoring and control in the USA based on RBPs (3 levels)



EPA - Environmental Protection Agency (government service)

WE ARE HERE BECAUSE:

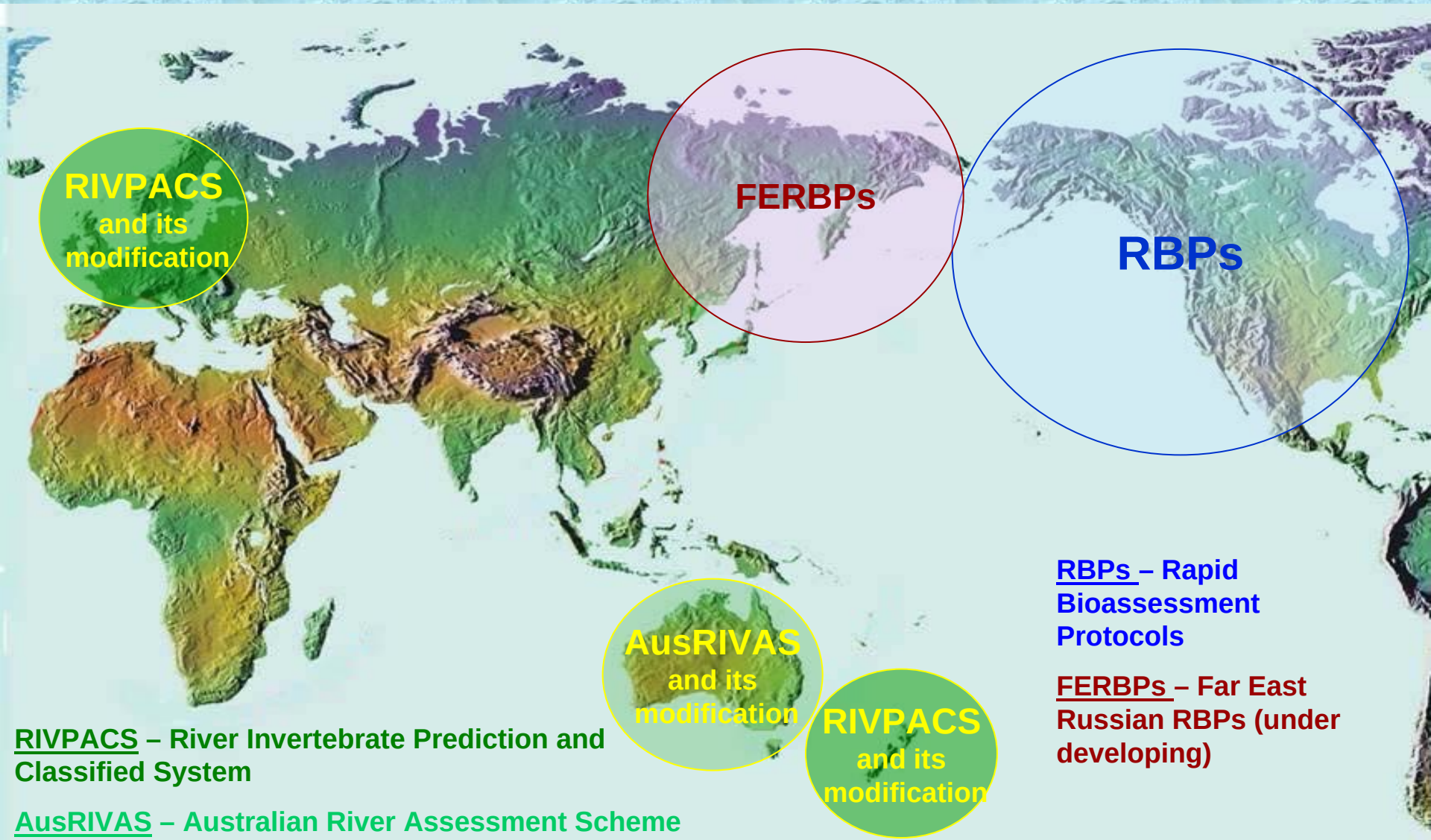
- the government monitoring system is not effective;

- environmental monitoring by government agencies is based on obsolete methods (traditional chemical and microbial analysis while macroinvertebrates used insufficiently);

- the citizens of the region are usually uninformed and apathetic about ecology and nature conservation;

- the ecological monitoring in Russia is accomplished by government managements as rule, while public and scientific monitoring is overboard of official observations, private monitoring is not developed

The main world systems of freshwater biomonitoring



RBPs – Rapid Bioassessment Protocols

FERBPs – Far East Russian RBPs (under developing)

RIVPACS – River Invertebrate Prediction and Classified System

AusRIVAS – Australian River Assessment Scheme

What we need?

