ENVIRONMENTAL FLOWS

What are Environmental Flows?

Environmental flows are the freshwater needed to maintain water quality and the overall health of streams, creeks and rivers, wetlands, and bays and estuaries. All of these systems depend on adequate environmental flows to deliver social and economic benefit to Texans.

Environmental flows include:

Instream Flows in rivers and streams:

- **Subsistence Flows:** low flows that maintain acceptable habitat connection and water quality in times of drought
- **Pulse Flows:** surges of freshwater from high rainfall events, which deliver critical freshwater into wetlands or riparian corridors beyond the normal river channel
- **Base Flows:** the most frequent flow volumes, in between subsistence and pulse flow volumes, which support good water quality and healthy fish and wildlife populations

Freshwater Inflows: freshwater that reaches bays and estuaries at key times to deliver essential nutrients and sediments and reduce salinity levels, and which support some of the planet's most productive fish and wildlife habitats.

Why Do Environmental Flows Need Protection?

Like other Western states, surface water in Texas is owned by all Texans but governed by perpetual permits that authorize its use, with the oldest permit having the first claim to the water.[1] The vast majority of the reliably available surface water has already been allocated and less than 10% of existing permits include any protection for environmental flows. Only recently issued permits, which are last in line to get water during dry periods, include environmental flow protections. Consequently, much of the water that is reliably available for the environment today during droughts is return flows--water that has been used by cities, industries or agriculture and then returned to the river. Even return flows are becoming increasingly unreliable for the environment as more water users invest in water reuse, an important strategy to extend the reach of water supplies that can have the unintended consequence of returning less water to our state's rivers.[2]

Environmental flows create significant economic value for Texas. Freshwater-dependent activities in Texas bays, including commercial and recreational fisheries, generate some $3.5 billion a year in 1994 dollars ($5.7 billion a year in 2017 dollars).[3] Without sufficient freshwater inflows to Texas' bays and estuaries, commercial and recreational fisheries cannot be sustained—as much as 98% of the commercial and recreational fish

Environmental flows benefit Texans in many ways. Sustained base flows in rivers and creeks maintains water quality for recreational contact and drinking water sources.

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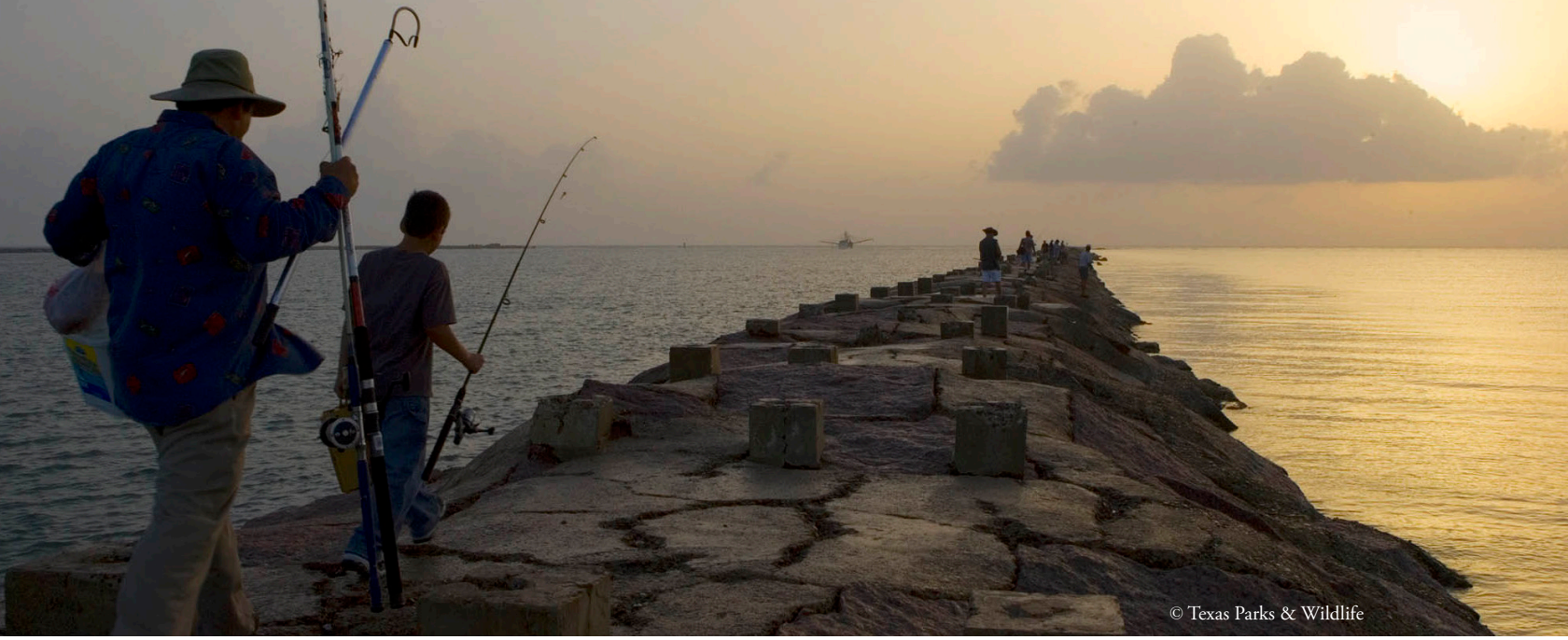

