

CURRICULUM VITAE



Name	Eugene A. Silow
Date of birth	17.08.1963
Institution:	Irkutsk State University
Department:	Institute of Biology Chair of invertebrate zoology and aquatic ecology
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Education:

2004 – Dr. Sci., Aquatic Biology and Ecology, Peoples Friendship University of Russia, Moscow.

Thesis: “Ecological modelling to assess the influence of anthropogenic pressure on the functioning of aquatic ecosystems (i.e., Lake Baikal)”

1990 – Ph. D., Aquatic Ecology, Institute of Hydrobiology of Ukraine NAN, Kiev.

Thesis: “Model experiment in aquatic ecotoxicology (i.e. lake Baikal).”

Advisors: Vladimir J. Gurman, Devard J. Stom.

1985 – M. S., Biochemistry and Genetics, Irkutsk State University, Department of Biology and Soil Science.

Thesis: “Influence of phenols and heavy metal ions on the luminescent system of *Beneckea haveyi*”.

Advisor: Devard J. Stom.

Professional Training:

- 1985 – 1989 – PhD-Student of Irkutsk State University.
- 1994 – 1995 – post-doc training in the Royal Danish School of Pharmacy (Department of Environmental Chemistry) in ecological modelling. Advisor: Sven E. Jørgensen (Denmark)
- 1994 – 1996 – training in Leadership for Environment and Development (LEAD) Program in sustainable development (USA, Costa-Rica, Thailand, Zimbabwe, Russia)
- 1996 – 1999 – Dr. Sci.–Student of Irkutsk State University. Advisor: Olga M. Kozhova.

Employment:

- 1985 – 1990 – Junior Research Fellow of Scientific Research Institute of Biology at Irkutsk State University.
- 1991 – 1996 – Senior Research Fellow of Scientific Research Institute of Biology at Irkutsk State University.
- 1999 – 2001 – Senior Research Fellow of Scientific Research Institute of Biology at Irkutsk State University.
- 2001 – 2003 – Full Professor (Limnology, Ecology, Ecological Modelling, Ecological Toxicology) of Department of Natural Sciences of Pai-Chai University (Taejon, Republic of Korea).
- 2003 – 2005 – Associate Professor of Geographical Faculty at Irkutsk State University.
- 2003 – 2005 – Leading Research Fellow of Scientific Research Institute of Biology at Irkutsk State University.
- 2005 – 2007 – Full Professor (Aquatic Ecology, Environmental Chemistry, Ecosystem Health Assessments, Sustainable Development of Mankind) of Geographical Faculty at Irkutsk State University
- 2005 – 2013 – Full Professor (Limnology, Ecological Modelling, Environmental Chemistry) of UNESCO Chair at Irkutsk State University
- 2006 – 2014 – Principal Research Fellow of Scientific Research Institute of Biology at Irkutsk State University
- 2010 – Present time – Full Professor (Sustainable Development, Limnology, Environmental Chemistry, Ecological Monitoring) of Faculty of Biology and Soil Science at Irkutsk State University.
- 2014 – Present time – Leading Research Fellow of Institute of Biology of Irkutsk State University.

List of selected publications (total 139 and 77 abstracts)

1. Silow E. A., D. J. Stom, N. I. Basharova *et al.* 1991. Influence of biogenous elements on the lake Baikal plankton community. *Acta hydrochimica et hydrobiologica*. 19(6): 629 – 634. DOI: 10.1002/ahch.19910190607.
2. Gurman V. J., D. M. Rosenraukh, D. J. Stom and E. A. Silow. 1991. Mathematical modelling of perturbations of lake Baikal ecosystem and identification of it on the basis of experiments. *In: Computer science for environmental protection*. New York: Springer-Verlag, pp. 451 – 460.
3. Silow E. A., V. J. Gurman, D. J. Stom, D. M. Rosenraukh and V. I. Baturin. 1995. Mathematical models of lake Baikal ecosystem. *Ecological Modelling*. 82: 27 – 39.
4. Kozhova O. M., B. K. Pavlov and E. A. Silow. 1998. Economic use and anthropogenic pressure. *In: Lake Baikal. Biodiversity and evolution*. Leiden, The Netherlands: Backhuys Publishers. Pp. 279 – 292.
5. Kozhova O. M. and E. A. Silow. 1998. The current problems of Lake Baikal ecosystem conservation. *Lakes & Reservoirs: Research and Management*. 3: 19–33.
6. Silow E. A. 1998. The changes of ecosystem goal functions in stressed aquatic communities. *The Journal of Lake Science*. 10: 421–435.
7. Silow E. A. 1999. The use of two lumped models for the analysis of consequences of external influences on the lake Baikal ecosystem. *Ecological Modelling*. 121: 103–113.
8. Silow E. A. 2000. The present state of the Lake Baikal contamination. *In: Ecotechnology in Environmental Protection and Fresh Water Lake Management*. Taejon: Pae Chai University, pp. 105 – 110.
9. Kozhova O. M. and E. A. Silow. 2001. Principles and Results of Ecological Monitoring of Lake Baikal. *In: Partnerships for Sustainable Life in Lake Environments*. Otsu, Vol. 5, pp. 532–536.
10. Silow E. A., V. A. Baturin and D. J. Stom. 2001. Prediction of Lake Baikal ecosystem behaviour using an ecosystem disturbance model. *Lakes & Reservoirs: Research and Management*. 6(1): 33–36.

