

Red
River
Environmental
Defense

R.R.E.D

Outline

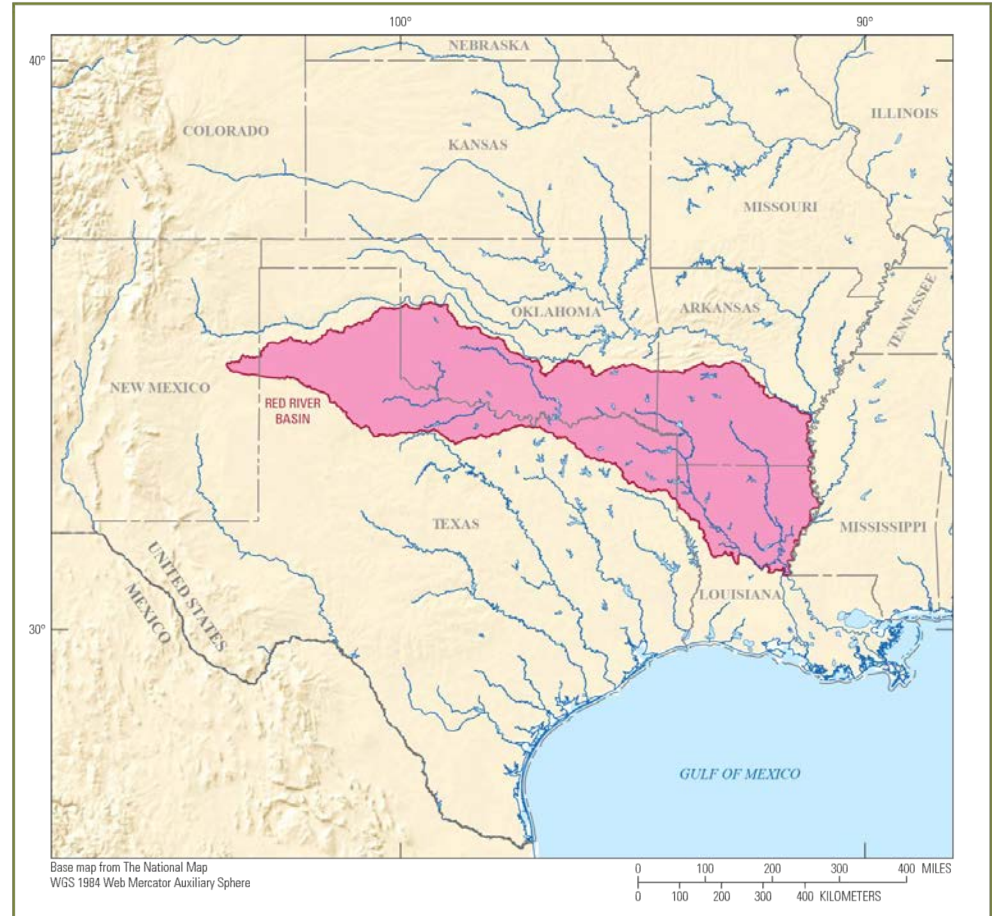
- Mission statement
- Watershed Overview
- Current Policies and Mandates
- Problem 1: Disruption of Basin Fish Species
- Problem 2: Nutrient Overload
- Problem 3: Water Scarcity
- Goals and Recommendations
- Sources

Mission Statement

R.R.E.D.'s goal is to analyze and mitigate negative impacts on the Red River Basin watershed and improve water quality to support the health of local ecosystems. We will lead strategic efforts for the long-term protection and preservation of the watershed and its surrounding environment. Our goal is to improve the overall quality of this basin by 2045.

Red River Watershed Overview

- Stretches through Texas, Oklahoma, Arkansas and Louisiana
- ~93,000 square miles
- 1,290 miles long with around 10 major tributaries
- Key reservoirs like the Denison Dam/Lake Texoma facilitate flood control, water supply, and river development



Current Policies and Mandates

- Multiple boards were put together to form the International Red River Watershed Board (IRRWB) which operates in accordance to International Watershed Initiative principles and approaches.
 - This board follows a directive to support the Aquatic Ecosystem Integrity of the Red River Basin
- Red River Compact (1978):
 - A legal agreement between Arkansas, Louisiana, Oklahoma, and Texas that divides water usage rights between the 4 states. The basin is split into 5 subbasins, and each state has specific percentages or unrestricted use rights within the subbasins.

