Powder River Aquatic Survey Update

Interagency Working Group, BLM

May 9, 2007

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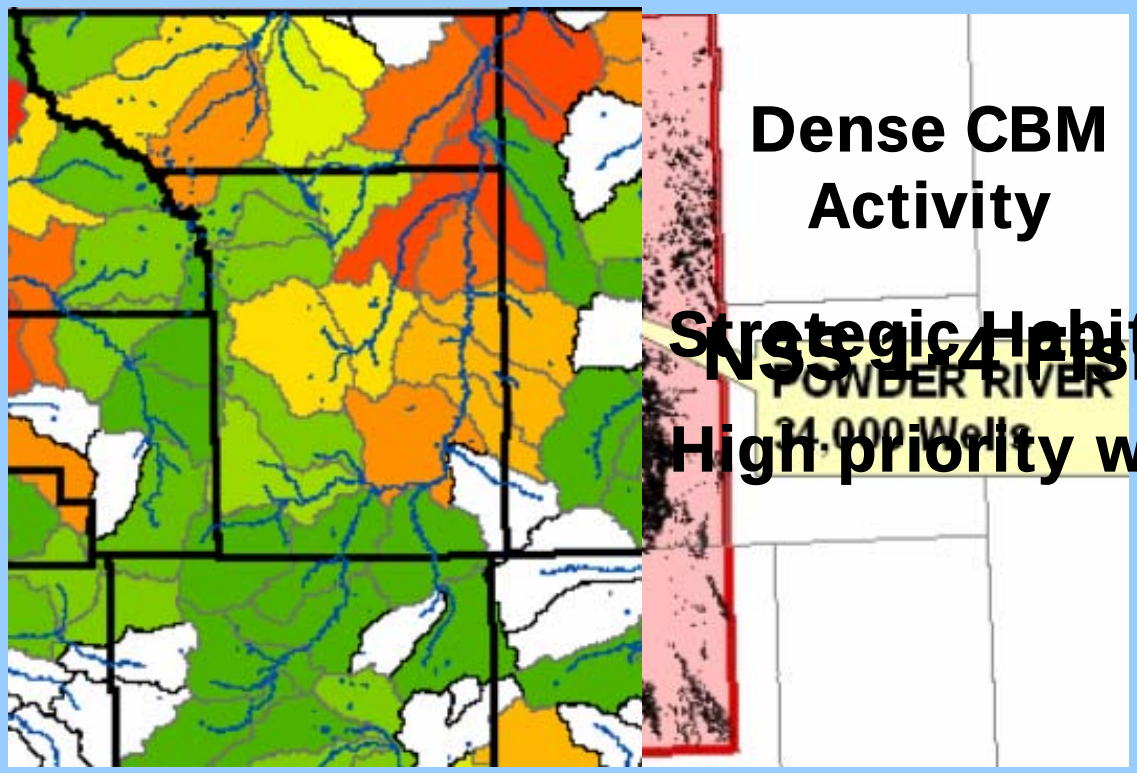
Project Needs & Purpose

-Native fish project funded by WGFD



Dense CBM Activity

Strategic Habitat Plan:

NSS 1-4 Fishes

High priority watershed

-Follow up to U.W. graduate research

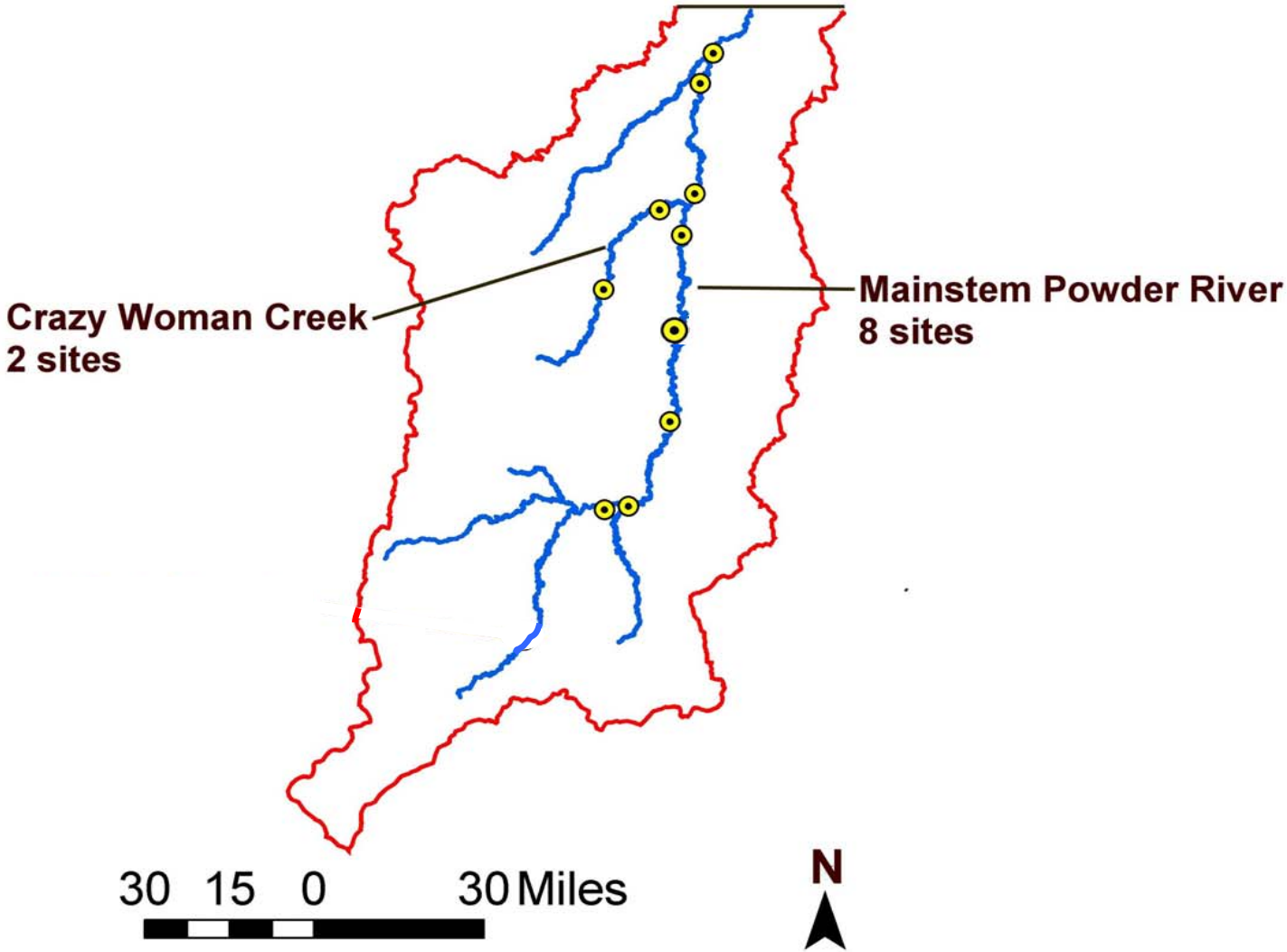
-Baseline data for research and monitoring

