

Ponds found to take up carbon like world's oceans

Research led by Iowa State University limnologist, or lake scientist, John Downing finds that ponds around the globe could absorb as much carbon as the world's oceans.

Professor Downing found that constructed ponds and lakes on farmland in the United States bury carbon at a much higher rate than expected; as much as 20-50 times the rate at which trees trap carbon. In addition, ponds were found to take up carbon at a higher rate than larger lakes.

"Aquatic ecosystems play a disproportionately large role in the global carbon budget," Downing said. "Despite being overlooked in the past, it's small bodies of water that are important because they take up carbon at a high rate and there are more of them than previously thought. The combined effect is that farm ponds could be burying as much carbon as the world's oceans, each year."

Ponds capture carbon in two main ways:

The research estimated there are 304 million natural lakes and ponds in the world, covering an area of 4.2 million square kilometers, twice the area previously thought. As many as 90 percent of these water bodies are one hectare (two acres) or less in area.

Downing's research team published its most recent findings in the Feb. 15 issue of the journal *Global Biogeochemical Cycles* in a paper titled, "Sediment organic carbon burial in agriculturally eutrophic impoundments over the last century." The team included members from Europe, the United States and Canada. The work was sponsored by the National Center for Ecological Analysis and Synthesis and the Iowa Department of Natural Resources.

Downing has presented invited seminars on this research to the International Society of Limnology, the American Society of Limnology and Oceanography, and at several major research institutions in North America and Europe. Most recently, he was invited to discuss his research by the Pond Conservation, a charity in the United Kingdom dedicated to creating and protecting ponds and the wildlife they support. He will spoke today at University College London. An upcoming presentation is scheduled for the annual meeting of the European Pond Conservation Network in Valencia, Spain.

Jeremy Biggs, Pond Conservation director of policy and research, said the research has exciting implications. "It may be that ponds will be the modern equivalent of the swamps that formed coal in the past. But before we all rush into making ponds to trap carbon we need to do some basic research here in the UK. If the rate of carbon uptake in ponds in Europe is the same as that found in the USA study, we may well have discovered an important new natural way of trapping carbon," he said.

Downing's ongoing research, partnering with the United States Geological Survey, and his contributions to the Iowa Lakes Survey will investigate the role of small Iowa lakes in the absorption of atmospheric carbon dioxide and other important gases such as methane.

Source: Iowa State University of Science and Technology

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