



# Habitat Assessment



# Habitat Assessment

- Conduct once a year preferably in the summer
- AND after a major land use change along your site
- Observations & Documentation
- **PICTURES!!!**

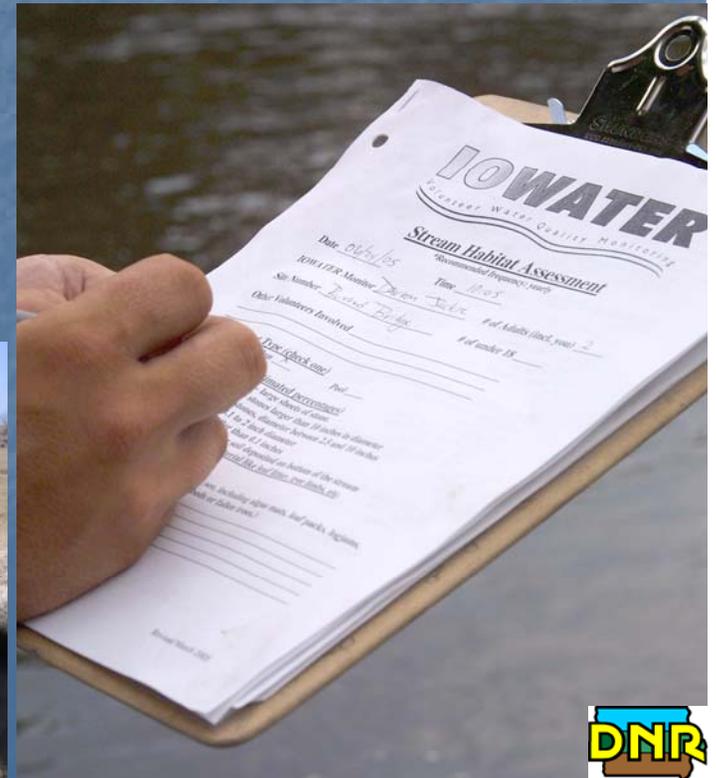


View to the North

Photos by Ed Engle

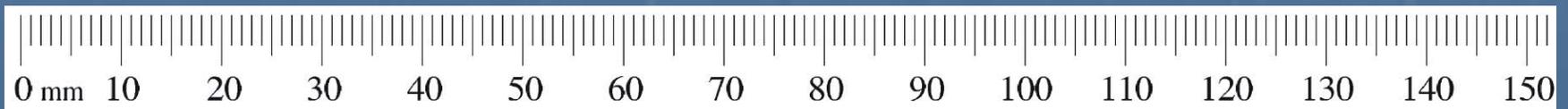


View to the South



# Stream Transect & Reach

- Observations and parameters measured throughout the IOWATER assessments are done at two scales, the **stream transect** and the **stream reach**.
- Instructions will direct you to which scale you should consider each observation or parameter.



# Transect



Photo by Dave Ratliff

A stream transect is the exact location across the stream that you are going to monitor. Your transect should “represent” your stream.

