

# A Collaborative Process for Prescribing Flow Regimes to Restore River Ecosystems

A cooperative partnership between the  
US Army Corps of Engineers  
The Nature Conservancy  
Georgia Department of Natural Resources  
South Carolina Department of Natural Resources  
US Fish and Wildlife Service



# The Nature Conservancy's Mission

*To preserve the plants,  
animals, and natural  
communities that  
represent the diversity of  
life on Earth by  
protecting the lands and  
waters they need to  
survive.*



# Ecologically Sustainable Water Management:

- Protects the ecological integrity of affected ecosystems
- Meets long-term human needs for water
- Sustains the full array of other products and services provided by natural freshwater ecosystems.



# U.S. Army Corps of Engineers-The Nature Conservancy

## *Memorandum of Understanding*

### PURPOSE...

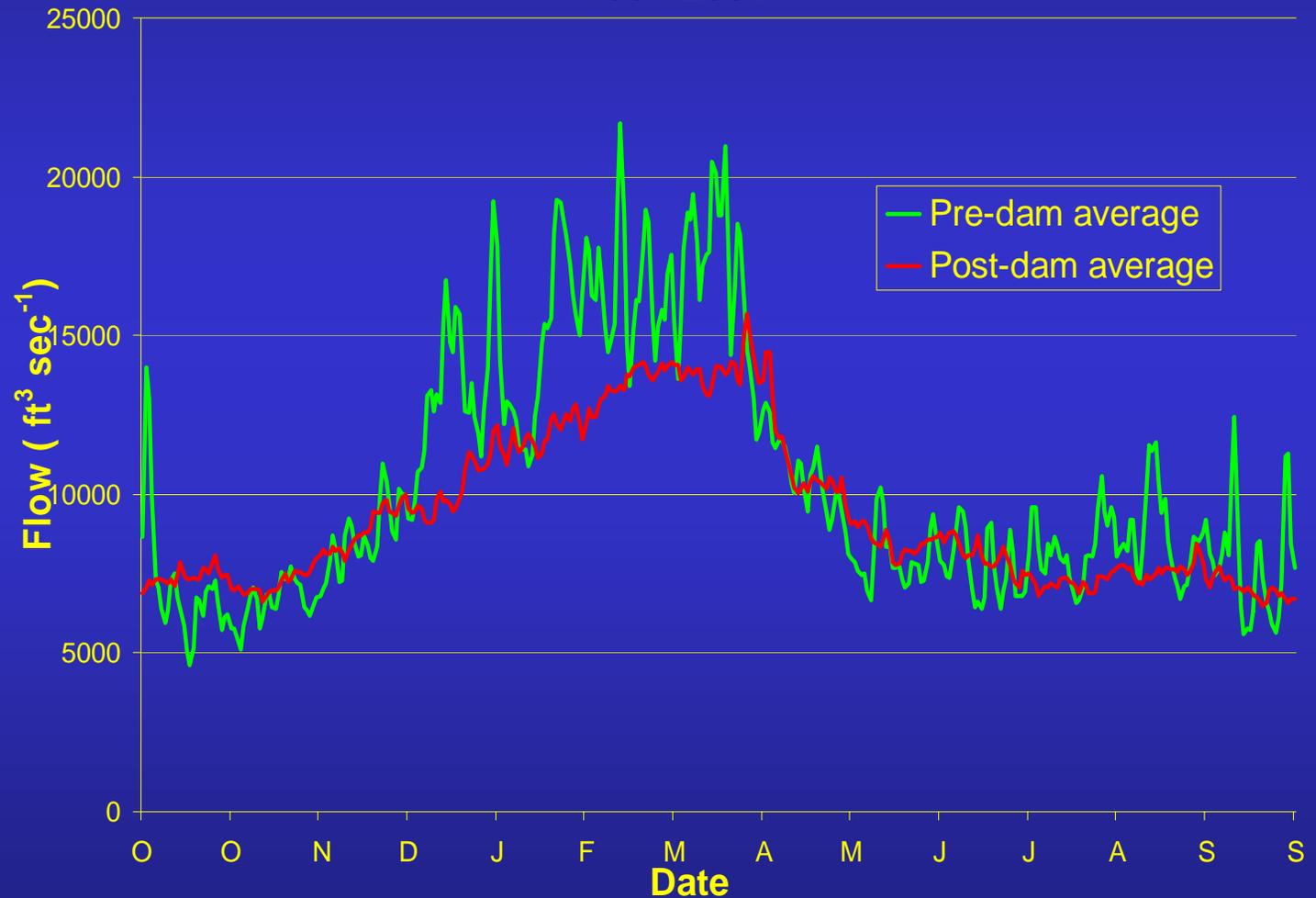
...to facilitate effective and efficient management of important biological resources within the context of the Corps' civil works and regulatory missions



