The really big picture of habitat: The conceptual underpinnings and vision for the National Fish Habitat Partnership – National Fish Habitat Assessment

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Vision

A **comprehensive**, **comparable**, and **connected** assessment of the nation's fish habitats that include the freshwater systems and coastal waters.

Ultimately a habitat portrait from the mountain tops to the shelf.

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Purpose

- To support the conservation, rehabilitation, and improvement of fish habitat by providing:
  - the FHPs with national and regional data sets and analytical procedures that assess the nations fish habitat using the best available data; and
  - the NFHP Board and stakeholders with communications products to highlight the condition and importance of the nation's fish habitat.

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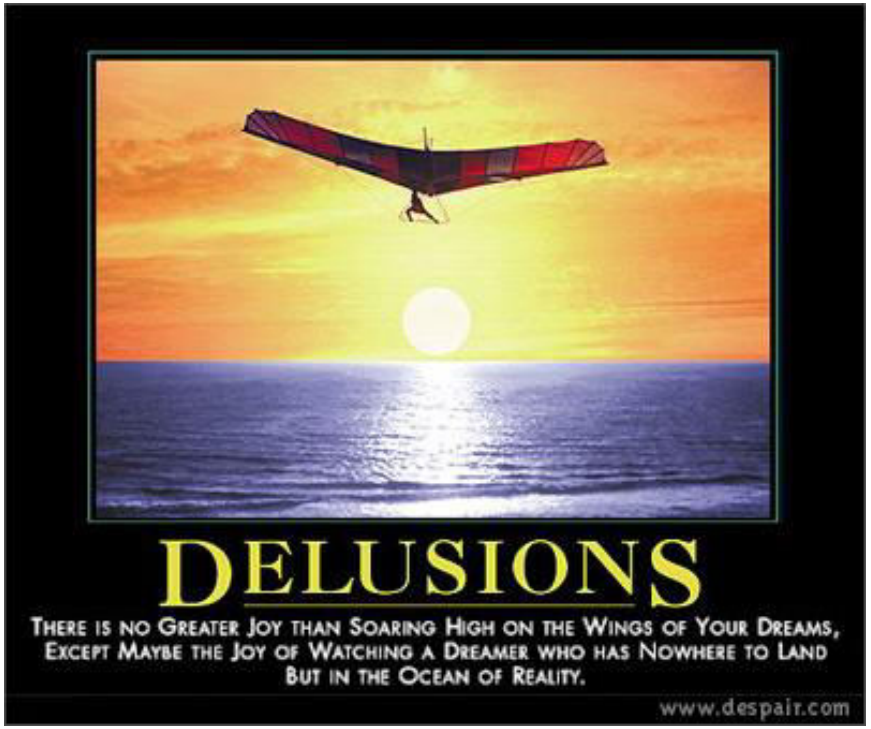
"Always a fine line between vision and delusion."



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Key Tenets

- Focus on controlling variables and processes not symptoms
- Priorities where to get the best return on incremental investment
- Spatial data on the three legs of the fisheries stool
  - Fish
  - Habitat
  - People
- Physical and Biological Controls
  - Key processes
  - Must be actionable and have an effect on aquatic resources

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Key Tenets

- Ultimately must know what the expected value and range of all variables are for a watershed
  - Not changing geology or climate
- Socioeconomics of systems
  - What are the priorities of Society
  - Economics of protection and conservation, rehabilitation, and improvement
- Employ and mine existing datasets
- Should affect all aquatic resources
- Processes and controlling variables have a fish or aquatic organism response
  - Dose-response functions
  - Consistently measured fish data