# Stream Reach

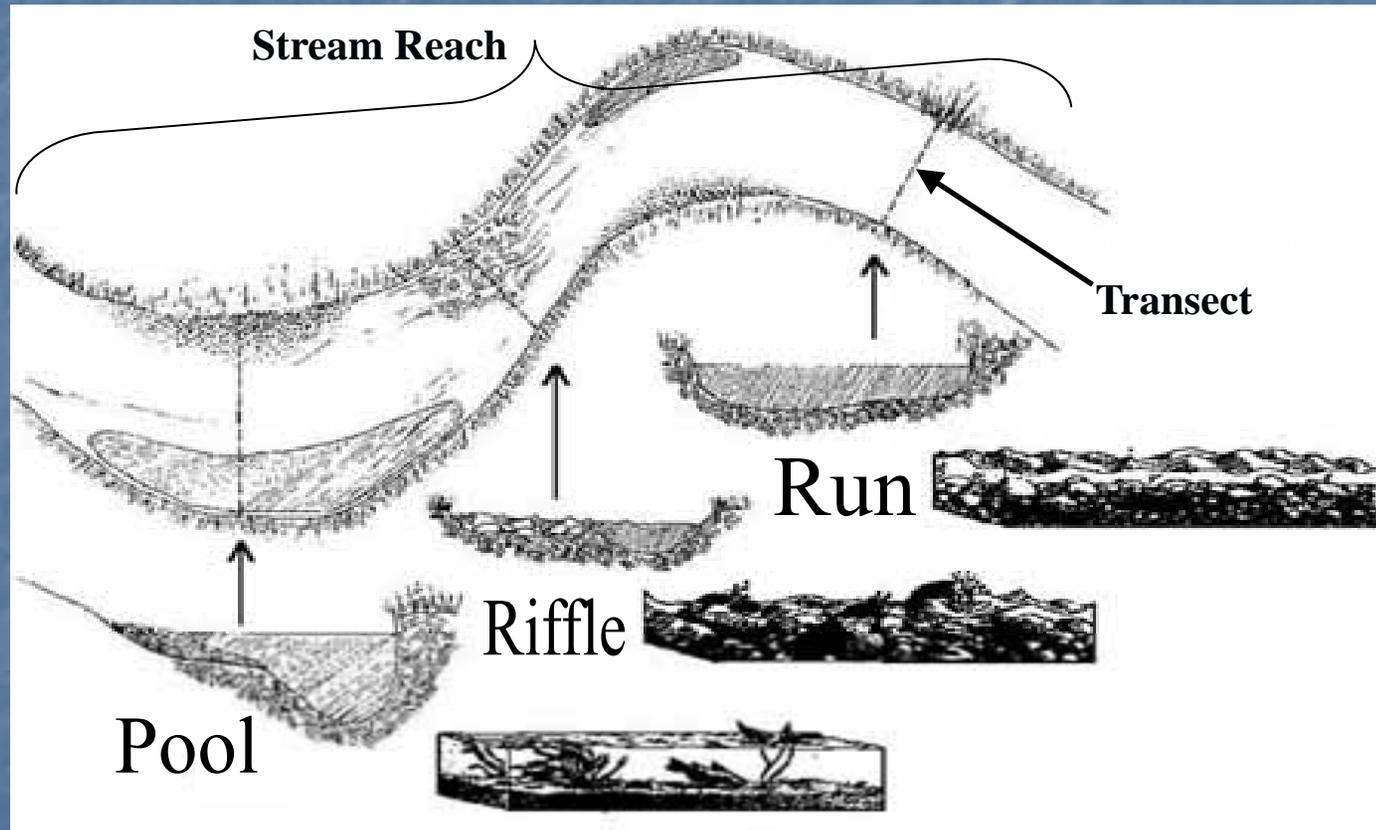
- The stream reach is one set of riffle, run, and pool habitat OR
- A set distance from your transect.
  - We recommend 25 meters upstream and 25 meters downstream of the transect.



# Habitat Type

*Estimated at Stream Transect*

Stream habitats are divided into three main types: riffles, runs, and pools.



A variety of habitats within a stream usually enhances the **diversity** of aquatic life that you may find there.

Figure adapted from:  
*Volunteer Stream Monitoring:  
A Methods Manual*. EPA 841-  
B-97-002

# Habitats Influence Water Quality

- Physical features
- Water Quality Parameters
- Biological

# Riffle

- Swift moving current and water that is normally "bubbling" due to a rocky streambed
- Promotes relatively high dissolved oxygen levels, high numbers of **invertebrates**, and the small fish



Photo by Ben Petty



Photo by Dale Lindquist

# Run

- moderate current, medium depth, and a smooth water surface



# Pool

- slow current
- usually found at stream channel bends, upstream of riffles, or on the downstream side of obstructions
- Great areas for fish such as bass, catfish, northern pike and trout.



# Streambed Substrate

*Estimated at Stream Transect*

What's on  
the bottom  
of the stream?

Bedrock, boulders,  
cobbles, gravel, sand,  
mud/silt, other...