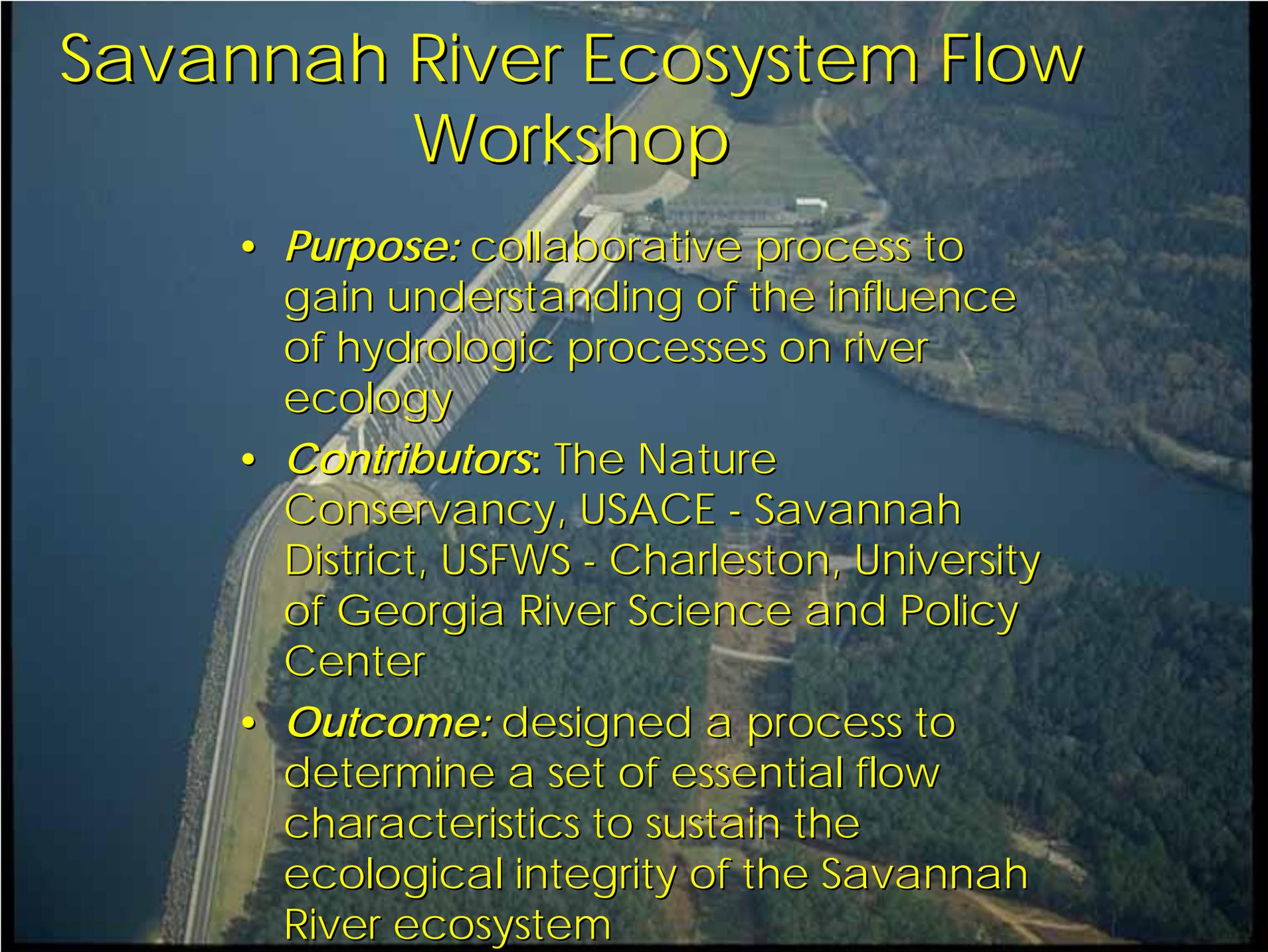
# Key Post-Dam Changes in the Savannah River Hydrograph