11. Silow E. A. and I. H. Oh. 2002. Exergy: Preliminary Results of an Experimental Laboratory Verification of its Applicability in Applied Ecology. *Journal of Natural Sciences (Republic of Korea)*. 12: 61 – 67.
12. Silow E. A. and I. H. Oh. 2004. Aquatic ecosystem assessment using exergy. *Ecological Indicators*. 4: 189–198. doi:10.1016/j.ecolind.2004.03.003.
13. Silow E.A. *Environmental Chemistry*: textbook. 2006. Irkutsk University Press, 146 pp. (In Russian) ISBN 5-9624-0091-7.
14. Hampton S.E., L.R. Izmet'seva, M.V. Moore, S.L. Katz, B. Dennis and E.A. Silow. 2008. Sixty years of environmental change in the world's largest freshwater lake – Lake Baikal, Siberia. *Global Change Biology*. 14: 1947-1958. DOI: 10.1111/j.1365-2486.2008.01616.x.
15. Moore M.V., S.E. Hampton, L.R. Izmet'seva, E.A. Silow, E.V. Peshkova and B.K. Pavlov. 2009. Climate Change and the World's "Sacred Sea" – Lake Baikal, Suberia. *BioScience*. 59 (5): 405–417. DOI: 10.1525/bio.2009.59.5.8.
16. Silow E.A. *Hydrobiology and Aquatic Ecology*: textbook. 2009. Irkutsk University Press, 146 pp. (In Russian) ISBN 978-5-9624-0388-5.
17. Silow E.A. and A.V. Mokry. 2010. Exergy as a Tool for Ecosystem Health Assessment. *Entropy*. 12: 902-925. doi:10.3390/e12040902.
18. Silow E.A. *Analysis and prognosis of aquatic ecosystems changes on the basis of model experiments*. 2010. Irkutsk University Press, 232 pp. (In Russian) ISBN 978-5-9624-0413-4
19. Silow E.A. *Essays on Environmental Chemistry*: textbook. 2011. Eastern Siberian Educational Academy Publishing House, 176 pp. (In Russian) ISBN 978-5-85827-694-4.
20. Izmet'seva L.R., Silow E.A. and E. Litchman. 2011. Long-Term Dynamics of Lake Baikal Pelagic Phytoplankton under Climate Change. *Inland Water Biology*. 4 (3): 301–307. DOI: 10.1134/S1995082911030102.
21. Silow E.A., Mokry A.V. and S.E. Jørgensen. 2011. Some Applications of Thermodynamics for Ecological Systems. In: J.C. Moreno-Pirajan (Ed.). *Thermodynamics - Interaction Studies - Solids, Liquids and Gases*. Vienna: InTech. Pp. 319-342. ISBN: 978-953-307-563-1.
22. Silow E.A. 2012. Exergy changes in lakes around the world under pressure from global change. *Archives des Sciences*. 65: 209 – 214.
23. Rusinek O.T., Takhteev V.V., ..., Silow E.A. et al. 2012. *Baicalogy: in 2 books*. Novosibirsk: Nauka. (In Russian) ISBN: 978-5-02-019118-1.
24. Silow E.A. *General Limnoecology: in 2 books*. 2013. Irkutsk University Press. (In Russian) ISBN 978-5-9624-0977-1.
25. Xu F.-L., S.E. Jørgensen, Y. Shimizu and E. Silow. 2013. Persistent organic pollutants in fresh water ecosystems. *The Scientific World Journal*. 2013. Article ID 303815. - P. 1-2. DOI: 10.1155/2013/303815.
26. Zilov E.A. 2013. Water resources and the sustainable development of humankind: international cooperation in the rational use of freshwater-lake resources: conclusions from materials of foreign studies. *Water resources*. 40(1): 84 – 95. DOI: 10.1134/S0097807812030116.
27. Silow E.A. *Analysis and prognosis of aquatic ecosystems changes on the basis of model experiments*. 2nd Ed. 2014. Moscow: Book on Demand, 258 pp. (In Russian) ISBN 978-5-518-99271-9
28. Silow E.A. 2014. Lake Baikal: Current Environmental Problems. In: *Encyclopedia of Environmental Management*. New York: Taylor & Francis. Pp. 1 – 9. DOI 10.1081/ E-EEM-120050578. ISBN 1-4398-29270-6; eISBN 1-4398-2933-0.
29. Silow E.A. and Knizhin I.B. *Fundamentals of Practical Aquatic Biology*. 2014. Irkutsk University Press. 153 pp. (In Russian) ISBN 978-5-9624-1137-8.
30. Sharma S., D.K. Gray, J.S. Read, ..., E.A. Silow et al. 2015. A global database of lake surface temperatures collected by in situ and satellite methods from 1985–2009. *Scientific Data*. 2.: 150008. 19 pp. DOI: 10.1038/sdata.2015.8.
31. Shimaraeva S.V., Izmet'syeva L.R., Krashchuk L.S., Pislegina H.V. and Silow E.A. 2015. The influence of BPPC on Baikal plankton – comparative study of phytoplankton in the point of influence of BPPC purified waste waters and in the reference clean point in 2005–2006 years. In: D. Karthe, S. Chalov, N. Kasimov, M. Kappas (eds.) *Bringing Together Selenga-Baikal Research*. Erdsicht-Einblicke in Geographische und Geoinformationstechnische Arbeitsweisen. Schriftenreihe des Geographischen Instituts der Universität Göttingen, Abteilung Kartographie, GIS und Fernerkundung. Stuttgart: Ibidem-Verlag, Pp. 235-241. ISSN 1614-4716/ISBN-13: 978-3-8382-0853-4.
32. Kraemer B. M., O. Anneville, S. Chandra, ..., E. Silow et al. 2015. Morphometry and average temperature affect lake stratification responses to climate change. *Geophysical Research Letters*. 42(12): 4981-4988.

