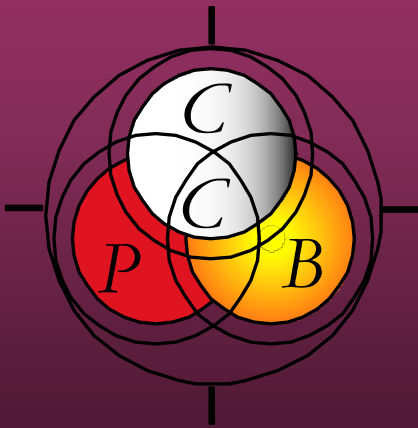


Why Monitor Streams?



Streams are important

- **Important habitat for a diverse group of organisms**
- **Many streams eventually reach drinking water sources (reservoirs, ground water recharge)**
- **Recreation**
- **Overall general health of environment**

Bioassessment

- **An evaluation of the condition of a water body using biological surveys and other direct measurement of the resident biota in surface waters (EPA 1999)**
- **Plainly – see what is in a water body (living and inorganic) and determine if it is pristine or impaired**

Goals of bioassessment

1. **Characterizing the existence & severity of impairment**
2. **Helping to ID sources and causes of impairment**
3. **Evaluating the effectiveness of control actions and restoration activities**
4. **Supporting use attainability studies and cumulative impact assessments**
5. **Characterizing regional biotic attributes of reference conditions**

Goals

- 1. Characterizing the existence & severity of impairment**
 - Is the stream impaired?
 - How impaired is the stream?
- 2. Helping to ID sources and causes of impairment**
 - What is causing the impairment?
 - How or why did the impairment reach the stream

Goals

3. Evaluating the effectiveness of control actions and restoration activities

- Have we stopped the impairment from occurring again?
- Is the stream recovering from the impairment?

Goals

4. Supporting use attainability studies and cumulative impact assessments

- Can we obtain our desired use?
- What is the “total impact” of the detected impairment?

5. Characterizing regional biotic attributes of reference conditions

- What organism should live here?
- What should the chemistry be?

Bioassessment Hypotheses

- Will the new 6000 head feedlot in the watershed affect the quality of the stream?
- Is the quality of stream A different from that of stream B?
- Does stream C differ significantly from a known reference condition for the region?
- Does a change in pH effect the make up of the insect fauna in a stream?
- Does erosion effect the fish fauna in a stream?

What do we get from all this work?

- **Baseline data**
- **Reference condition data**
- **Observe trends over time**
- **Observe deviation from expectations**

Baseline Data

- **Starting point**
- **Establish the current condition of streams**
- **Allows us to make comparisons**