Native Fishes Project Objectives

Describe:

- **Fish community throughout the drainage**
- **Aquatic habitat conditions**
- **Habitat use by individual fish species**
- **Migratory species distribution***
  (May - June)

Ten Study Sites



Sampling Frequency

- Monthly in ‘04 (May-Oct)
- Three flow conditions in ‘05
  (pre / post high-flow & low-flow)
- Low-flow in ‘06

Warmwater Stream Assessment (WSA)

- Designed for small to mid-sized prairie streams
  - Modified for Powder project
- Fish community data
  - Presence/Absence & rough CPUE
  - Distribution
  - Species composition
- Aquatic habitat characterization
  - Substrate, cover types, and aquatic vegetation

WSA Fish Sampling Methods

<u>Sampled two of each habitat type:</u>

Pools, Riffles, Runs, Backwaters, Shoals, & Isolated Pools

- Seine until no new species observed
- Identify, sort, count, & measure fish
- Seine haul L X W

WSA Aquatic Habitat Methods

Sampled two of each habitat type:

Pools, Riffles, Runs, Backwaters, Shoals, & Isolated Pools

- Habitat unit dimensions & depths
- Substrate
- Cover types
- Velocity, turbidity, conductivity, temperature

Intact Native Fish Community

Eight Cyprinids

Sand shiner
Flathead chub
Plains minnow
Western silvery minnow
Fathead minnow
Creek chub
Longnose dace
Sturgeon chub