doi:10.1002/2015GL064097.

33. Katz S.L., L.R. Izmet'eva, S.E. Hampton, T. Ozersky, K. Schapov, M.V. Moore, S.V. Shimaraeva and E.A. Silow. 2015. The "Melosira years" of Lake Baikal: winter environmental conditions at ice onset predict under-ice algal blooms in spring. *Limnology and Oceanography*. 60(6): 1950-1964 DOI:10.1002/lno.10143.
34. O'Reilly C.M., D.K. Gray, S. Sharma, ..., E. Silow et al. 2015. Rapid and highly variable warming of lake surface waters around the globe. *Geophysical Research Letters*. 42. doi:10.1002/2015GL066235.
35. Izmet'eva L.R., M.V. Moore, S.E. Hampton, C.J. Ferwerda, D.K. Gray, K.H. Woo, H.V. Pislegina, L.S. Krashchuk, S.V. Shimaraeva and E.A. Silow. 2016. Lake-wide physical and biological trends associated with warming in lake Baikal. *Journal of Great Lakes Research*. 42(1): 6-17. DOI:10.1016/j.jglr.2015.11.006.
36. Silow E.A., L.S. Krashchuk, K.A. Onuchin, E.V. Pislegina, O.O. Rusanovskaya and S.V. Shimaraeva. 2016. Some recent trends regarding Lake Baikal phytoplankton and zooplankton. *Lakes & Reservoirs: Research and Management*. 21: 40-44. DOI: 10.1111/lre.12119.
37. Kraemer B.K., S. Chandra, A.I. Dell, M. Dix, E. Kuusisto, D.M. Livingstone, G. Schladow, E. Silow, L.M. Sitoki, R.Tamatah, P.B. McIntyre. A metabolic approach to understanding global patterns in the response of lake ecosystems to warming. 2016. *Global Change Biology*. 22,(10). doi: 10.1111/gcb.13459.
38. Timofeyev M.A., E.A. Silow, A.W. Mackay, M.V. Moore, G.E. Likens. 2017. Monitoring: safeguarding the world's largest lake. *Nature*. 538(7623): 41. doi:10.1038/538041a.
39. Hampton S.E., ..., E.A. Silow, ..., M.A. Timofeyev et al. 2017. Ecology under lake ice. *Ecology Letters*. 20(1): 98–111. Doi: 10.1111/ele.12699
40. O'Donnell D., P. Wilburn, E. Silow, L. Yampolsky, E. Litchman. 2017. Nitrogen and phosphorus colimitation of phytoplankton in Lake Baikal: insights from a spatial survey and nutrient enrichment experiments. *Limnology and Oceanography*. 62. First Published: 12 February 2017. DOI:10.1002/lno.10505.
41. Bowman L.L., E.S. Kondratieva, E.A. Silow, P. Wilburn, L. Yampolsky. 2017. A capital breeder in a heterogeneous environment: lipid reserves and RNA:DNA ratio in Lake Baikal's endemic *Epischura*. *Journal of Great Lakes Research*. 43 (2). Available online 29 January 2017. <http://dx.doi.org/10.1016/j.jglr.2017.01.010>
42. Shimaraeva S.V., E.V. Pislegina, L.S. Krashchuk, K.S. Shchapov, E.A. Silow. 2017. Dynamics of Chlorophyll a Concentration in the South Baikal Pelagic during the Direct Temperature Stratification Period. *Inland Water Biology*. 10(1): 59–63. DOI: 10.1134/S1995082917010163.

