

Global Lake Conservation Priorities: Data Sources and Explanations

This text explains the data laid out in Global Lake Biodiversity Conservation Priorities charts, by region (Appendices II – VII). Data are described and the source referenced. Much additional research and monitoring is needed to accurately identify highly diverse priority lakes, their risk factors and current level of impairment, and basic limnology data.

Surrounding countries

All countries bordering lakes are listed. Biological diversity information on each lake is listed only under the first country named. Risk factor information, such as water scarcity index figures for 2025, is listed for each country bordering the lake.

BIOLOGICAL DIVERSITY

Fish diversity

The lake is identified by UNEP and the World Conservation Monitoring Centre as being notable for species richness or endemism in fish species.

Source: Groombridge, B. and M. Jenkins. 1998. Freshwater biodiversity: a preliminary global assessment. World Conservation Monitoring Centre. World Conservation Press.

Crab diversity

The lake is identified by UNEP and the World Conservation Monitoring Centre as being notable for species richness or endemism in crab species.

Source: Groombridge, B. and M. Jenkins. 1998. Freshwater biodiversity: a preliminary global assessment. World Conservation Monitoring Centre. World Conservation Press.

Mollusc diversity

The lake is identified by UNEP and the World Conservation Monitoring Centre as being notable for species richness or endemism in mollusc species.

Source: Groombridge, B. and M. Jenkins. 1998. Freshwater biodiversity: a preliminary global assessment. World Conservation Monitoring Centre. World Conservation Press.

Bird diversity/Ramsar Criteria 5

Lakes in countries that are party to the Ramsar Treaty on International Wetlands and applied under Criteria 5 as laid out by Ramsar authorities are identified. Ramsar Criteria 5 states “A wetland should be considered internationally important if it regularly supports

20,000 or more water birds”. Ramsar Criteria 5 highlights a limited group of lakes that are key to bird biodiversity.

Source: Ramsar Database, Ramsar Convention Bureau and Wetlands International.

Bird diversity/ Ramsar Criteria 6

Lakes in countries that are party to the Ramsar Treaty on International Wetlands and applied under Criteria 6 as laid out by Ramsar authorities are identified. Ramsar Criteria 6 states “A wetland should be considered internationally important if it regularly supports 1% of the individuals in a population of one species or subspecies of water bird”. Ramsar Criteria 6 highlights a limited group of lakes that are key to bird biodiversity.

Source: Ramsar Database, Ramsar Convention Bureau and Wetlands International.

Bird diversity/ Endemic Bird Areas in watershed

EBA’s are mapped globally by Birdlife International. Endemic Bird Areas by lake watershed are available at this time only for a select few lakes.

Source: Revenga, C., S. Murray, J. Abramovitz and A. Hammond. 1998. Watersheds of the world: ecological value and vulnerability.

Global 200 (WWF)

The lake is identified by WWF as being important for biodiversity or as an important representative of a habitat type.

Source: Olson, D. and E. Dinerstein. 1998. The global 200: a representation approach to conserving the earth’s distinctive ecoregions. World Wildlife Fund, Washington, D.C.

RISK FACTORS

Population density

Population densities (people per square mile) are given for entire countries. Starred entries are population density for the lake watershed and are given per square kilometer. Population density by watershed is difficult to obtain for smaller lakes. Watershed data are needed to accurately assess the impact of population growth and urbanization on lake ecosystems.

Source: The Universal Almanac 1997 (Andrews and McMeel, Kansas City, MO) and U.S. Census Bureau, World Population Profile (1997) as compiled in Rourke, J. 1997. International politics on the world stage: 7th edition. McGraw-Hill Companies.

Deforestation rate

A very limited number of watershed level deforestation rates by watershed are available from World Resource Institute’s (WRI) publication, Watersheds of the World. Where

these are available (for about 15 lakes), they have been included. Future research will include attempts to obtain additional watershed-level deforestation data from the World Bank.

Source: Revenga, C., S. Murray, J. Abramovitz and A. Hammond. 1998. Watersheds of the world: ecological value and vulnerability.

Water Scarcity Index and Ranking for the year 2025

Water availability in cubic meters (m³) per capita for 2025 is listed for each country bordering a lake identified as a priority. Projections of water availability are based on the U.N. "medium" population growth rate scenario for the year 2025. For reference, the country with the lowest available per capita water in 1995 was Malta, with 82 c.m. per person. The highest country was Iceland, with 624,535 c.m. per person. The United States had a per capita figure of 9,277 c.m.

Low: the annual per capita amount of renewable freshwater available is greater than 2,000 cubic meters.

Medium: the annual per capita amount of renewable freshwater available is less than 1,700 and greater than 1,000 cubic meters.

High: the annual per capita amount of renewable freshwater available is 1,000 cubic meters or less.

There may be countries such as China and Mexico that experience severe water shortages locally, but are not considered in the study cited to be water-scarce nationally.

Data source: Gardner-Outlaw, T. and R. Engelman. 1997. Sustaining water, easing scarcity: population, annual renewable fresh water availability, 1950, 1995, 2025 and 2050. Population International. http://www.populationaction.org/why_pop/water/water-table.htm.

Capacity to address expected impacts of global climate change

Combines the amount of climate change projected by country with each country's economic capacity to adapt. Expressed in per capita GDP per ° C of future warming. The higher the dollar figure, the more substantial the capacity of the country to address expected climate change. For reference, countries least able to adapt (such as Tanzania) are at \$100, compared to the U.S. which is at \$6,900.

Source: Mitchell, T. and M. Hulme. 2000. A country-by-country analysis of past and future warming rates. Tyndall Centre for Climate Change Research at the University of East Anglia, Norwich, England. <http://www.tyndall.uea.ac.uk>

Measures of Institutions:

Governance

Four rough measures are used to assess voice and accountability, government effectiveness, regulatory framework, and corruption control in countries with priority lakes. All indicators are based on data from 1997 and 1998. Important political changes since 1998 in countries such as Russia are not incorporated. Only countries in the very worst (“Lowest”) and very best (“Highest”) categories are included since the data is based on aggregate indicators and standard errors associated with estimates of governance are still large relative to the units in which governance is measured.

“Lowest” indicates the country may be very difficult to accomplish conservation work in; “Highest” indicates that particularly good institutions and participatory ideals may make these countries places where conservation work can be done relatively efficiently.

These measures should not be interpreted as reasons not to do conservation work; rather they can be seen as indicators of some of the strategic challenges faced in particular countries.

Source: Kaufmann, D., A. Kraay and P. Zoido-Lobaton. 1999. Governance matters. http://www.worldbank.org/wbi/governance/gov_data.htm. World Bank. Washington, D.C.

LIMNOLOGY

Volume

Lake volume in km³ is listed when available from the International Lake Environment Committee Database (<http://www.ilec.or.jp>), developed by the United Nations Environmental Programme, the International Lake Environment Committee (ILEC) and the government of Japan. The smaller a lake’s volume, the lower the dilution capacity of the lake.

Catchment area

The surface area of the lake’s watershed.

Source: International Lake Environment Committee database at (<http://www.ilec.or.jp>.)

Lake Type

N/R – natural or reservoir (man-made)

F/S – freshwater or saline or soda lake

P/I – permanent or intermittent

Characterizations of lakes are from the Ramsar database and refer to the main type of lake at the site.