Five Catostomids

River carpsucker
Northern redhorse
Mountain sucker
White sucker
Longnose sucker

Three Ictalurids

Channel catfish
Stonecat
Black bullhead

Three Highly Migratory Species

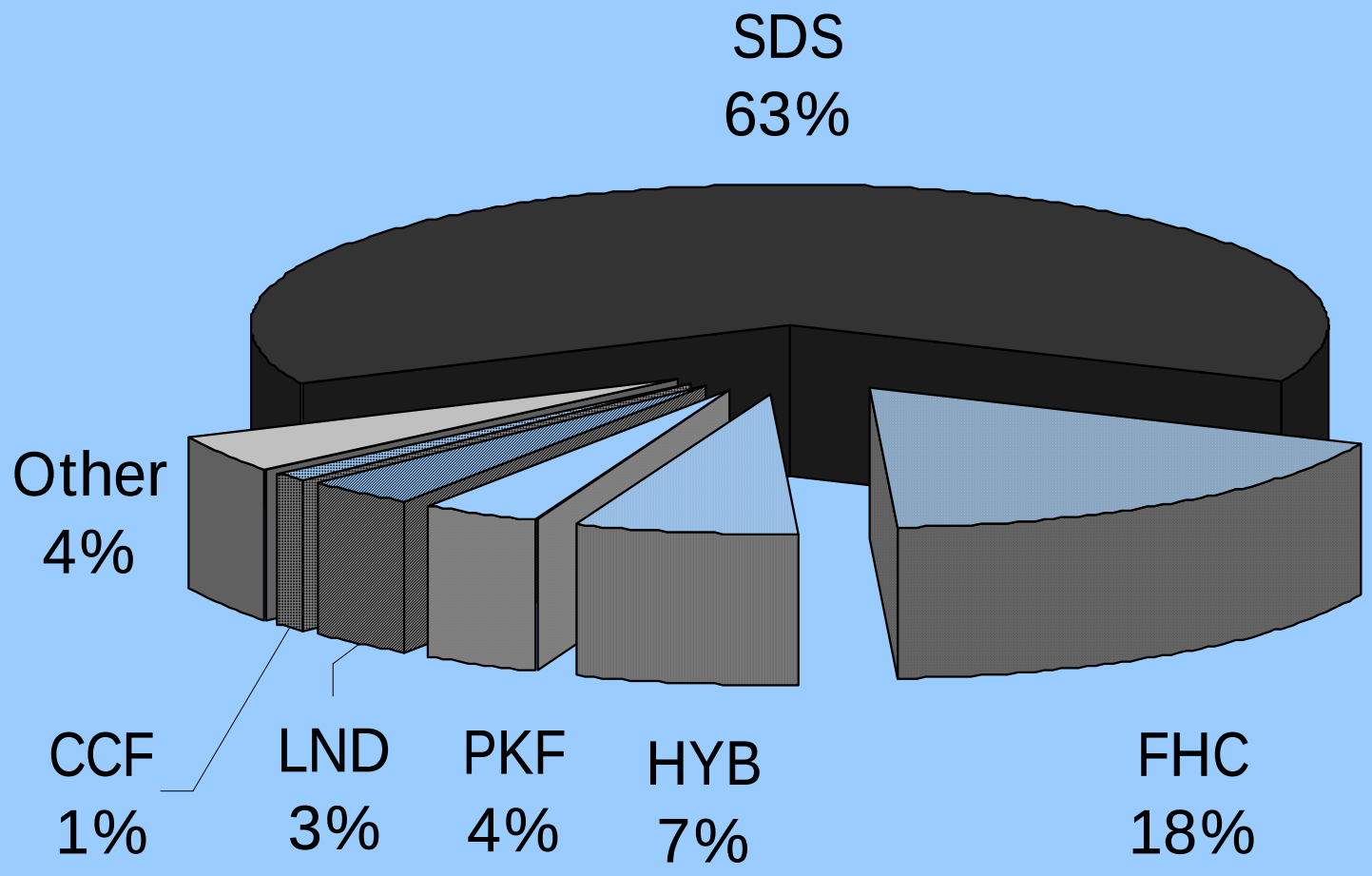
Shovelnose sturgeon
Sauger
Goldeye

Six Exotic Species

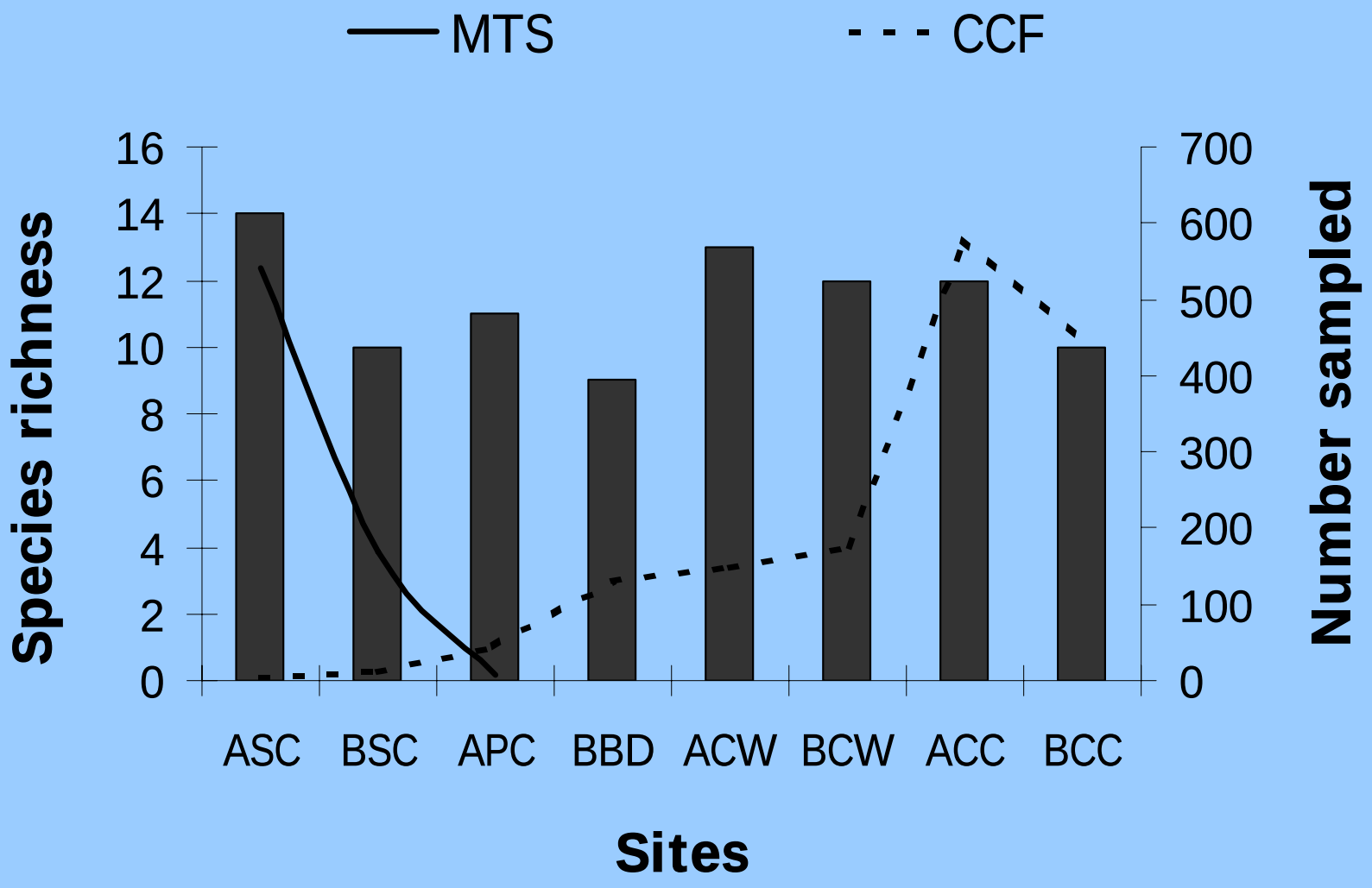
Smallmouth bass
Green sunfish
Largemouth bass
Rock bass
Common Carp
Plains killifish*

Species Composition

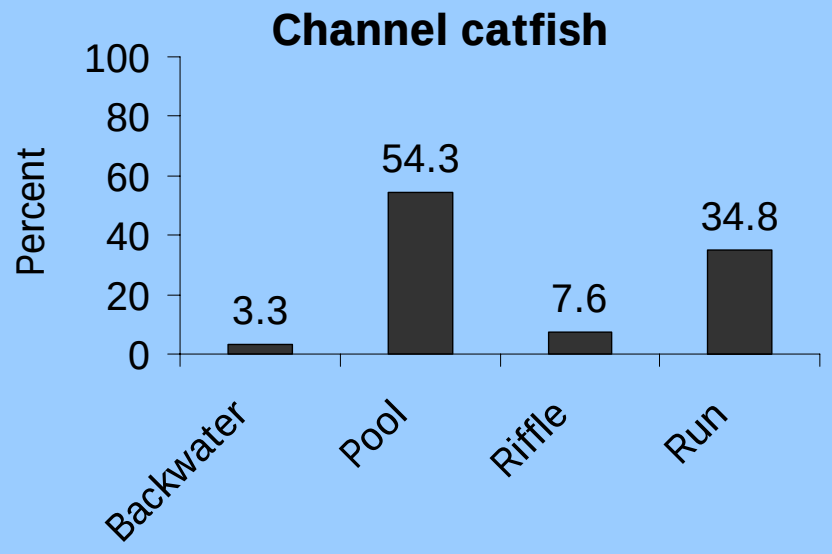
(*n* = 184,571)