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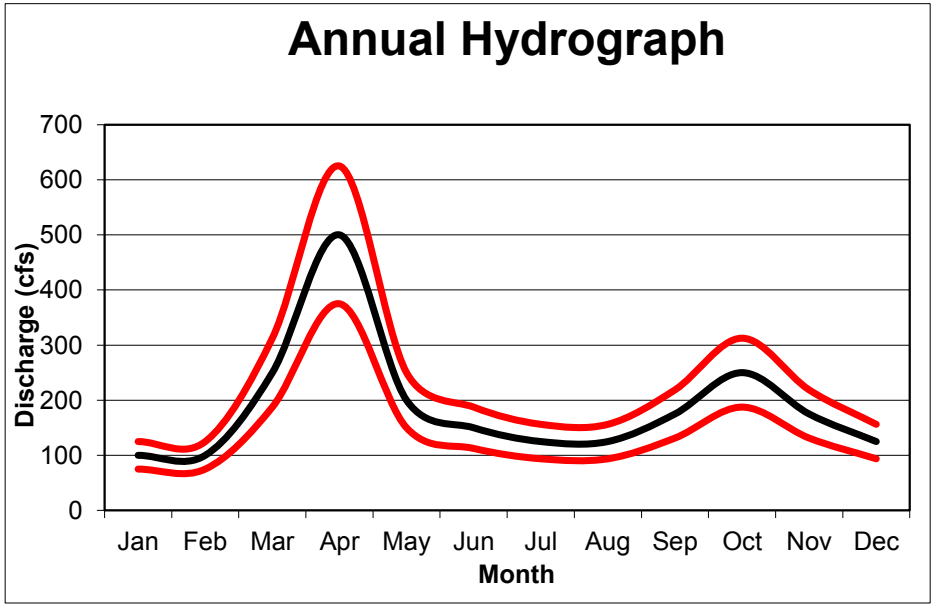
Key Processes

- Connectivity
- Hydrology
- Geomorphology
  - Bottom form
- Material Recruitment
  - Woody Debris and Sediment
- Water Quality
- Energy Flow in Aquatic Communities
  - Size distribution



NFHP Goal - Maintain expected condition and variance for each process

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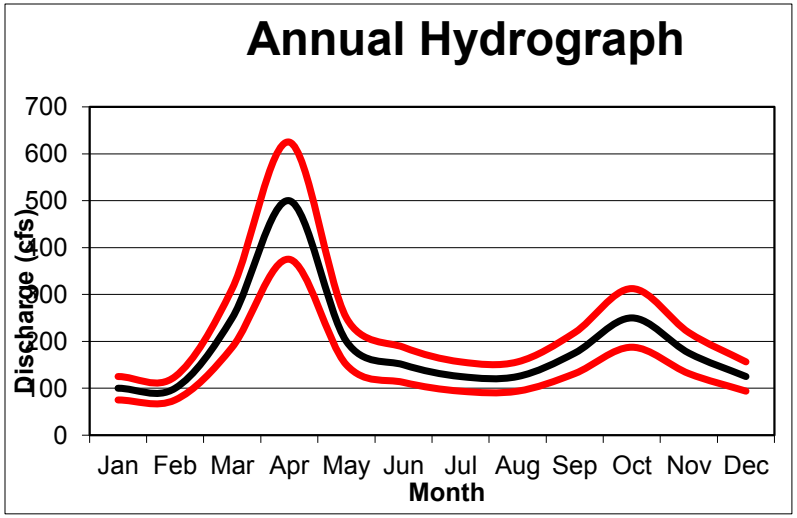
Hydrology

- **Broadly defined - Unaltered hydrology and velocity vectors**
- **Wetland alteration over time – Water storage**
- **Hydrologic variables**
  - **Annual hydrograph**
    - **Timing and volume of flows**
    - **Duration of flows**
  - **Daily hydrograph**
  - **Lake elevations**
  - **Flow patterns in coastal systems**



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Connectivity

- Natural fragmentation - Waterfalls
- Current barriers
  - Fisheries management barriers
  - Dams
  - Culverts
  - Fishways – Efficiency
  - Concrete channels
  - Water quality impairments
  - Water quantity
- Decision support systems




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Material Transport and Recruitment

