

Ecosystem-based valuation of Colorado River water, USA and México

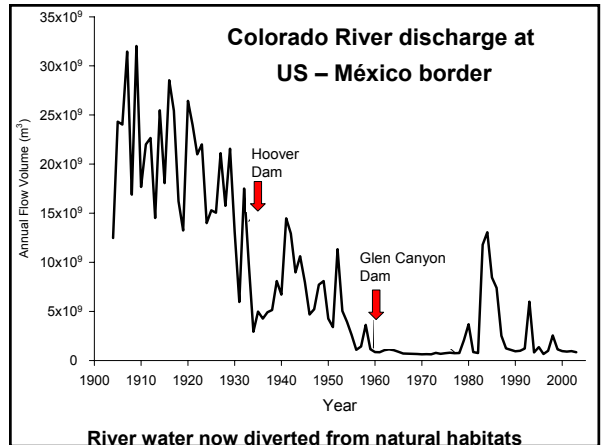


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The Colorado River: Water for the Southwest

- Upstream dams provide reservoir storage and regulate downstream flow.
- Regulated flow permits irrigation for agriculture and water for cities.
- Now, little to no water reaches the sea.



Ecosystem-based value of water =

Annual \$ value of natural goods and services

Annual discharge of river



Ecosystem-based value of water =

Annual \$ value of natural goods and services

16 x 10⁹ m³ yr⁻¹



- Gas regulation
- Climate regulation
- Disturbance regulation
- Water regulation
- Water supply
- Erosion control
- Soil formation
- Nutrient cycling
- Waste treatment
- Pollination
- Biological control
- Refugia
- Food production
- Raw materials
- Genetic resources
- Recreational
- Cultural

The value of the world's ecosystem services and natural capital

Robert Costanza¹, Ralph d'Arge², Rudolf de Groot³, Stephen Farber⁴, Monica Grasso⁵, Bruce Hannons⁶, Karin Limburg⁷, Shahid Naeem⁸, Robert V. O'Neill⁹, Jose Paruelo¹⁰, Robert G. Raskin¹¹, Paul Sutton¹² & Marjan van den Belt¹³
 Nature v. 387, p. 253-260 (1997)

BIOME	Value ($h^{-1} yr^{-1}$)
Estuary*	\$2,800
Coastal shelf*	\$180
Wetlands and floodplain	\$15,000
Lakes and rivers	\$8,500
Desert**	\$122
Agriculture***	\$220
Urban***	\$122

*Not including nutrient cycling

** half rangeland values

***rangeland value when not known

****desert value used