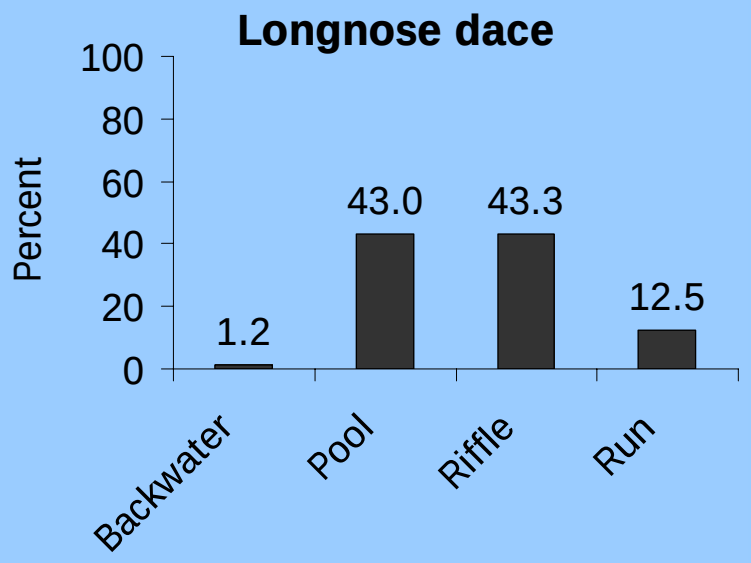


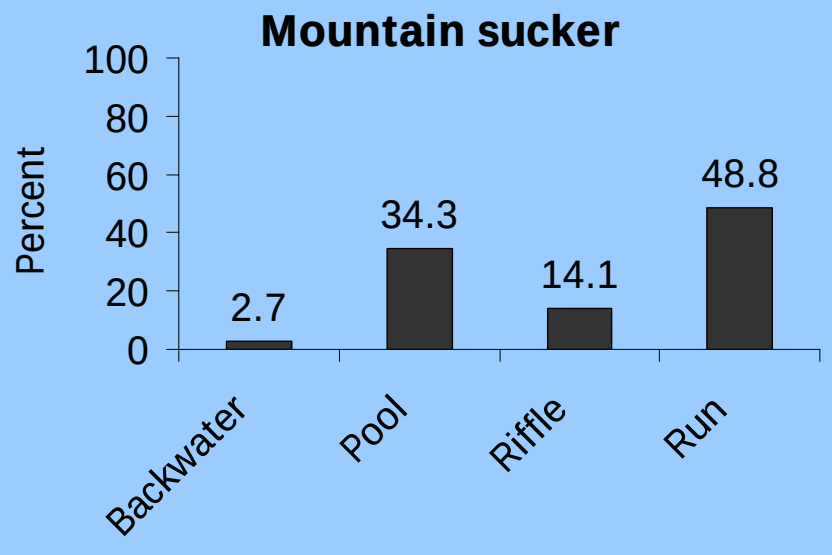
Mainstem Species Richness

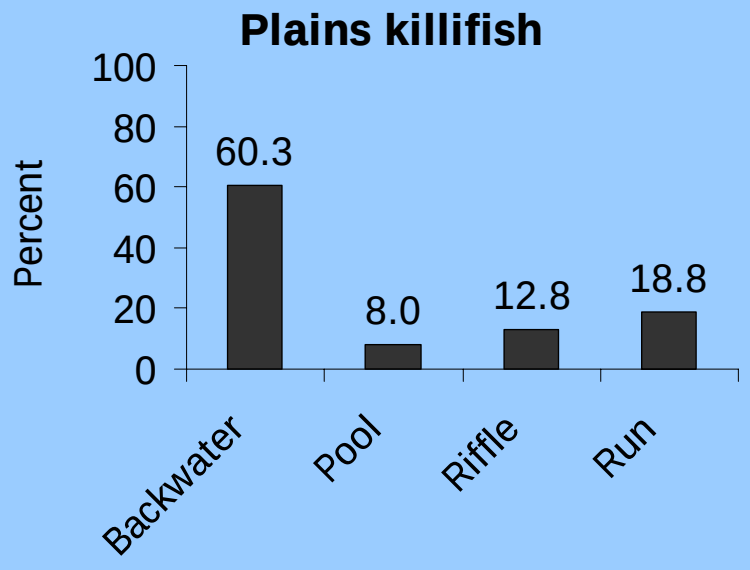


Fish Occurrences by Habitat Type

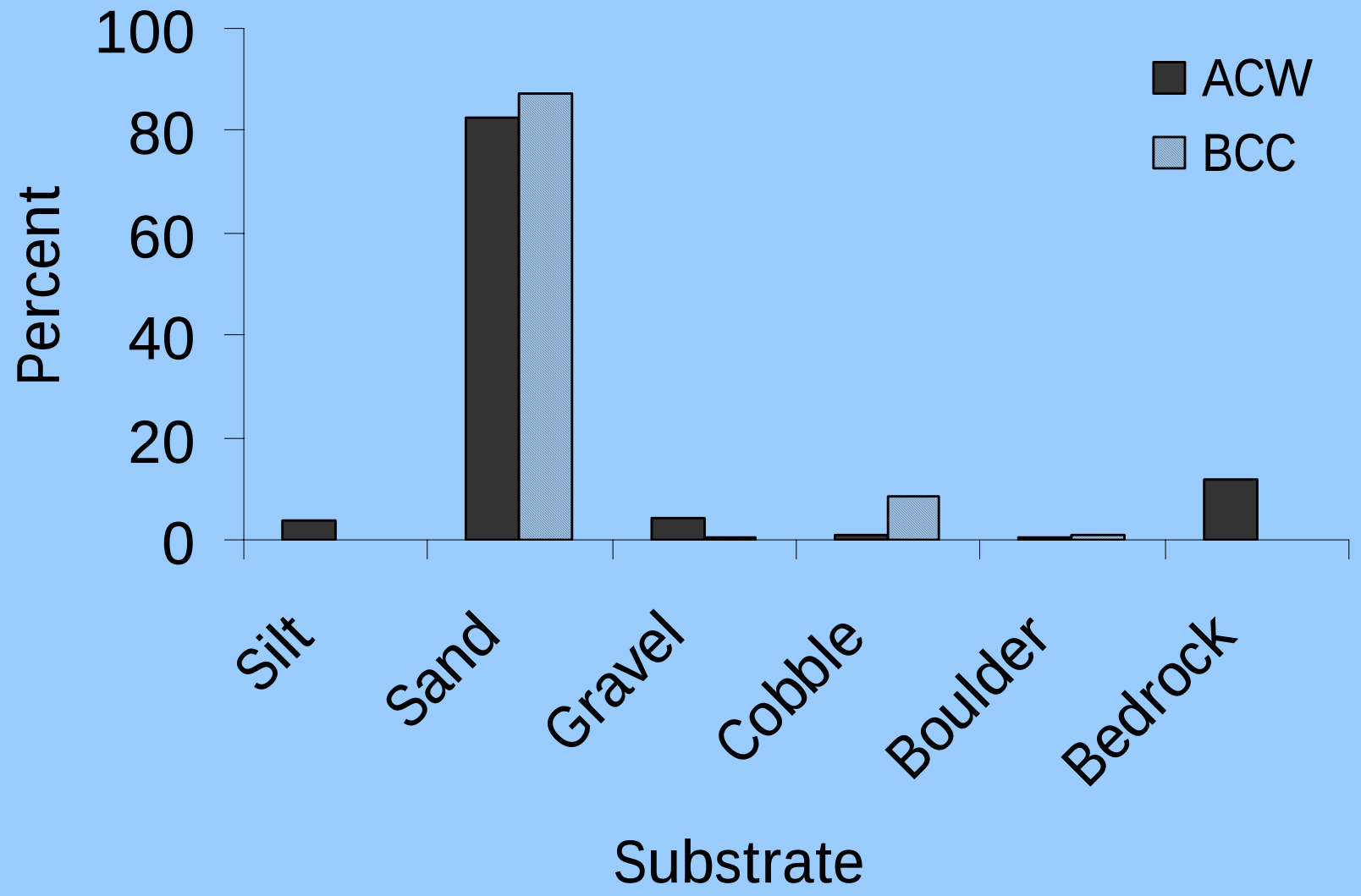








Overall substrates from WSA: Two sites