- Expected background rates of sediment and woody debris recruitment and transport
- Woody debris - Forest growth dynamics
  - Riparian forest type
  - Recruitment rate – Pop dynamics of riparian forests
  - In-channel storage and transport rates
- Sediment
  - Soil type erosion rates
  - Anthropogenic erosion areas and rate changes
  - Sediment transport
  - In-channel storage rates

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Water Quality

- Expected values for each parameter to compare to existing values
- Temperature
  - Seasonal pattern
    - Baseflow periods key in summer and winter
  - Daily fluctuation
- Dissolved oxygen
  - Percent saturation
  - Profile
- Nutrients
  - Phosphorus and nitrogen
- Salinity
- Contaminants



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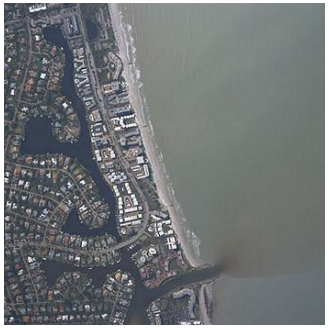
Geomorphology

- **Unaltered bottom and channel shape baseline**
  - **Rivers**
    - **Sinuosity**
    - **Bankfull flow**
    - **Pool – riffle – run ratios**
    - **Bottom shape and diversity**
  - **Lake bottom**
  - **Coastal bottom shape**
  - **Sediment type**
- **Current condition – Deviation from expected**
  - **Channelization and navigation channel development**
  - **Levee development**
  - **Hardened shoreline**
  - **Jetty numbers and density**
  - **Sediment characteristics**





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Energy Flow and Living Habitat

- **Expected and current particle size distribution**
  - **Most efficient distribution of particles in an ecosystem**
    - **Top down control of other variables such as water quality (Great Lakes)**
- **Living habitat distribution**
  - **Oyster reefs, freshwater mussel beds and SAVs**
- **Invasive species**
  - **Alter other habitat processes**
    - **Quagga mussels and water quality**
    - **Sea lamprey control in the Great Lakes**

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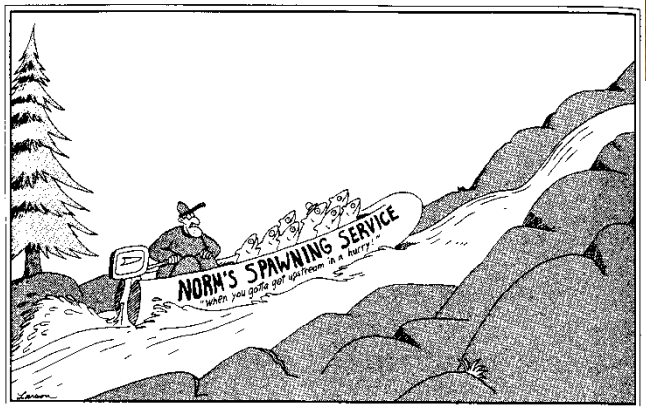
Fish and Aquatic Organism Data

- Species composition
- Abundance
- Size distribution
- Movement dynamics
  - When
  - Why



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Socioeconomics

- **What does Society think the priorities are in a watershed**
  - **Total up priorities from all fisheries and water related entities – Swimming in plans but not a drop to think**
    - **State and federal agencies, Trout Unlimited, The Nature Conservancy, BASS…….**
- **What is the economic value of the system**
  - **Historic, current and future**
  - **Creel census data**
- **What is the cost of protecting/conserving intact and cost of the repairing damage to a degraded system**
- **Current distribution of "protected" lands in system**

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Inland Assessment
http://assessment.fishhabitat.org/

THROUGH A FISH'S EYE:
THE STATUS OF THE FISH HABITATS IN THE UNITED STATES
2015

This report summarizes the results of an unprecedented nationwide assessment of human effects on fish habitat in the rivers and estuaries of the United States. The assessment assigns a risk of current habitat degradation scores for watersheds and estuaries across the nation and within 14 sub-regions. The results also identify some of the major sources of habitat degradation.

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Thank You!

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Visit www.fishhabitat.org for more information

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