# DEGRADATION OF WATER QUALITY

Andrew Miller

- **Degradation of water quality in the Bay happened much more recently than the massive wave of upland erosion and sediment deposition in river valleys and in tidewater.** The question of whether we need to worry more about sediment or more about biologically available nutrients is an important question for the Bay watershed partnership and for how we meet TMDL requirements.

- **Sediment eroded from the land surface prior to the advent of massive post-WWII increases in application of chemical fertilizers and industrial-scale animal feedlots has typically lower nutrient concentrations, and the longer it stays in intermediate storage the more refractory and the less biologically available those nutrients become.**
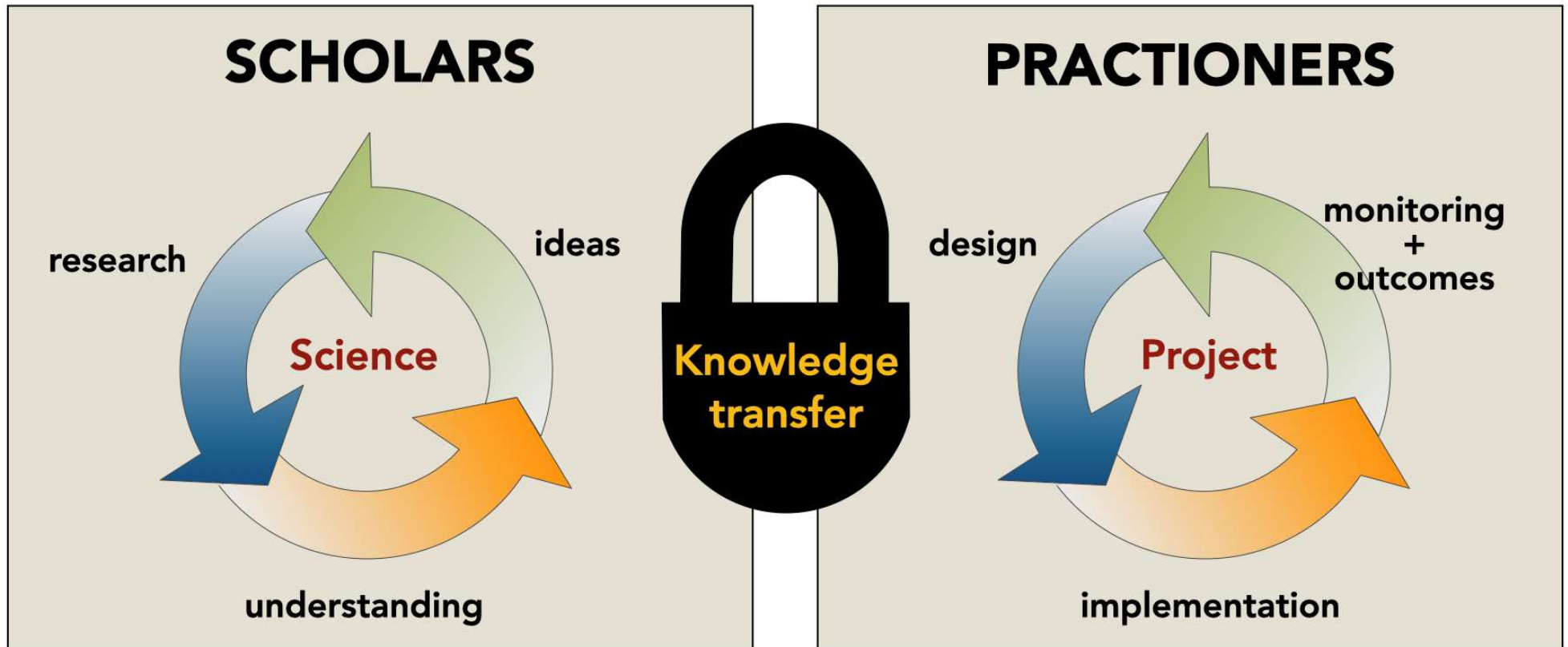
# DEGRADATION OF WATER QUALITY

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- The **extent to which preventing erosion of stream banks or remobilization of sediment behind dams will have an impact on what actually influences water quality in Chesapeake Bay is very much uncertain.** This suggests that restoration projects should be approved first and foremost based on the extent to which they will address local problems in the stream and only on a secondary basis in order to meet TMDL requirements.

- The TMDL itself says you meet the sediment goals automatically if you can meet the nutrient goals, so **focusing on nutrient content of stored sediments and on how biologically available it is should be more important than the sediment itself,** unless the sediment is causing local problems (which it certainly can and does).

# THE PARADIGM LOCK

Adapted from the United Nations' **Hydrology for Environment Life and Policy** (HELP) Project

## SCHOLARS

research — ideas

**Science**

understanding

"Blue skies" strategic research

## Knowledge transfer

## PRACTIONERS

design — monitoring + outcomes

**Project**

implementation

"Real world" accepted restoration practice

# SESSION 1

Historical changes of to Chesapeake landscapes and identify the evolution of stream restoration goals, regulations, practices, and practice implementation (after the 1972 Clean Water Act)

# OBJECTIVES

1. How has **management** or mismanagement resulted in impairment of streams (watershed and stream management)?

2. What is our understanding of how **stressors** influence streams and our ability to appropriately identify and address stressors?

3. What are the **drivers** for stream restoration?

4. In the past, what **management** was taken to restore streams?
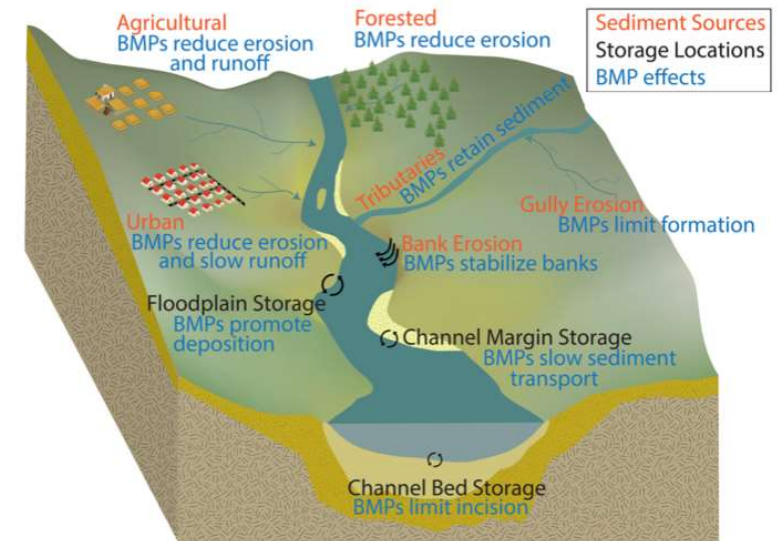


*From: Noe et. al. (2020). Sediment dynamics and implications for management: State of the science from long-term research in the Chesapeake Bay watershed, USA*