- Removal of natural variability in the hydrograph
- Increased low flow volumes
- Reduction in peak flow volumes and frequency
- Reduction in mean annual flow

Savannah River Flow at Augusta  
1884-2001



# Savannah River Ecosystem Flow Workshop



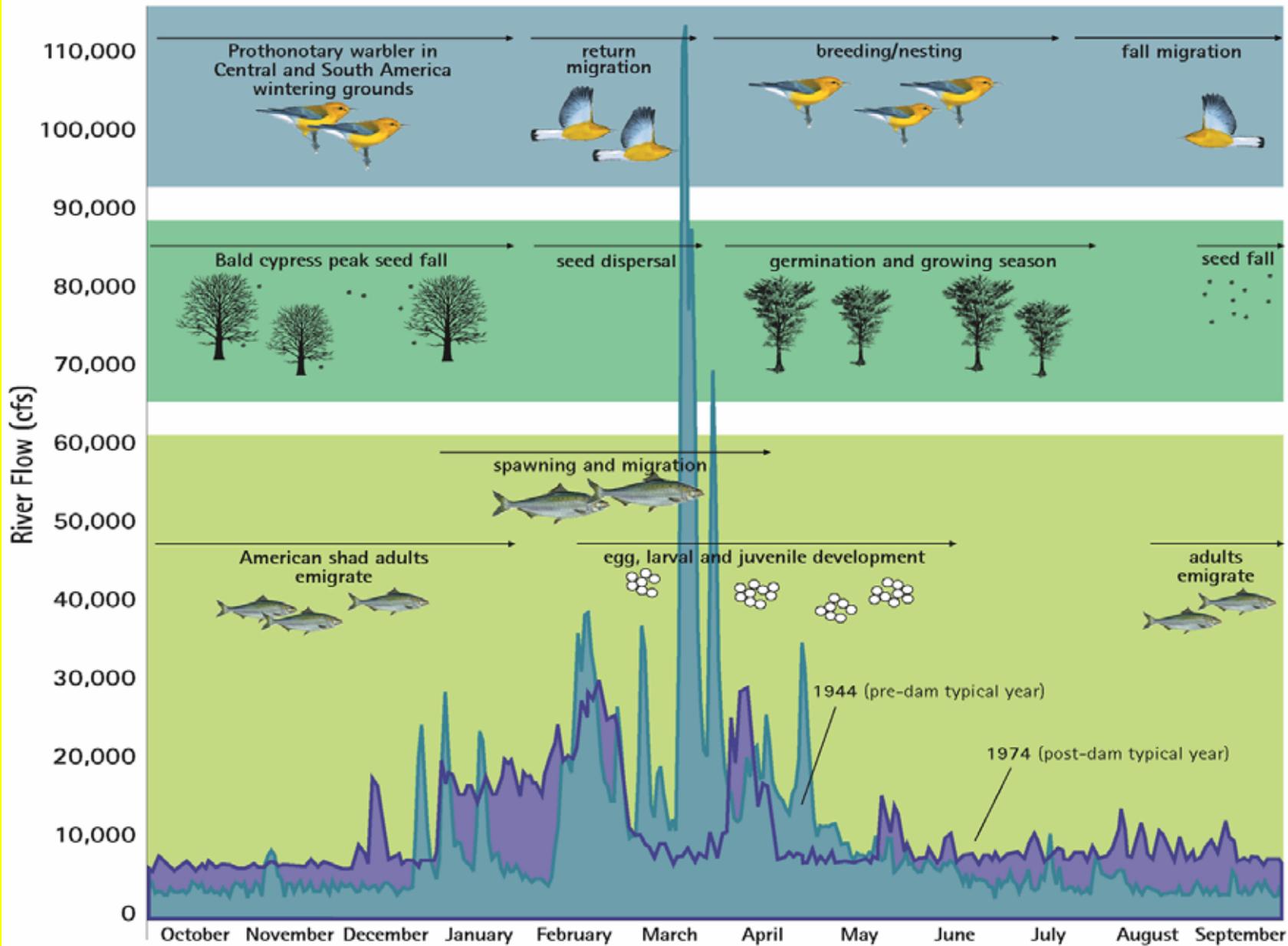
- **Purpose:** collaborative process to gain understanding of the influence of hydrologic processes on river ecology
- **Contributors:** The Nature Conservancy, USACE - Savannah District, USFWS - Charleston, University of Georgia River Science and Policy Center
- **Outcome:** designed a process to determine a set of essential flow characteristics to sustain the ecological integrity of the Savannah River ecosystem