landings in the Gulf of Mexico are species that depend upon estuaries for at least some part of their life cycle.[4]

Environmental flows also support human recreation and protect water quality by diluting pollutants from treated wastewater effluent and runoff from farms, cities and mining operations. Keeping water instream also ensures greater reliability of water rights, and has long been used to protect the efficiency of water delivery on the Rio Grande.

How Do We Meet Environmental Flow Needs?

Recognizing the need to balance human and environmental water demands, the Texas Legislature in 2007 passed Senate Bill 3 (SB 3), which directed the Texas Commission on Environmental Quality (TCEQ) to adopt environmental flow standards "adequate to support a sound ecological environment, to the maximum extent reasonable considering other public interests and other relevant factors."[5] Environmental flow standards adopted by TCEQ limit water rights issued after adoption of SB3 in order to help meet environmental flow needs.[6]

Under the SB3 process, TCEQ gathered input from scientific experts and regional stakeholders from each river basin. Although the recommendations from these stakeholders informed the environmental flows standards set in place by TCEQ, in many basins the final standards allocated less water to the environment than what had been recommended by stakeholders. As of January 2017, environmental flow standards have been adopted for all river basins in Texas except for the Cypress, Sulphur, Red and Canadian River basins. Important studies of environmental flows are currently underway in basins where standards have been set. These studies will inform review and possible revisions of the standards, as required by statute.

Freshwater inflows to bays and estuaries are necessary for sustaining Texas' multi-billion dollar fishing industries.

[1] Different systems govern riparian rights, which are limited in quantity, and the middle and lower Rio Grande.

[2] Guadalupe, San Antonio, Mission, and Aransas Rivers and Mission, Copano, Aransas, and San Antonio Bays Basin and Bay Area Stakeholders Committee. (2011, September 1). Environmental Flows Standards and Strategies Recommendations Report. https://www.tceq.texas.gov/assets/public/permitting/watersupply/water_rights/eflows/20110901gsabbasc_report.pdf (accessed January 3, 2017).

[3] Texas Water Development Board. Freshwater Inflow Needs of Texas Estuaries. n.d. http://www.twdb.texas.gov/surfacewater/flows/freshwater/ (accessed January 3, 2017).

[4] K. A. Lellis-Dibble, K. E. McGlynn, and T. E. Bigford. Estuarine Fish and Shellfish Species in U.S. Commercial and Recreational Fisheries: Economic Value as an Incentive to Protect and Restore Estuarine Habitat. November 2008. NOAA Technical Memorandum NMFS-F/SPO-90. http://www.habitat.noaa.gov/pdf/publications_general_estuarinefishshellfish.pdf (accessed January 3, 2017).

[5] Tex. Water Code §11.1471(a)(1).

[6] 30 Tex. Admin. Code § 298.10.