Selected grants (since 2006 only):

- 2017 – 2019 *Complex assessment of Lake Baikal Plankton Community State - Structure, Tendencies, and Prognosis under Global Climate Change and Human Pressure*. Ministry of Education and Science of Russian Federation, 6.1387.2017. \$ 250,000.
- 2017 – 2019 *Ecological monitoring of Lake Baikal: Study of Structure, Organisation, and Functioning of Lakes Biota*. Ministry of Education and Science of Russian Federation, 6.4819.2017. \$ 119,000.
- 2015 - 2016 *Ecological monitoring, study of structure and peculiarities of functioning of ecological and biological systems of Baikalian region*, GR 01201461929. Ministry of Education and Science of Russian Federation, \$ 93,000.
- 2012 – 2013 *Study of structure, dynamics and functioning of lake Baikal plankton* Research work within State Assignment, 5.1864.2011, \$85,700
- 2012 – 2013 *Analysis and prognosis of Lake Baikal ecosystem state under Global Change*. Ministry of Education and Science of Russian Federation, \$ 58,000.
- 2012 – 2013 *Phytoplankton of the Lake Baikal pelagial: investigation of 60 years dynamic* – Russian Foundation for Basic Research, \$ 16,000.
- 2009 – 2011 *The development of the new methods of investigation, monitoring and prognostics of the state of the atmosphere and hydrosphere of the lake Baikal and the creation of sustainable system of research and teaching staff training on the basis of REC Baikal* - Ministry of Education and Science of Russian Federation, \$ 400,000. Coauthored with N.M. Budnev.
- 2008 – 2011 *Baikal REC: Integration of Research and Education Activities for Complex Geoecological Studies of the UNESCO World Heritage Site* - Ministry of Education and Science of Russian Federation & CRDF, \$ 1,000,000. Coauthored with A. V. Arguchintsev, A. V. Mantsivoda, A. V. Arguchintseva.

- 2006 *The development of integral index for ecosystem state analysis and prognosis on the basis of ecological goal functions and the testing of its applicability (for the lake Baikal and other water bodies of Eastern Siberia)*– Ministry of Education and Science of Russian Federation, \$ 20,000.
- 2005 – 2006 *The 60-year data set of plankton dynamics in Lake Baikal: Examining facets of the jewel of Siberia (LAKE BAIKAL PLANKTON)* – National Center for Ecological Analysis and Synthesis, University of California, Santa Barbara, California, \$ 36,030. Coauthored with Marianne Moore and Stephanie Hampton.

Member of Editorial Board of

Annual Research & Review in Biology (since 2017), Journal of Biotechnology and Bioengineering (since 2017), Journal of Global Agriculture and Ecology (2017), Asia Pacific Journal of Studies in Zoology (2017), Journal of Nuclear Exergy (since 2017), African Journal of Agricultural Research (since 2006)

Reviewing journals:

Ecological Indicators (since 2005); Science of the Total Environment (since 2012); Environmental Modelling & Software (2012); Environmental Toxicology and Chemistry (2012); Environmental Science & Technology (since 2013); Ecological Modelling (since 1995); Entropy (2013); International Research Journal of Public and Environmental Health (2014); Lakes&Reservoirs: Research and Management (since 2002); British Journal of Applied Science & Technology (since 2014).

Member of

The Association for the Sciences of Limnology and Oceanography (ASLO), The International Association for Great Lakes Research (IAGLR), The International Society for Ecological Modelling (ISEM), Royal Society of Chemistry, Russian Society for Aquatic Biology, Russian Society for Ecology, Expert of RAS

Awards

Monograph "Baikalogy" in two volumes (Baikalogy. Novosibirsk, Nauka, 2012, 1111pp. ISBN 978-5-02-019118-1, ISBN 978-5-02-019100-6) won the competition "Best books of 2012" of Association of book-editors of Russia in nomination "Best edition in natural sciences, technics, medicine".

Certificate for Excellence in Reviewing (Ecological Modelling, 2013)

Chandler-Misener Award for the best paper of 2016 (IAGLR, 2017).