# Savannah River Ecosystem Flow Workshop Participants



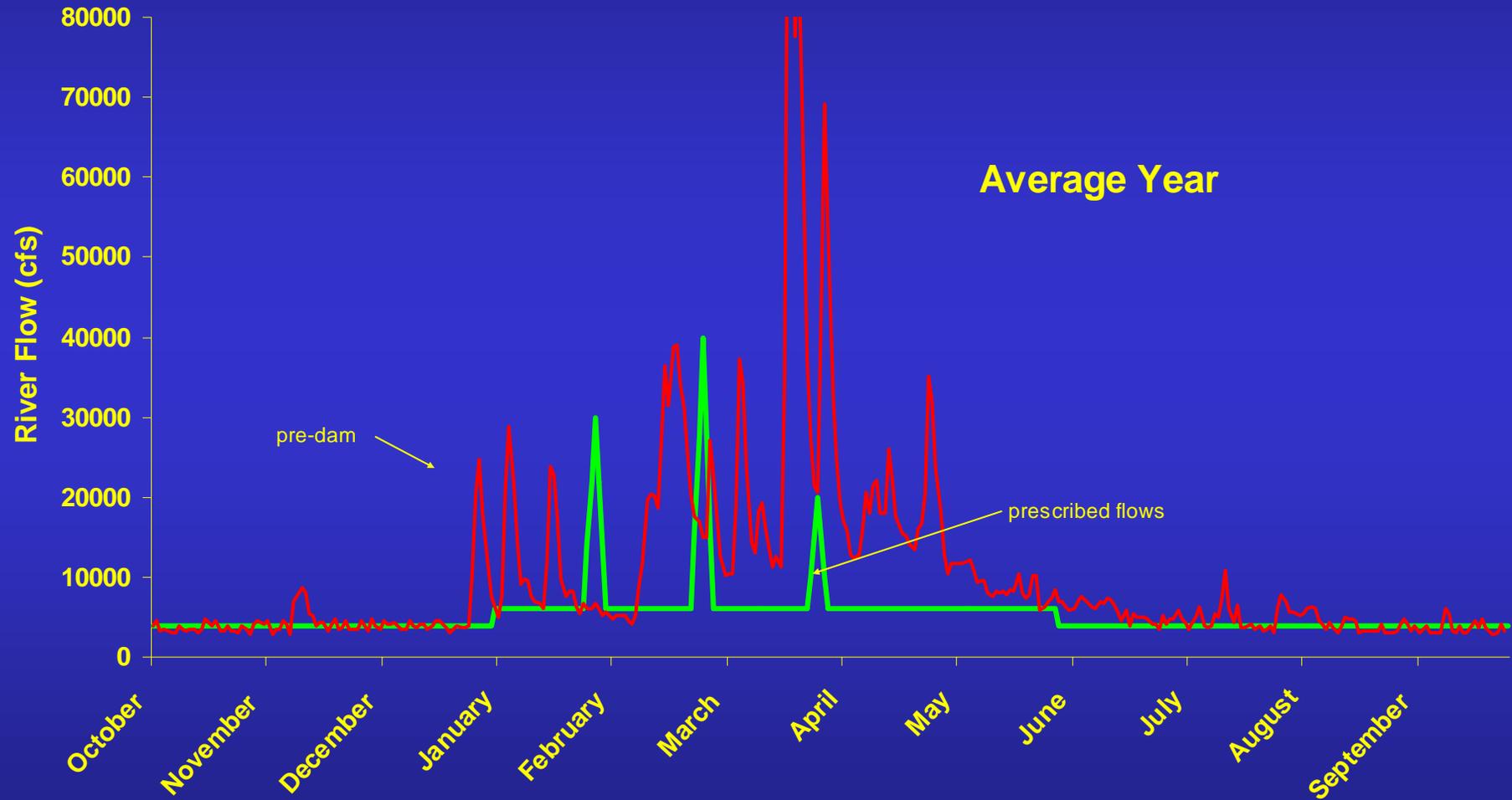
The goal was *not* to create optimal conditions for all species all of the time; rather, we wanted to create adequate conditions for all native species *enough* of the time.