- Change government monitoring system to emphasize macroinvertebrates data

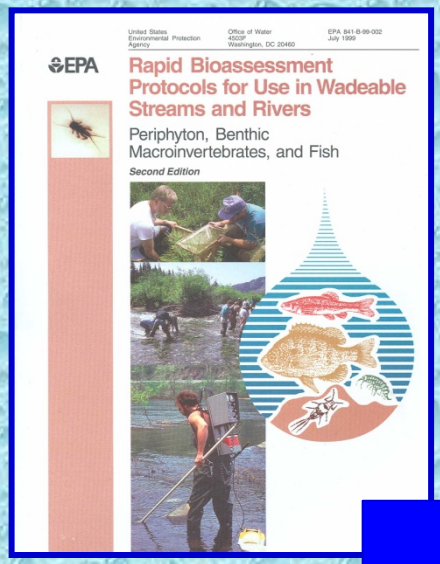
- Train specialists in freshwater ecology

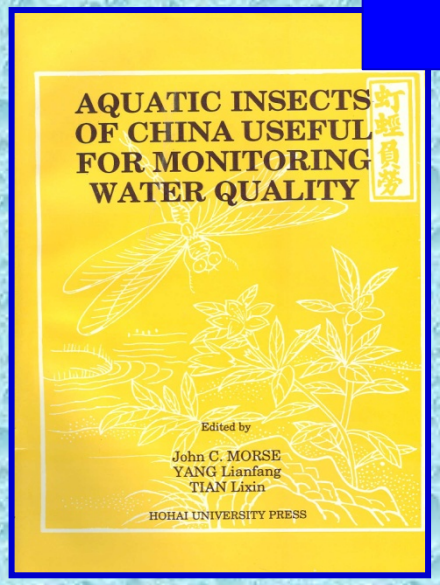
- Obtain and use international experience

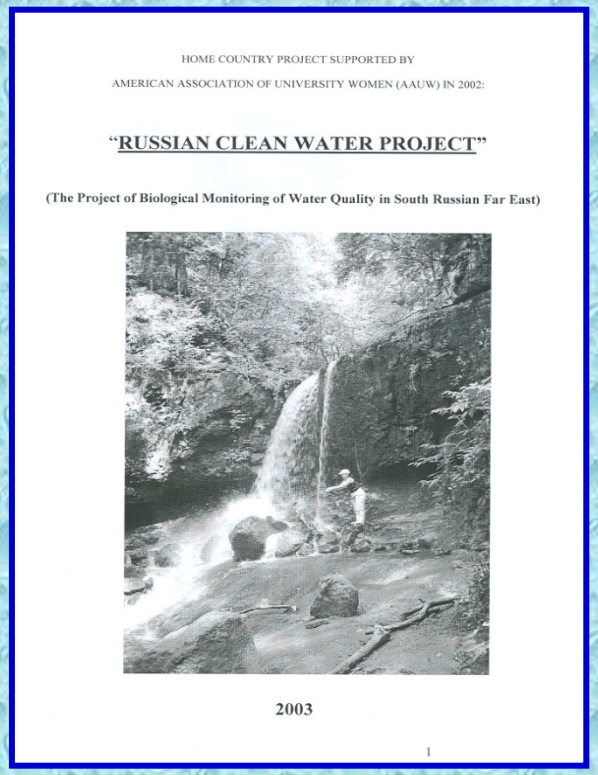
- Develop regional criteria for estimating water pollution based on macroinvertebrates

Kedrovaja river, Kedrovaja Pad Nature Reserve. Primorsky Territory, Russia

Toward introducing the modern biomonitoring technology in Eastern Russia







Russian Clean Water Project
T.S. Vshivkova, J.C. Morse, G.B. Glover
2003

Clean Water Center
established
September , 2003

www.cleanwater.fegi.ru
www.cleanwater.fegi.ru/personal/abput e htm

Who can monitor?:

International experience and ideas about introducing Public Biomonitoring in Asian Russia

Japanese schoolchildren demonstrate their ability to use macroinvertebrates for water quality estimation

XII International Symposium on Trichoptera in Japan, 2003

Using aquatic insects for monitoring water quality by non-government organizations: “Clean Water Center”

(established in 2003)

Institute of Biology and Soil Sciences, Far Eastern Branch of Russian Academy of Sciences

Far Eastern State University

Scientific-public Clean Water Center CWC

T.S. Vshivkova1,2 and J.C. Morse2

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Let’s make the world clean!

