

History shows that parched Aral Sea can be restored

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The Aral Sea has lost 90 per cent of its volume since 1960 (Image: NASA)

In less than a century, humanity destroyed the Aral Sea. It is one of the most emblematic environmental disasters. But now it seems the sea has collapsed at least twice before, and recovered both times.

In 1961, the Aral Sea in central Asia was the world's fourth largest lake. But [massive irrigation programmes](#) begun during the Soviet era diverted water from the rivers that feed it, reducing the lake's

volume to just 10 per cent of what it was and leaving large areas dry. The ecosystem has [collapsed](#), the desiccated lake bed is laced with pesticides that are spread by dust storms, and [drinking water is polluted](#).

Now geologists have discovered that the Aral Sea has previously recovered naturally from such severe declines.

"The sea really has dried in the past and has come back," says [Philip Micklin](#) of Western Michigan University in Kalamazoo, who was not involved in the new study.

A history of collapse

[Sergey Krivonogov](#) of the Institute of Geology and Mineralogy in Novosibirsk, Russia, and his colleagues have compiled data showing how the Aral Sea has changed over the past 2000 years. Researchers had carbon-dated the shelves etched into the shoreline by past waves, and drilled cores to reveal which layers were once exposed to the surface.

Shrunken sea

Soviet irrigation projects cut off the rivers feeding the Aral Sea, so it has shrunk to 10 per cent of what it was in 1960



It turns out that water levels in the Aral Sea have varied widely, says Krivonogov. Humans may have played a role, because they have been farming the area for 2500 years.

In 1961, the lake's surface was 54 metres above sea level. Yet between AD 400 and 600, it was just 10 metres above sea level, but recovered. Then between 1000 and 1500 it fell to 29 metres above sea level. The lake grew again after 1600, until the Soviet irrigation began.

"History tells us don't give up hope," says Micklin.

Loss of a lake

The modern collapse is no worse than the historical ones. By 1989, the lake was 40 metres above sea level, and a small northern lake split from the rest.

Since then [the northern part has rebounded](#). In 2005, [a dam separated the north and south sections, reducing water loss](#). The north Aral Sea is back up to 42 metres above sea level, and native fish have returned from refuges in the river, says [Nikolay Aladin](#) of the Russian Zoological Institute in Saint Petersburg.

"The fish catch is a small fraction of what it was in the mid-1950s, but the rehabilitation of the northern part has been pretty amazing," says Micklin.

However [the main southern part is still shrinking](#). It has split into three salty lakes less than 29 metres above sea level. The eastern lake is so salty only [brine shrimp](#) live there.

There is no work under way to restore the southern region. It has always looked like a lost cause. So Aladin says it will keep shrinking and getting saltier until only brine shrimp are left.

Using less water to irrigate crops could restore the entire Aral Sea, says Micklin. But it would devastate the farms, which have actually increased the irrigated area since the end of the Soviet era. In places they have shifted from water-hungry rice and cotton to winter wheat, but they need to grow cotton to earn money.

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