

# Ecologists plot to turn the tide for shrinking lake

Quirin Schiermeier, Munich

The Aral Sea is dying. Researchers have given up hope that the central Asian lake — which was the fourth-largest in the world before intensive Soviet agriculture diverted the rivers that feed it — can ever be restored.

But a group of ecologists and economists is nonetheless discussing plans for a conservation strategy that could eventually reverse the ecological ruin of the region surrounding the shrinking lake. Germany and the United Nations Educational, Scientific and Cultural Organization (UNESCO) are backing the plan, for which scientific preparations could begin in Uzbekistan next year.

Over the past half-century, the Aral Sea has lost four-fifths of its volume and more than half of its surface area as water from the main rivers that flow into it, the Amu Darya and the Syr Darya, was diverted to irrigate cotton fields in the surrounding region.

The vanishing of the lake has triggered an ecological disaster, with desertification of what used to be the lake's floor and heavy salination of the surrounding water table and soil.

Intensive farming has also caused widespread pesticide contamination, according to scientists who have visited the region. Illnesses such as hepatitis, respiratory diseases and anaemia are widespread, and shortages of food and drinking water are worsening, a crisis that has been compounded by the exceptionally dry

summers of this year and last.

Now researchers at the Center for Development Research (ZEF) in Bonn are hoping to stop the rot by introducing sustainable patterns of land and water use to the region. They want to undertake a pilot scheme, after a preliminary investigation, to test the idea in the province of Khorezm, Uzbekistan, 400 kilometres south of the Aral Sea.

Under the scheme, around one-fifth of the irrigated cotton fields in the area would be converted into forest or hedgerow. More efficient farming would enable the remaining area to yield the same amount of cotton, the plan's architects say.

Christopher Martius, scientific coordinator of the project and an ecologist at the ZEF, thinks that local cotton growers can be persuaded to support the plan. "It is a legacy of Soviet times that most farmers in Uzbekistan have received solid scientific and agronomical training," he says. "Many of them have already signalled interest in participating."

The changes in land use would be accompanied by legal, administrative and economic reform, and its success will therefore require strong backing from the Uzbekistani government, which Martius also thinks will be forthcoming.

The initial phase of the project will prepare for the pilot by studying the ecology and economy of the region, including its hydrology, environment, demography and agriculture. This study will take up to four years, says Martius, after which a pilot will be implemented on a single farm and then, perhaps, throughout the 6,300 square kilometres of the province.

The new strategy aims to mitigate the consequences of the changing environment, rather than trying to rescue the Aral Sea. A UNESCO report released last year said that there was no prospect of preventing the sea from drying up.

"Changing the behaviour of people and authorities will not be easy," says Paul Vlek, one of the directors of the ZEF. "We hope, however, that we will be able to demonstrate that, even in a crisis situation, it is sensible to think ecologically."

Local scientists from Tashkent State Agricultural University and Urganch State University will be involved in the project from the outset. If, as expected, the German science ministry approves a grant of 3 million euros (US\$2.7 million) for the study phase, work on the project could begin next spring.

# Code-breakers reveal results as threat of legal action is lifted



Rex Dalton, San Diego

Computer scientists who cancelled a talk in May because of legal threats from the recording industry delivered it in full last week at a conference in Washington.

The researchers, led by Edward Felten of Princeton University, presented their research on 15 August at the Usenix computer security conference, after the Recording Industry Association of America (RIAA) said that it did not intend to sue them.

The team had withdrawn virtually the same paper on code-breaking from an earlier conference, fearing legal action by the RIAA under the federal Digital Millennium Copyright Act of 1998, which prohibits certain disclosures of digital information (see *Nature* 411, 5; 2001).

In response to the case, a committee of faculty at Princeton will meet on 26 September to advise the university on possible policies to protect researchers' rights to publish, particularly in computer science. Some Princeton faculty have voiced concern that the university's leadership did not do enough to support the challenged researchers.

The new president of Princeton, Shirley Tilghman, was unavailable for comment. But an official at the university said that it strongly supports academic freedom, adding in a statement that university officials go "out of their way to indemnify our employees".

Members of Felten's team say that the legal threat has already impinged on their academic freedom. The group, backed by the Electronic Frontier Foundation, a California-based lobby group that supports free speech on the Internet, is now suing the RIAA in the federal court in New Jersey.



Washed up: ecologists can't save the Aral Sea but they hope to reduce the effects of its demise.