Alternative habitat surveys

*Habitat availability

*Focus on rare habitats

2005: Habitat Mapping

-High precision GPS

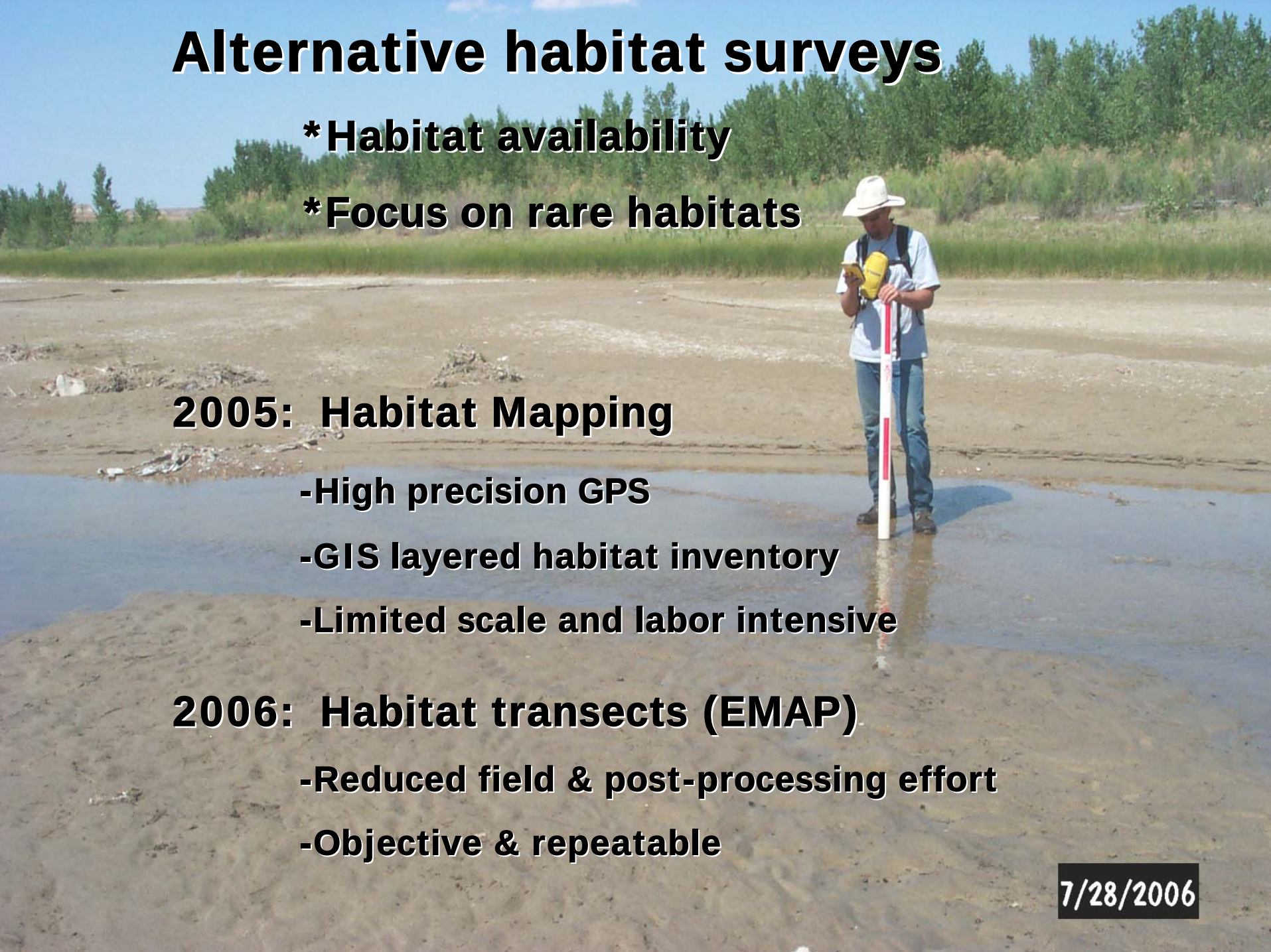
-GIS layered habitat inventory

-Limited scale and labor intensive

2006: Habitat transects (EMAP)