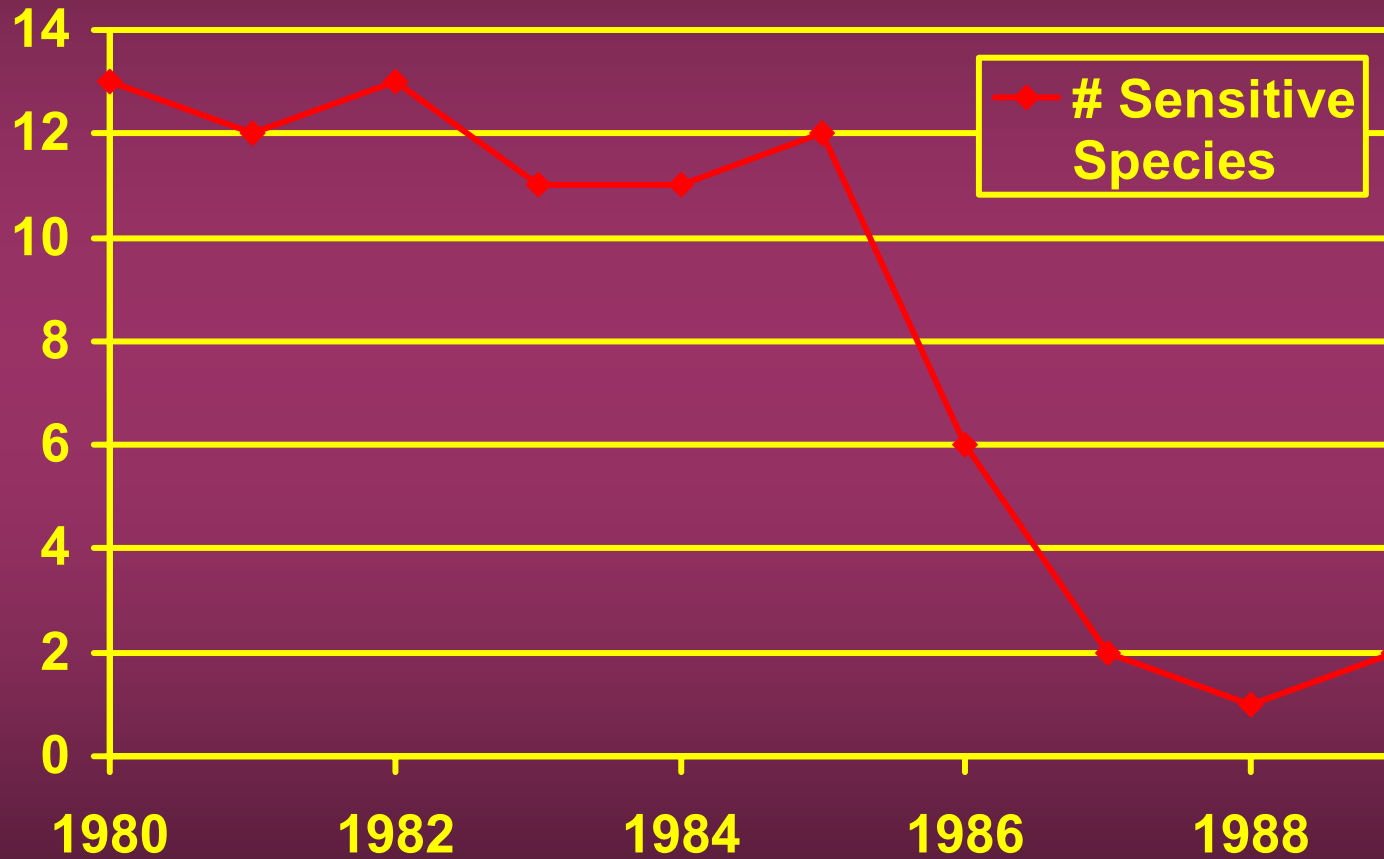
Reference Condition

- **Baseline data for the “best” streams**
- **Established from looking at lots of baseline data**
- **Often termed “the best of what is left”**
- **Does reference condition exist today?**
- **If not, we still need some group of “the best” streams for comparison**