Problem 1: Disruption of Fish Species

- Projections show disruption or potential extinction of species with high recreational and ecological value
- Primary Causes:
 - Declining water availability and climate change
 - Water quality issues and habitat fragmentation



Solution to Disruption of Fish Species



- **Culverts:**
 - Poorly designed culverts block migration and can reduce flows, so improving existing and new culverts will allow for habitat growth and easier migration.
- **Removing unnecessary structures:**
 - Ditches and levees that are designed to drain wetlands by cutting off rivers from side channels and floodplains can be removed to combat habitat fragmentation.
- **Avoiding new dam construction:**
 - Dams cause habitat fragmentation and discourage fish migration, and should only be used when the power benefits significantly outweigh the environmental impacts.

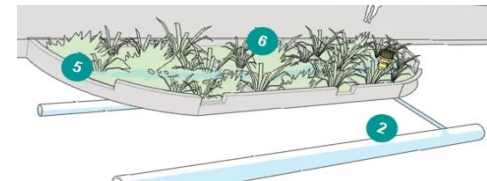
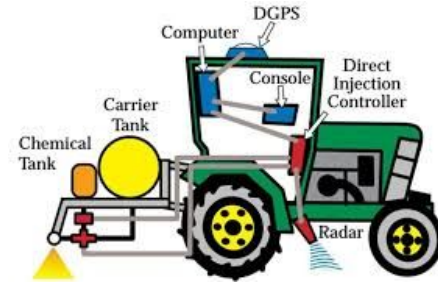
Problem 2: Nutrient Overload

- Excess Nitrogen and Phosphorus lead to eutrophication, harmful algae blooms, and hypoxia (depleted oxygen)
- This lowers local water quality and contributes to the “dead zone” in the Gulf of Mexico
- The Primary causes are:
 - Runoff from agricultural fertilizers and livestock waste
 - Municipal wastewater discharge and urban stormwater runoff



Solution to Nutrient Overload

- **Better Nutrient Management:**
 - Farmers need to use precision technology like Variable Rate Technology (VRT) so fertilizer stays in the soil.
- **Wetland Restoration:**
 - By restoring trees and wetlands along riverbanks, a natural barrier is created that will catch runoff before it gets into the river.
- **Upgrade Infrastructure:**
 - City wastewater plants need to be improved so they remove the extra nutrients that trigger algae blooms.
- **Urban Stormwater Mitigation:**
 - Build rain gardens and bioswales to soak up city rain naturally rather than it flowing on concrete right into the river.



Problem 3: Water Scarcity

- Extreme weather conditions, including severe drought and heavy precipitation.
- Higher water temperatures lead to increased evapotranspiration, placing further stress on resources.
- Primary Causes:
 - Climate change drives precipitation shifts
 - Regional disparity - decreased precipitation in the western basin vs. increases in the eastern side.



Solution to Water Scarcity

- **Manage Water Consumption**
 - Creating voluntary water consumption incentives through education
 - Payments/subsidies offered to water users as an effort to reduce human consumption
 - Working with stakeholders to manage resources
- **Drought Planning**
 - Create a preliminary drought plan to prepare for low consumption with high demand
 - Work with other Basins to help provide resources during drought

Goals and Recommendations

Goals:

Remediate these issues and restore water quality in the Red River Basin

Recommendations:

- Focus on certain land types such as agriculture, forestry, home sewage systems, urban stormwater runoff, and road and highway construction
- Replace poor infrastructure and remove any with negative impacts on the basin
- Implement better nutrient management
- Work to restore the wetlands
- Create further plans to prepare for droughts



Questions?

Sources

https://www.deq.louisiana.gov/assets/docs/Water/Whats_In_Your_Water/RedBasinBrochure.pdf

https://webapps.usgs.gov/watercensus/redriver_fas/index.html

<https://www.lsuagcenter.com/profiles/lbenedict/articles/page1515431998585>

<https://www.britannica.com/place/Mississippi-River/Plant-and-animal-life>

<https://www.fws.gov/apps/project/balancing-water-usage-and-ecosystem-outcomes>

<https://eos.com/blog/variable-rate-technology/>

<https://nacto.org/publication/urban-street-design-guide/street-design-elements/stormwater-management/bioswales/>

<https://ijc.org/sites/default/files/Revised-IRRWB-Directive-5.26.2022.pdf>

<https://www.nature.org>

<https://statutes.capitol.texas.gov/?tab=1&code=WA&chapter=WA.46&artSec=>