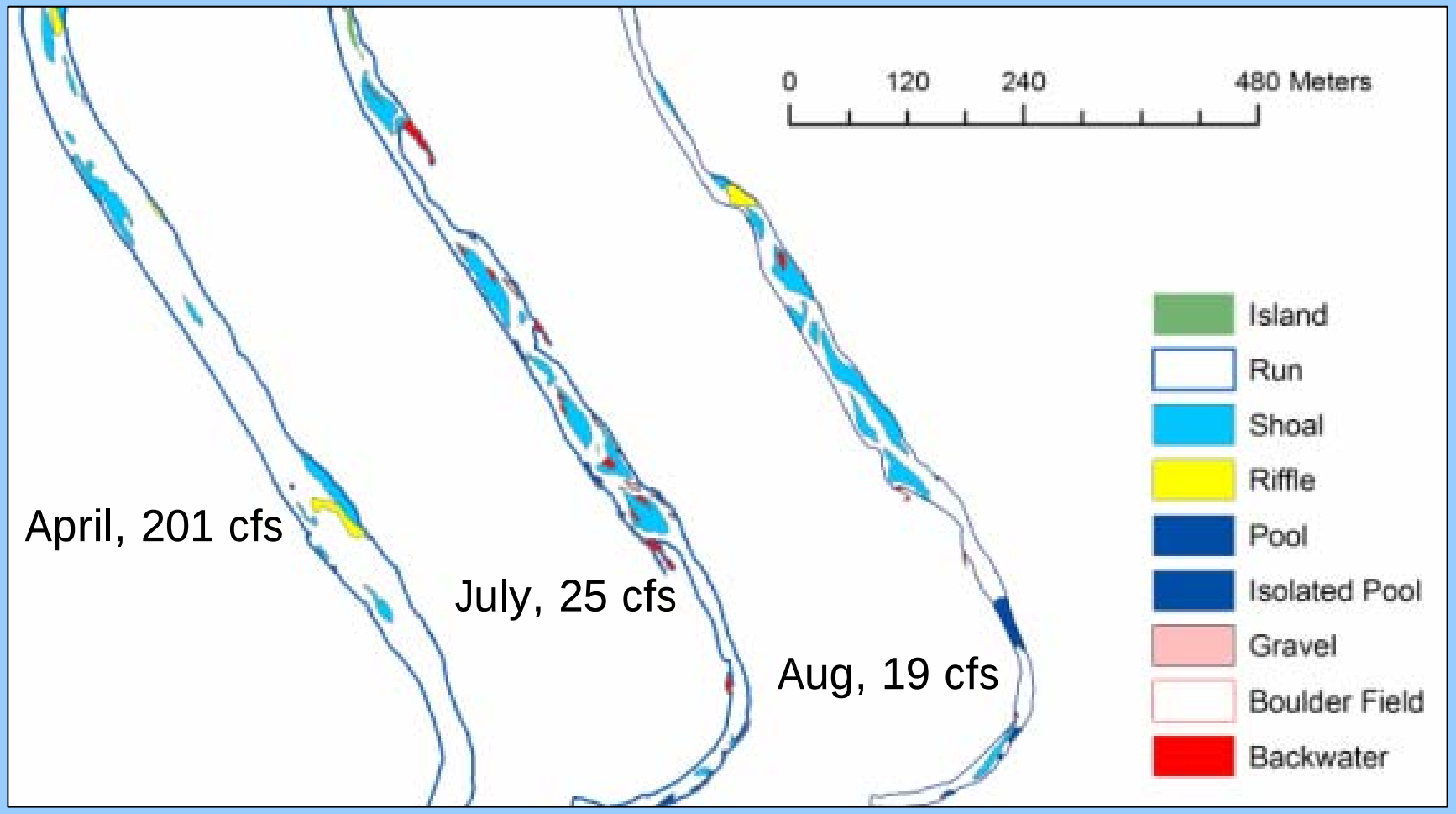
-Reduced field & post-processing effort

-Objective & repeatable

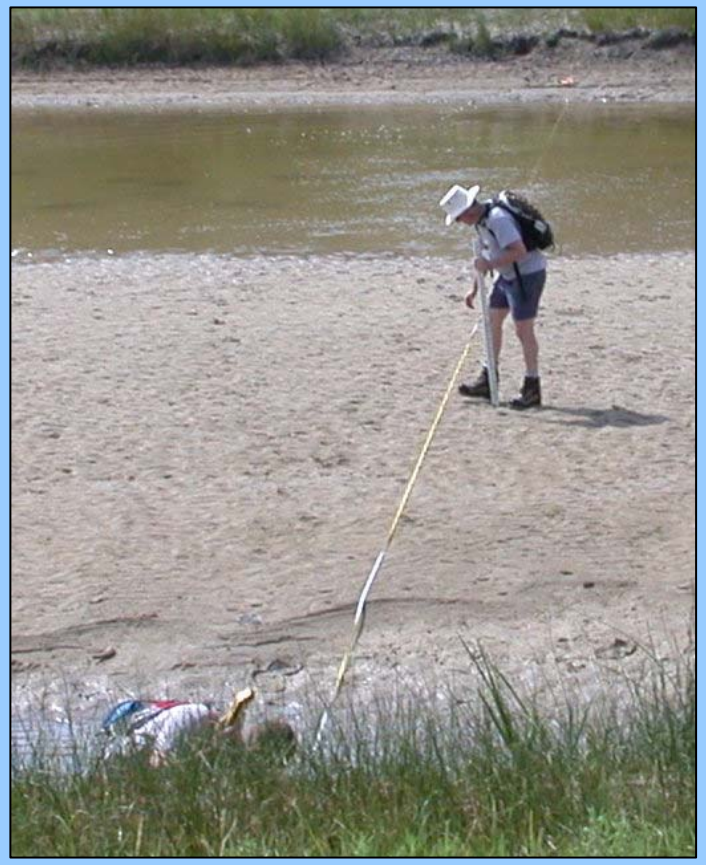


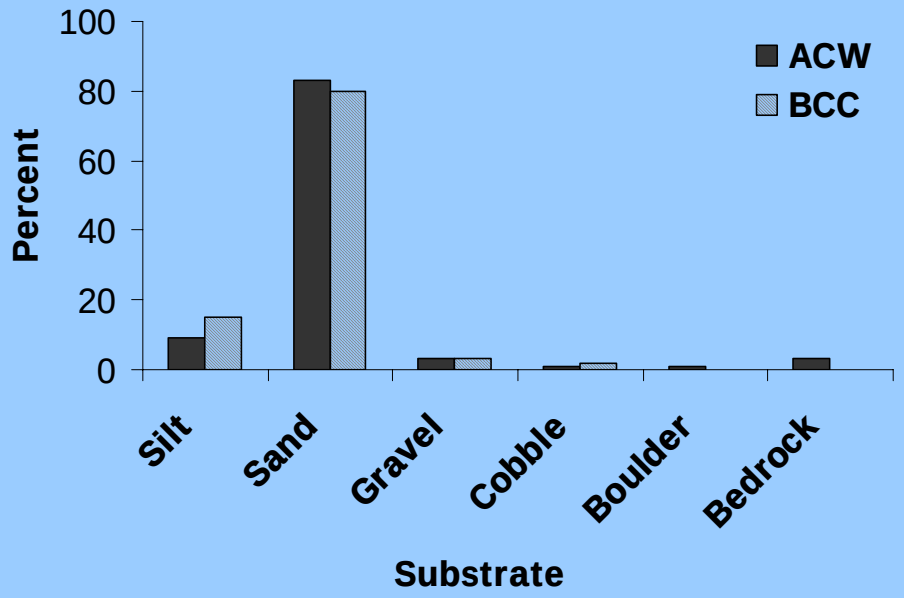
2005: Habitat Mapping

(ACW Site)



2006: Habitat transects (EMAP)





Site	Riffles	Pools	Backwaters
ACW	23	7	67
BCC	18	30	32

-Captured channel complexity

-Identified differences among sites

-Index of habitat types encountered

Shovelnose Sturgeon Distribution
May-June '06

Trammel net drifting in main stem