Photo by Jacklyn Gautsch



Photo by Troy Martens



Photo by Terry Moran

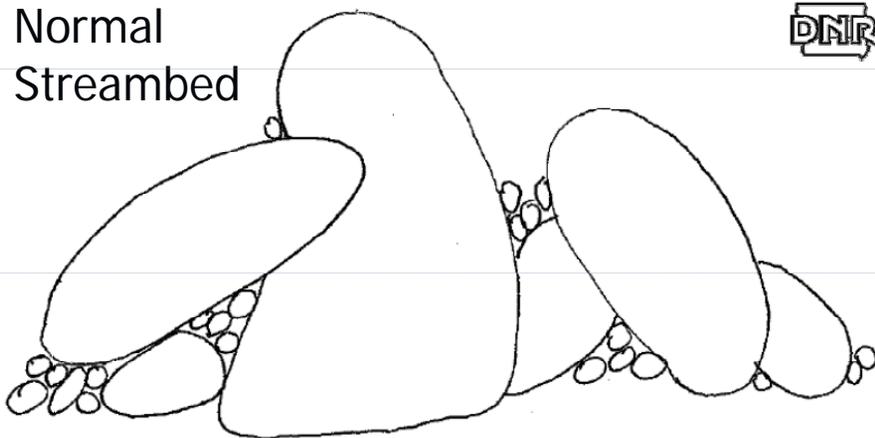


Photo by Dave Ratliff

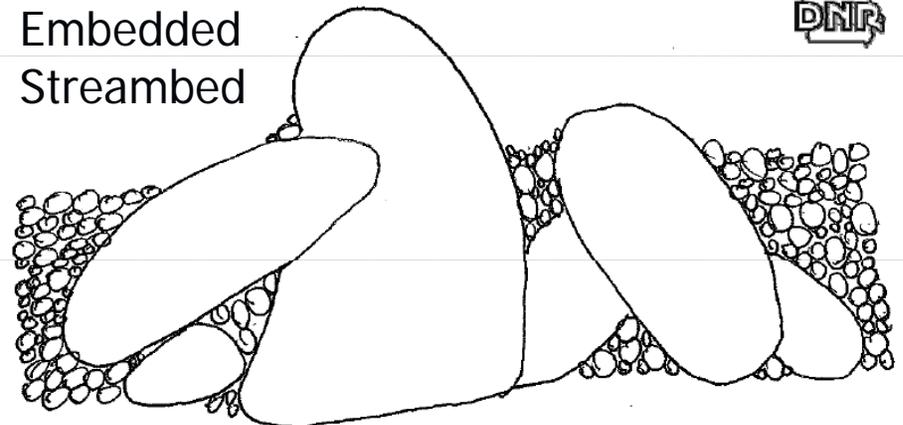
# Streambed Substrate

- Important to habitat quality and aquatic life
- Natural **geology** is responsible for the original substrate, human activities that increase erosion can cover the existing substrate with a layer of sand or silt.
  - Embeddedness
  - Reduces biodiversity by destroying aquatic habitats

Normal  
Streambed



Embedded  
Streambed



# Microhabitats

*Found in Stream Reach*

- Microhabitats ensure stream diversity by supporting a variety of aquatic life.

- Algae Mats
- Logjams
- Rootwads
- Fallen Trees
- Silt/Muck
- Sand
- Junk
- Leaf Packs
- Rocks
- Weed Beds / Aquatic Vegetation
- Undercut Banks
- Rip Rap
- Overhanging Vegetation