# Ecological Model of the Savannah River

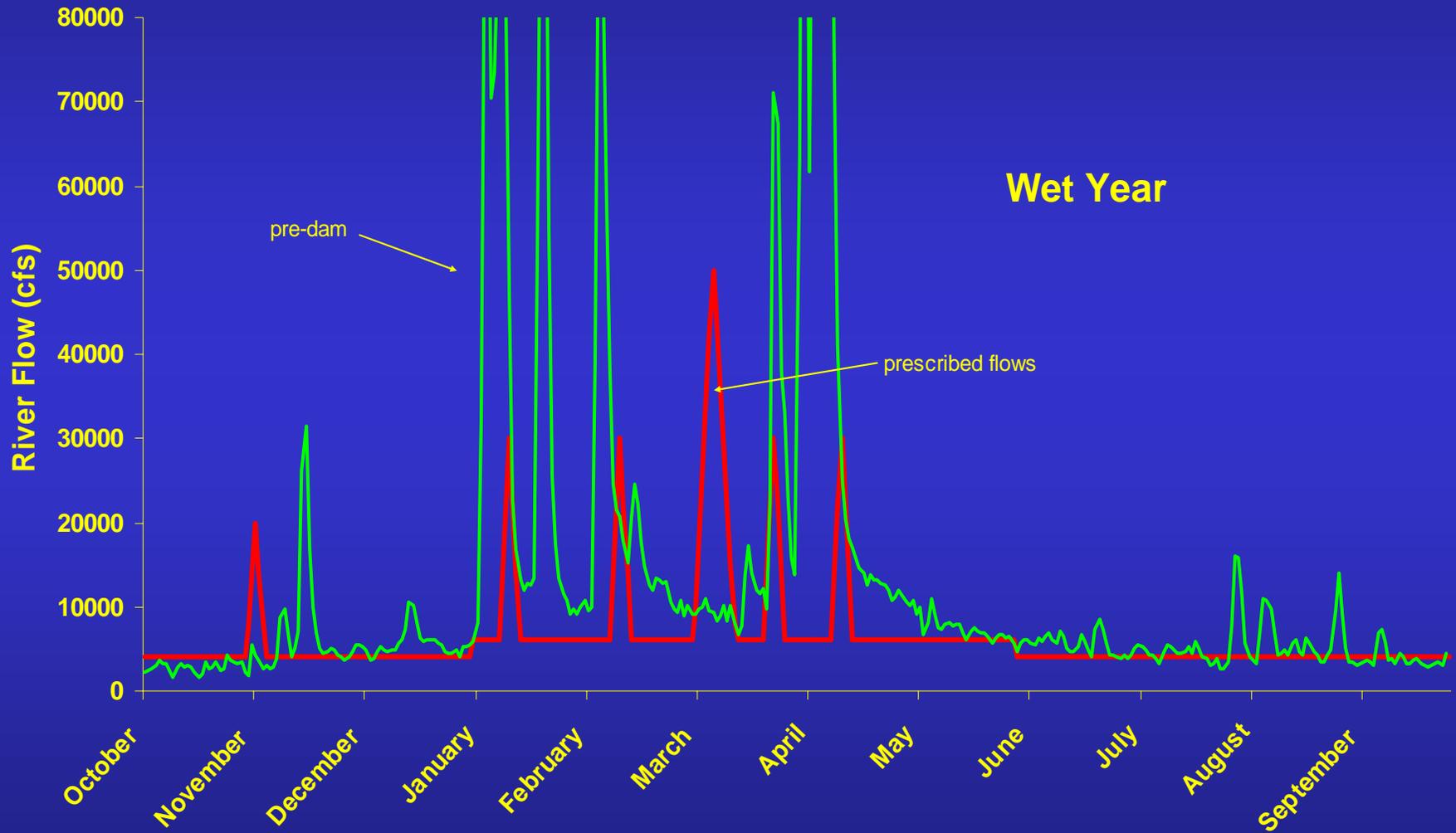


Reprinted from the National Academy of Sciences, The Savannah River, 2002. Revised after review and discussion from 10/1/02 to 10/1/03.