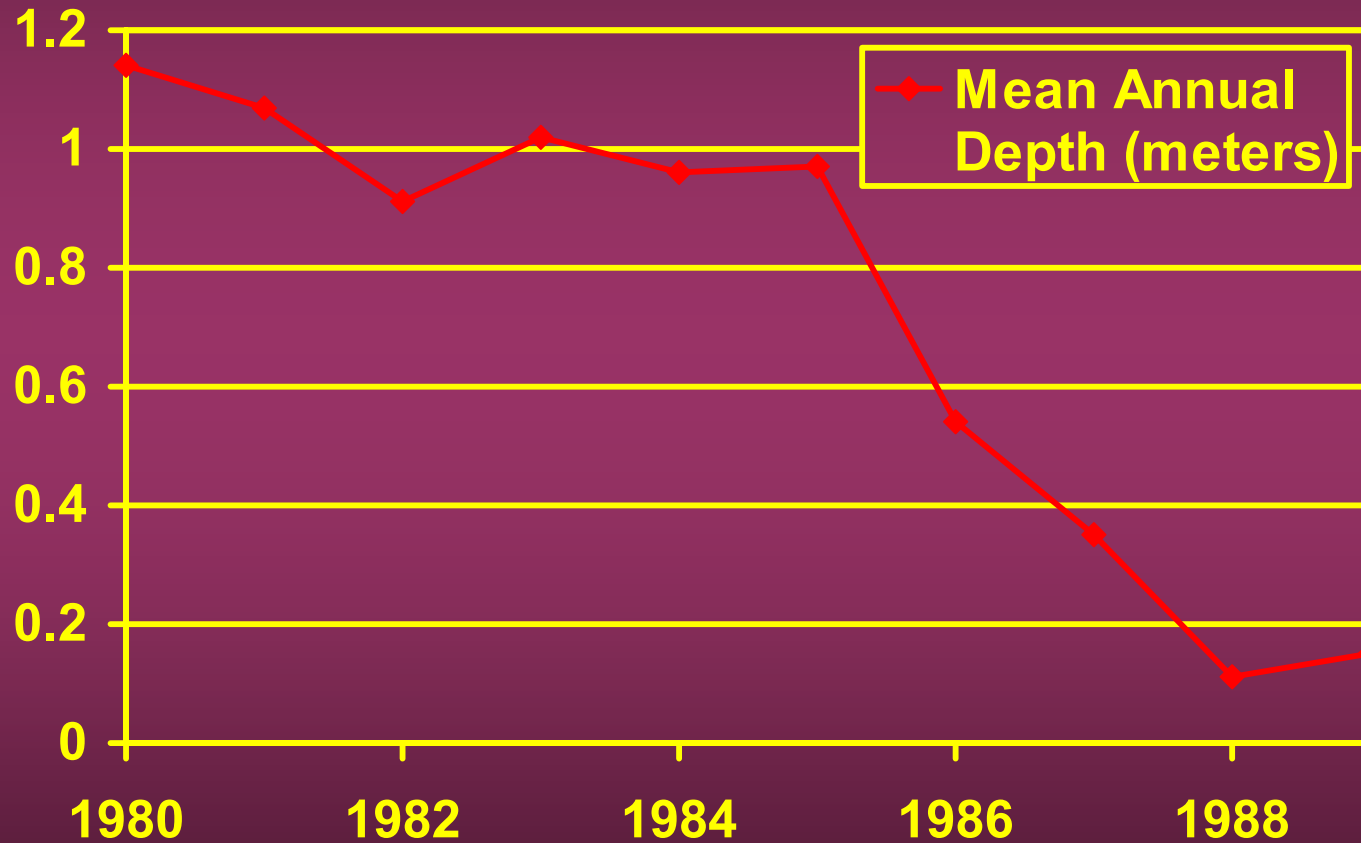
Trends over time & deviations

- Repeated collection of data from streams allows monitoring of trends
- Are observed deviations in trends “normal” or a cause for concern?
- Very important for remediation

Observed Trend In Species Abundance

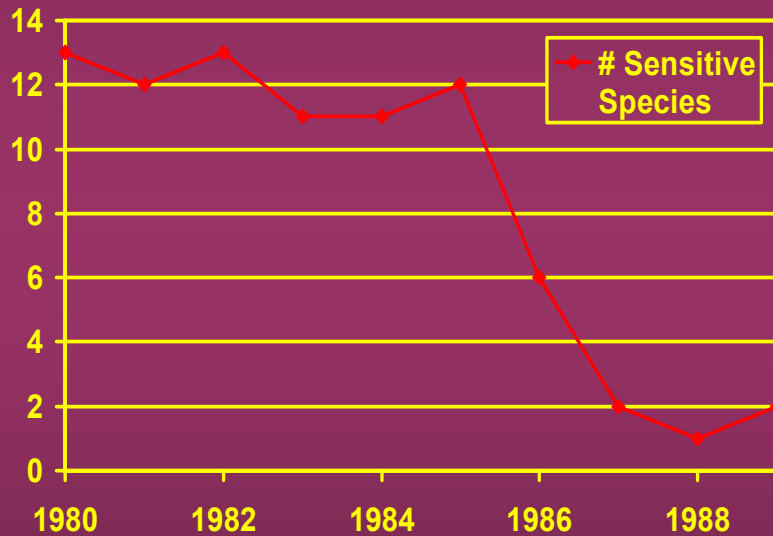


Observed Trend in Stream Flow

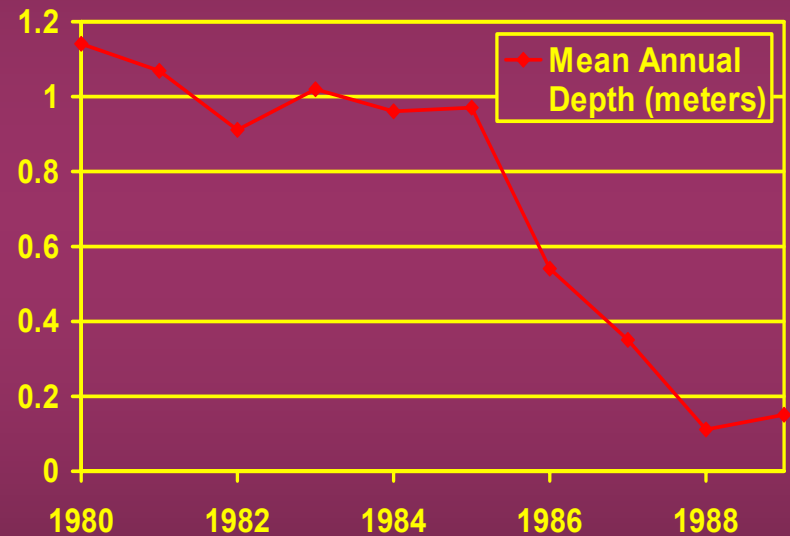


Side by Side Comparison

sensitive species



mean annual depth



Recap

- **Streams are important**
- **Bioassessment has clear goals**
- **Collect baseline information**
- **Collect reference data**
- **Follow trends over time**
- **Observe deviations in trends**
- **Need data over time for accurate comparisons**