Photo by Rick Dietz



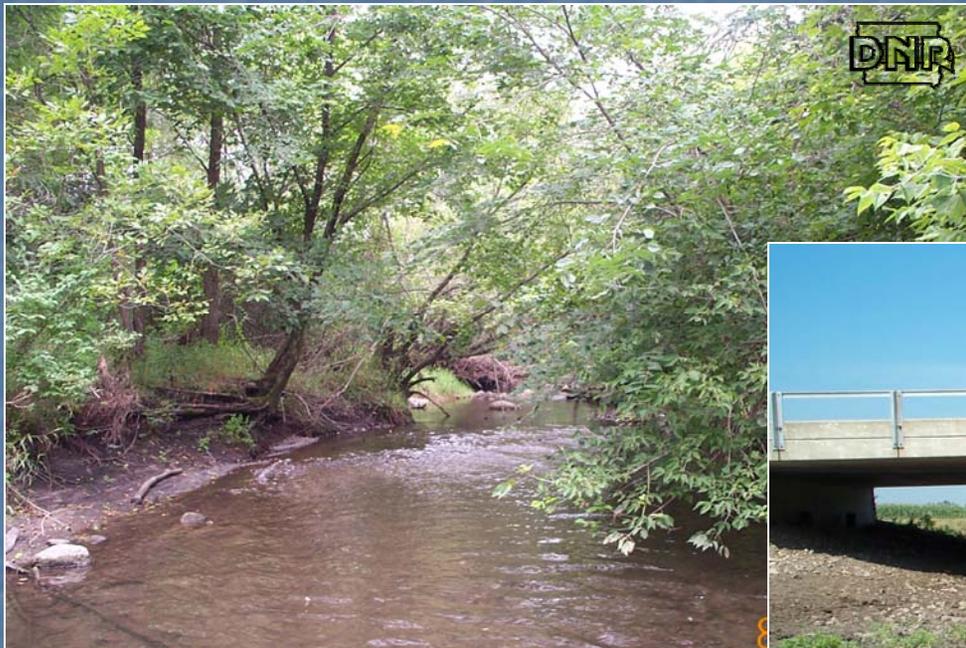
Photo by Troy Martens

# Stream Banks

## *Conditions at Stream Transect*

A stable stream bank is a sign of a stable stream.

Upstream



Downstream

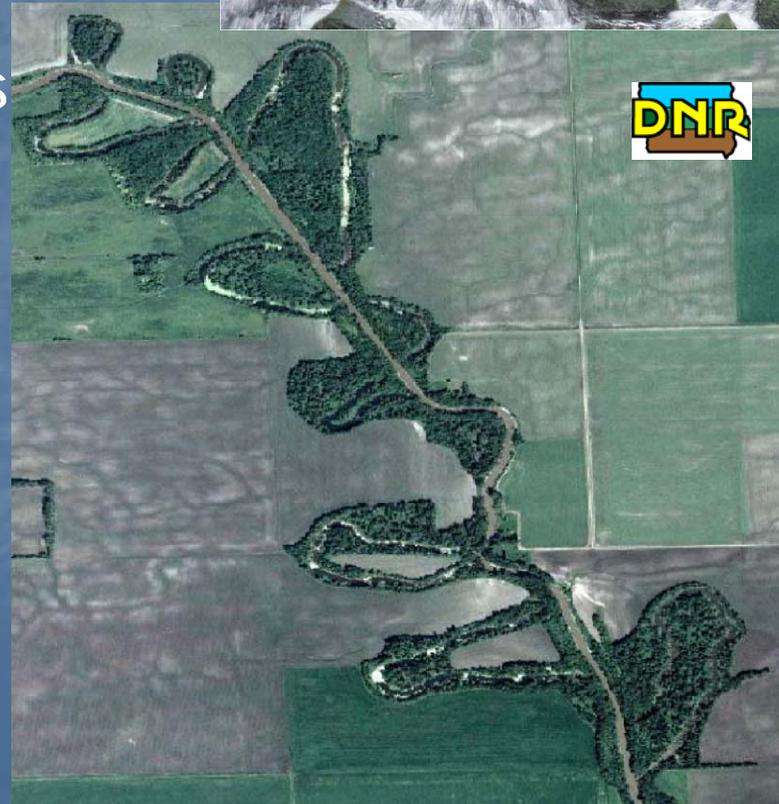


# What influences stream bank stability?

- Channelization
- Soil Types
- Stream Bank Vegetation
- Livestock
- Tiles or Storm Drain Outlets