Freshwater pollution in Asian Russia becomes a serious problem in last decades. The situation goes out of control because of some reasons: the government program on nature conservation is not effective (1), environmental monitoring by government agencies is based on obsolete methods (traditional chemical and microbial analysis while macroinvertebrates used insufficiently)(2), the citizens of the region are usually uninformed and apathetic about ecology and nature conservation (3), the ecological monitoring in Russia is accomplished by government managements as rule, while social and scientific monitoring is overboard of official observations, private monitoring is not developed (4).

The reasons why macroinvertebrates are poor used in Russia are: insufficient knowledge of local faunas and tolerance values for invertebrates of different eco-regions, few specialists on freshwater macroinvertebrates, few centers of qualified experts and deficit of necessary literature (indigenous and foreign, taxonomic, ecological, applied benthological).

To test vitality of the RCWP ideas the scientific-social coordination "Clean Water Center" (CWC) was organized in 2003 under the aegis of IBSS and FE State University (FESU) as a non-profit organization. The center established a net of social eco-agencies (SEA) throughout RFE to provide extensive monitoring of freshwaters by specially educated students, teachers, ecologists, schoolchildren and other voluntaries. The managers of CWC are highly qualified specialists in freshwater ecology, leaders in fields of aquatic entomology and invertebrates.

Local agencies of CWC in Primorskyi Region (Far East of Russia)

Up to no 30 local public agencies united in 14 branches are established in Primorye

Members of CWC identify aquatic invertebrates

Clean water indicators

Biomonitoring is carried out by members of CWC

The Russian Clean Water Project (RCWP) was created for the development of policy for protection of Russian freshwaters. The Project is designed to establish rapid bioassessment protocols for different ecoregions, beginning with those of southeastern Russia. The RCWP uses US EPA-recommended protocols.

Two large rivers and one small stream were chosen as models to test potential rapid bioassessment protocols: Razdolnaya and Partizanskaya.

The metrics used were Taxa Richness, EPT Richness, NEPT/N, NEPT/NCh, Family Biotic Index, and percent composition of major orders and families. Non-professionals were able to collect and sort to major orders and families efficiently and reliably. The Project has demonstrated to Russian natural resource managers the value of aquatic can play in accomplishing it.

Results of social biomonitoring in a scientific paper (authors are : an academic researcher (1), graduate student (2), master student (3), teachers (4-5)

T.S. Vshivkova (1), M.V. Omelchenko, E.V. (2), Burukhina, L.P., (3), L.P. Samchinskaya (4), E.K. Sibirskaya

(5)Estimations of Partizanskaya Power Station Influence at ecological state of Partizanskaya River after 22-23 May 2004 catastrophic ash spill

The investigation of water quality and the estimation of different pollution sources' effect on the ecological state of Partizanskaya River carried out after the 22-23 May 2004 catastrophe at The Partizanskaya Power Station fly ash storage area, when 80 tons of fly ash were spilled into the river. The research was based on chemical, Microbiological and macrozoobenthos data which were estimated for reference and stressed sites. The serious effect of the accidental ash rush on the river freshwater biota has been documented as well as other water pollution point sources.

The effectiveness of the Rapid Bioassessment methods is shown, and the methods are recommended to be employed widely by the federal government water quality agencies as well as by citizen ecological monitoring.

III International Children Symposium on Ecological Problems in countries of North-East Asia, 21-22 August 2006, Vladivostok


III International Children Symposium on Ecological Problems in countries of North-East Asia, 21-22 August 2006, Vladivostok

Benthological Needs in North and East Asia and necessary cooperation:

a) development of the North and East Asian common bioassesment system based on the same criteria of water quality estimation (creating of unified Protocols of sampling and data analyzing);

b) calibration of chemical analytic methods for estimation of freshwater quality;

c) cooperation in development of public ecological monitoring in N and E Asia (common educational and training programs; sharing of experience)

We should:

a) establish an International Workgroup to develop regional freshwater bioassesment system for North and East Asian countries (scientists of N & E countries);

b) establish of the Intergovernmental Commission on Nature Conservation under ESCAP SRO-ENEA aegis to control water quality of transboundary and unique freshwater ecosystems (involve governmental, scientific and public representatives);

c) establish international Data Base on ecological condition of the main critical zones in N & E Asia and the main unique natural objects which need strong protection;

d) tightly cooperate in development of public ecological monitoring in N and E Asia (common educational and training programs; sharing of experience)

We may:

a) initiate organization of annual workshops on developing of the unified N & E Asian bioassesment system through academic institutions of N & E Asia;

b) organize regular workshops and training courses for students, children and leaders of ecological movements on public monitoring of environment;

c) organize annual Students and Children Conferences on ecological problems in N & E Asian countries sharing results of public ecological monitoring of environment;

d) create a website and an ecological journal on problems of public monitoring of environment in N & E Asia (normative information, instructions, manuals, recommendations, experience, news, results).

Thank you for your attention!