- **50'X4' net with 10" outer & 2" inner mesh sizes**
- **Sample, tag, & recapture SNS & CCF**

- **Recorded drift length and time (CPUE)**

Low Flows in ‘06

Drifted a total of 32 miles of river

15 sturgeon sampled and tagged (no recaps)

Found sturgeon approx 25 river miles (10-12 air miles) further upstream than expected

94 Channel catfish sampled and tagged

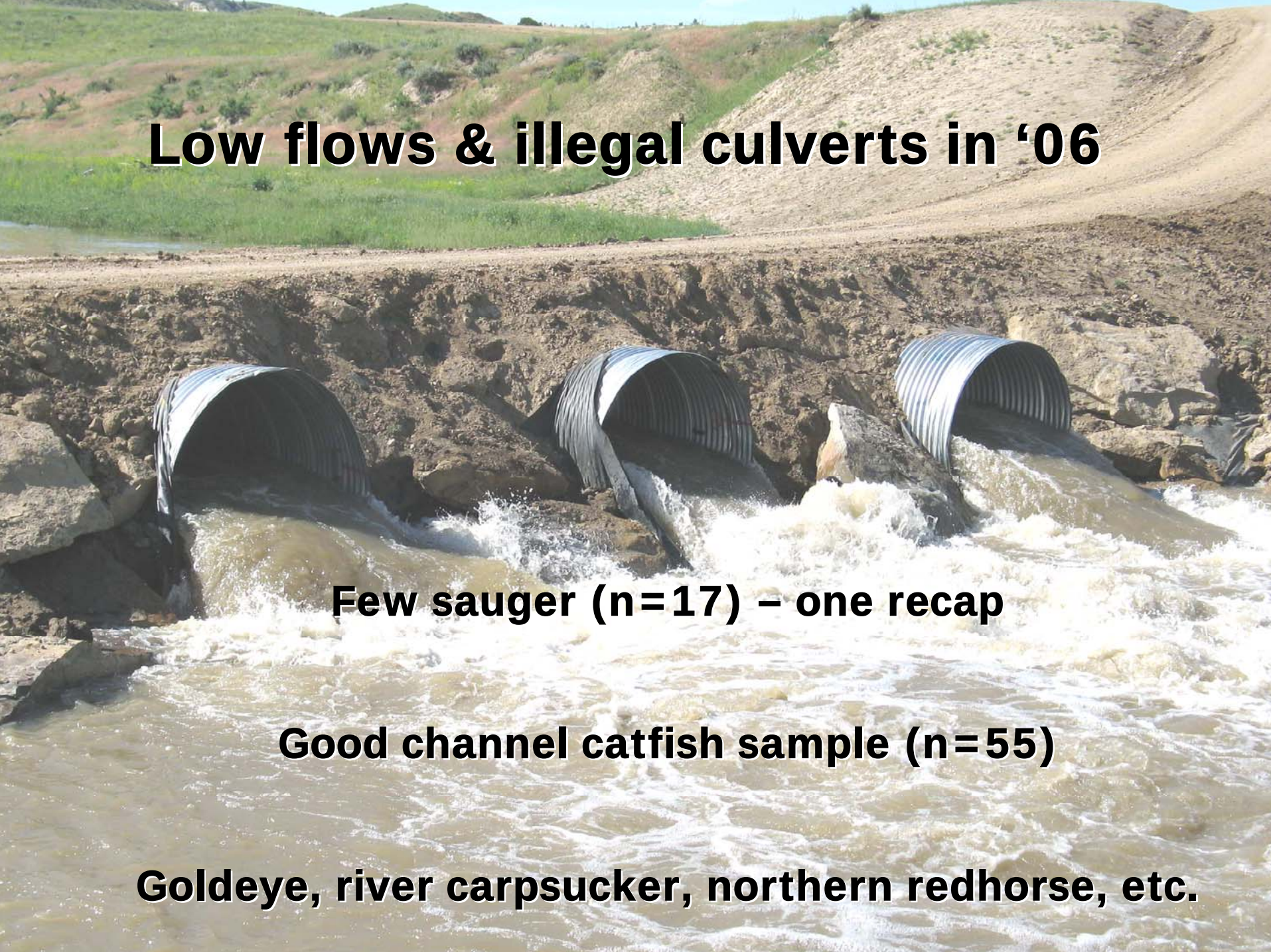
- **One CCF moved 25 miles upstream in 5 days**
- **Age ranged from 3-15 years**