USGS photo



# Cut Bank – Eroding



Photo by Gary Shaner



Photo by Gary Shaner



Photo by Tom Griep



Photo by Steve Veysey



Photo by Byron Bohnen



Photo by Byron Bohnen

# Cut Bank – Vegetated



Photo by Greg Hoversten



Photo by Greg Hoversten



Photo by Greg Hoversten



Photo by Gary Shaner



Photo by Mark Brecht

# Sloping Bank



Photo by Troy Martens



Photo by Dave Ratliff



Photo by Greg Hoversten



Photo by Tom Isenhart

# Sand/Gravel Bar



Photo by Troy Martens



Photo by Troy Martens



Photo by Mark Brecht



Photo by Gary Shaner

# Rip Rap



Photo by Tom Davis



Photo by Dave Ratliff



Photo by Del Holland



Photo by Dave Ratliff

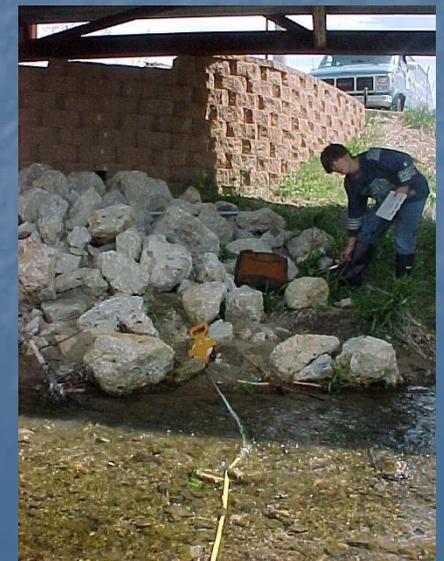


Photo by Del Holland

# Constructed Bank

i.e. Drainage Ditch



Photo by Greg Hoversten



Drainage Ditch, North-Central Iowa, NRCS photo



Photo by Pam Simmons



Drainage Ditch, North-Central Iowa, NRCS photo



Photo by Pam Simmons

# Test Questions

# Canopy Cover

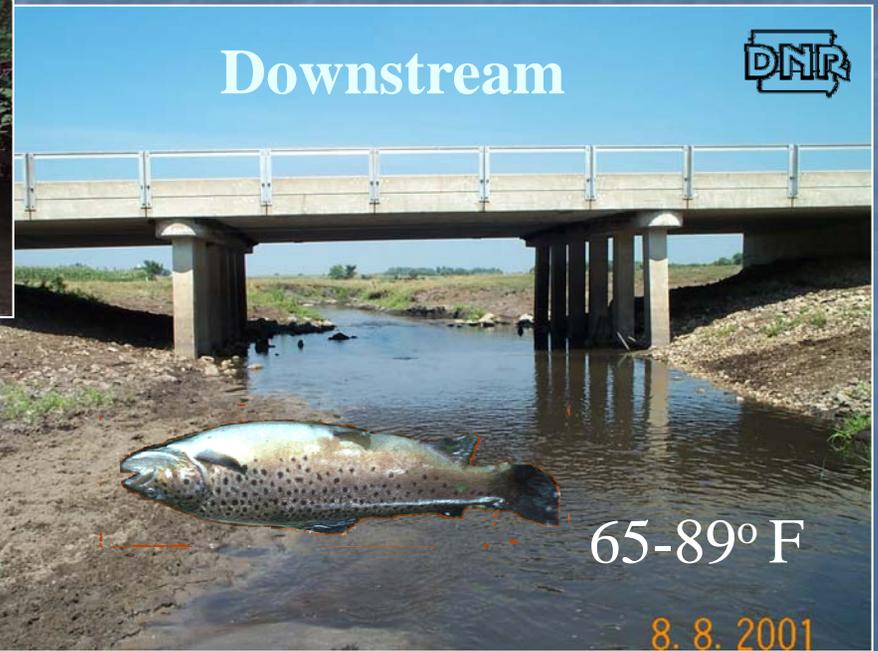
*Estimated at Stream Transect*

- The canopy can help protect the stream from extreme fluctuations in water temperature.



