

Shifting Baselines Confound River Restoration

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Steep reductions in the abundance of fish, shellfish, and other aquatic fauna in recent centuries are not restricted to animals that live in the sea: historical records show that species in rivers and lakes worldwide also experienced sharp declines. Yet the significance of these declines in freshwater species is frequently overlooked by natural resource managers, according to an article in the September 2009 issue of *BioScience*.

Authors Paul Humphries and Kirk Winemiller argue that as a result of this neglect of historical records, watershed planning is often built on estimates of baseline abundances of fish, freshwater [mussels](#), and [beavers](#) that are much lower than actual past abundances. Planners consequently underestimate the likely far-reaching effects such animals had on their ecosystems before European colonization.

Although precise historical numbers cannot be known, written accounts dating from the 1600s suggest that abundances were much greater than they are today. Travelers and diarists reported [rivers](#) so full of fish that a spear thrown into the water only rarely missed one, salmon runs that spanned the whole width of a river, and fish so plentiful that they were used as pig feed.

Humphries and Winemiller point out that European colonizers in North America and Australia, in particular, could easily move inland from coastal communities to supplement their seafood with food taken from freshwaters. Then, within a few decades, they started constructing weirs

and mills that impeded the migration of fishes and put further pressure on stocks. Stocks of fish and shellfish declined rapidly after colonization. The effects of this early loss of wildlife on the river ecosystems, the authors contend, has not been adequately considered.

Freshwater systems that have been little exploited seem to confirm the strong effects of fishing pressure in freshwater systems. Humphries and Winemiller cite the case of rivers in the [Lake](#) Eyre Basin, in central Australia, where [fish](#) are much more abundant than in comparable systems that are more heavily exploited.

Humphries, of Charles Sturt University in New South Wales, Australia, and Winemiller, of Texas A&M University in College Station, support the reintroduction of top predators and keystone species recently extirpated from freshwaters, and urge the creation of freshwater protected areas. Some of these protected areas could be used for restoration experiments in which the effects of reintroduced species could be explored.

More information: [Read the full article.](#)

Source: American Institute of Biological Sciences ([news](#) : [web](#))

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