Sauger Migration into Clear Creek
May-June ’06 – ‘07

Raft and cataraft electrofishing

Sample, tag, & recapture

Genetic samples



Low flows & illegal culverts in ‘06

Few sauger (n=17) – one recap

Good channel catfish sample (n=55)

Goldeye, river carpsucker, northern redhorse, etc.

Complex environment & issues

Acquired baseline information

- -Cooperative completion report w/USGS
- -Continue migratory species & aquatic habitat surveys

Focus on low-flow conditions & shallow habitats

U.W. Graduate research by Anna Senecal:

- -Refine fish sampling methods
- -Describe habitat use by fishes

Limited future G&F work w/o external funding

Powder River Herpefauna

Bill Turner

Herpetological Coordinator

Herpefauna Project Goals

Collect baseline species distribution data

Determine disease prevalence in amphibians

Methods

Visual Encounter Surveys (VES)

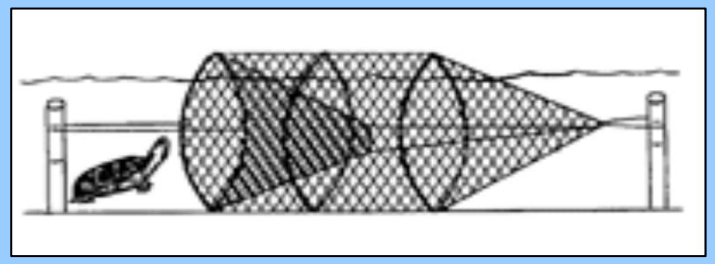
- Amphibians, snakes, & lizards

Incidental Observations

Road Surveys

- Turtles and snakes

Turtle Trapping



Calling Surveys for amphibians*

Common species

Woodhouse's Toads (n =549)

Northern Leopard Frogs (n = 426)

Boreal Chorus Frog (39)

Bullsnakes (n = 67)

Intermountain Wandering Gartersnakes (n = 45)

Uncommon species

Great Plains Toad	(n =2)
Plains Spadefoot	(n = 1)
Plains Gartersnake	(n = 2)
Horned Lizard	(n = 2)

Turtle Observations

Western Painted (*n*=14)

- –4 trapped CC & CWC
- –8 DOR
- –2 visual PR

Snapping (*n*=13)

- –9 trapped CC & CWC
- –4 visual CC

Softshells (*n*=13)

- – 9 trapped CC
- – 4 visual CC & CWC

Amphibian Breeding Sites

Most observed on main stem Powder River

33 Woodhouse's toad breeding sites

- 3 shared with leopard frogs

9 leopard frog breeding sites

- 3 shared with toads
- 3 shared with boreal chorus frogs

5 boreal chorus frog breeding sites

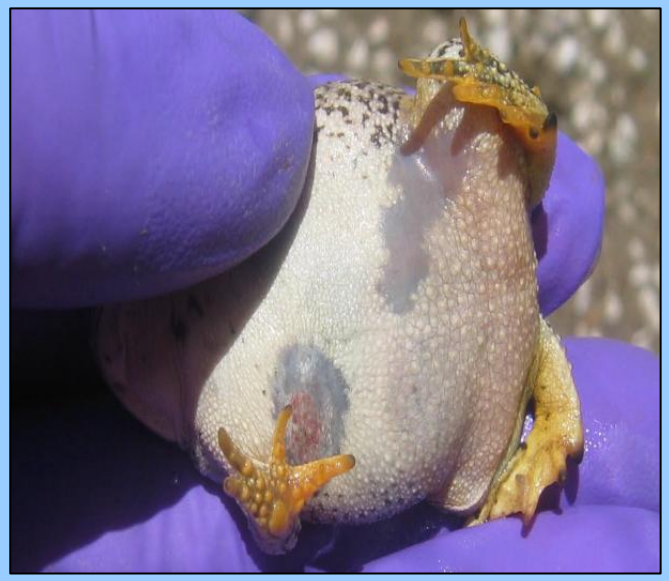
- 3 shared with leopard frogs

Batrachochytrium dendrobatidis (chytrid)

- Amphibian fungus implicated in population declines
- Most common in adults

Anurans Tested for Chytrid (positive/ tested)

- Powder River:
  - Woodhouse's Toads (1/11)
  - Northern Leopard Frogs (4/13)
- Clear Creek
  - Woodhouse's Toads (5)
  - Northern Leopard Frogs (1/18)
- Crazy Woman Creek
  - Woodhouse's Toads (2/13)
  - Northern Leopard Frogs (13/31)



Questions?