## *Nameless Creek*

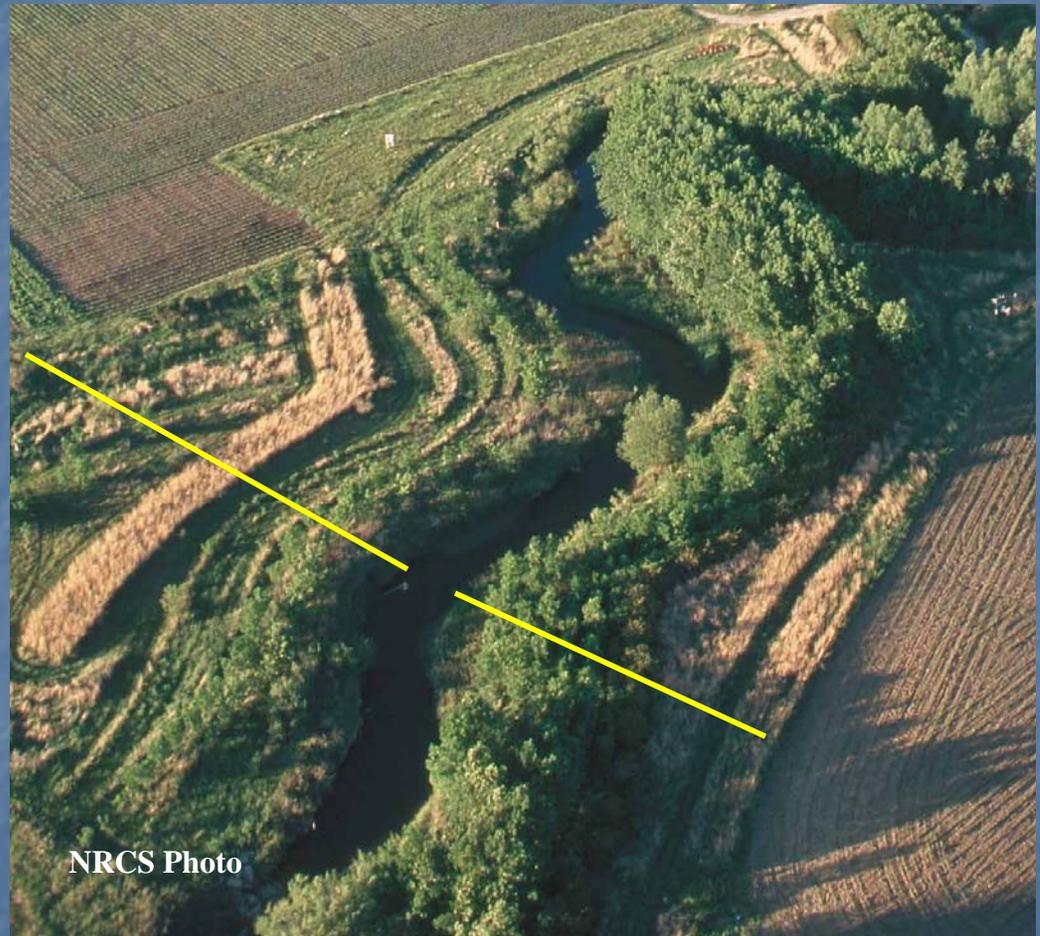
*Some County, Iowa*



# Riparian Zone

*Estimated at Stream Transect*

- Area of land that is in “natural” vegetation directly adjacent to the stream banks.
- This zone is extremely important to the health and protection of the stream.
  - Trees help stabilize the bank during flood events and may provide habitat for both aquatic and terrestrial organisms.
  - Shrubs, grasses, and other plants can slow and filter runoff water before it enters the stream.



NRCS Photo

# Adjacent Landuse

*Estimated at Stream Transect (record those you can see)*



**DNR**

**DNR**



**DNR**

**Don't forget  
you can submit  
Pictures!!**

- It is important to document the land uses in the watershed that might influence water quality

# Human Use

*Recorded at Stream Reach (record those you have done or have seen done)*



**Don't forget  
you can submit  
pictures!!**

# Evidence Human Use

*Recorded at Stream Reach*

**Don't forget  
you can submit  
Pictures!!**



# Perennial or Intermittent

*Recorded at Stream Reach*

- Perennial Streams
  - Water flowing in a channel year-round.....**EXCEPT** during periods of extreme drought.
- Intermittent Streams
  - Contain water only part of the year.
  - If the stream regularly dries up between July & September (typical dry times in Iowa)
- When you classify your stream, please include:
  - Your comments for why you classified it
  - Any specific dates, observations, etc. that support your classification.

# Pictures!

- These are extremely useful for tracking changes over time.
  - Take photos looking upstream & downstream every year
- Requirements
  - JPEG or GIF format
  - <1MB
  - 300 dpi
- Need help? Contact IOWATER



Photo by Dave Ratliff