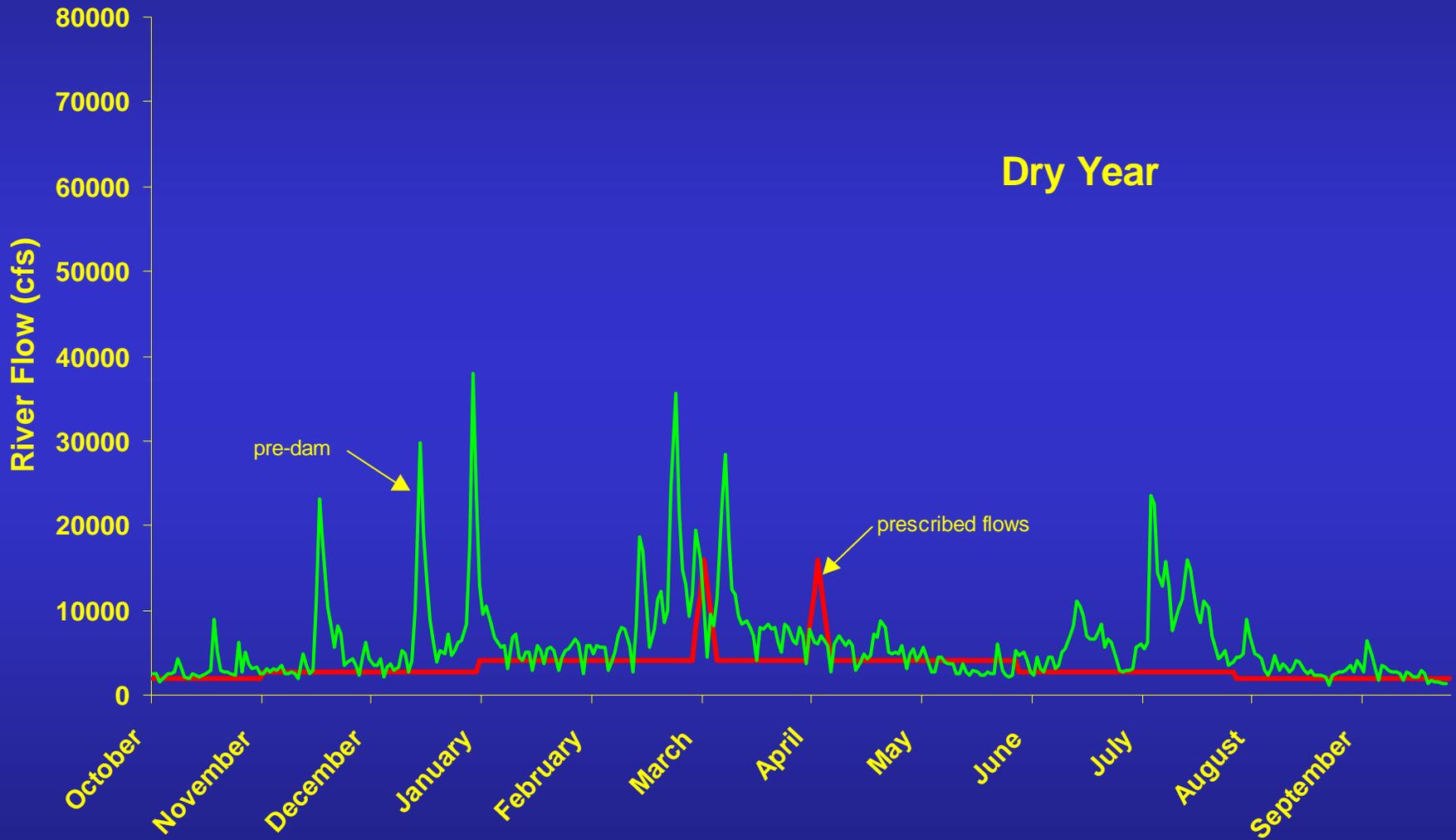
# Savannah Flow Prescription



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# Savannah Flow Prescription



# Ecological Benefits of Implementation



- Increased spawning habitat for anadromous species
- Decreased predation on Shoals Spider Lily

# Ecological Benefits of Implementation



Low flows will facilitate:

- Germination and establishment of bottomland hardwood species
- Growth of adult trees
- Juvenile fish survival
- Spawning in gravel shoals

# Ecological Benefits of Implementation



Pulses will facilitate:

- Seed dispersal
- Floodplain access for fish spawning and foraging
- Nutrient replenishment to floodplain soils
- Nesting habitat for birds

# Ecological Benefits of Implementation

Pulses will facilitate:

- Reduced parasitism of oysters and blue crabs
- Nutrient cycling
- Invertebrate productivity
- Seed dispersal
- Fish habitat utilization

## Pulses for fish passage:

- At least 16,000 cfs for 5 days in March
- At least 16,000 cfs for 5 days in April



# Fish Passage



# Electrofishing















