

# Ichthyological Collecting

- How and why we collect fish
- How we document collection events
- An integrated collecting effort on the Rio Grande

# Our major projects

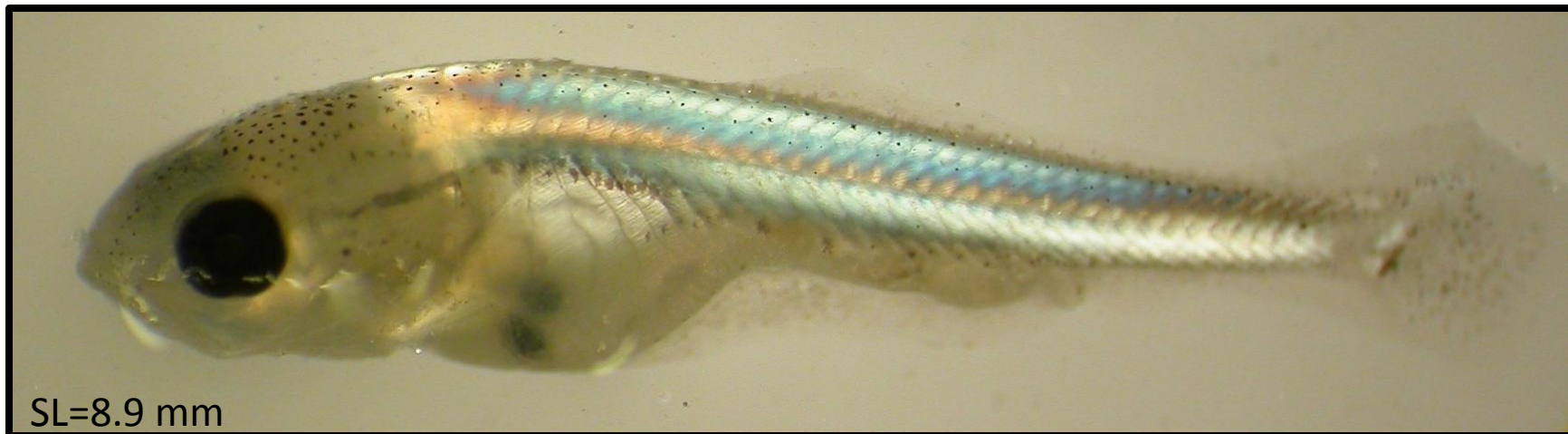
- Early life history of fishes on the San Juan River
- Long-term population monitoring of the Rio Grande
- Conservation of the Gila River watershed
- Community ecology of dynamic rivers with emphasis on low flow events











5% formalin buffered / unbuffered

10% formalin buffered / unbuffered

liquid nitrogen

95% ethanol

?





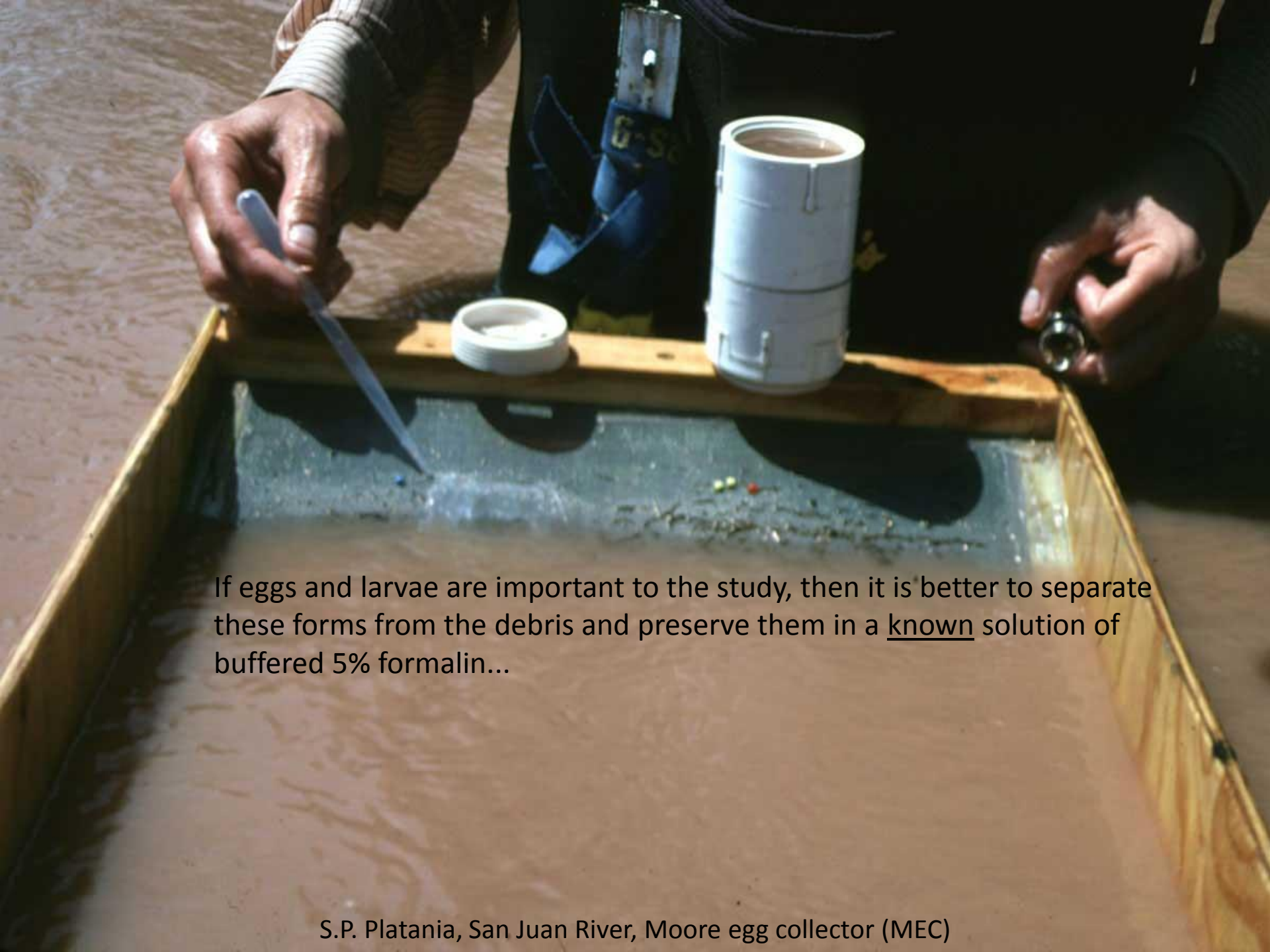


Example of dilution: trout lipids leaching into ethanol



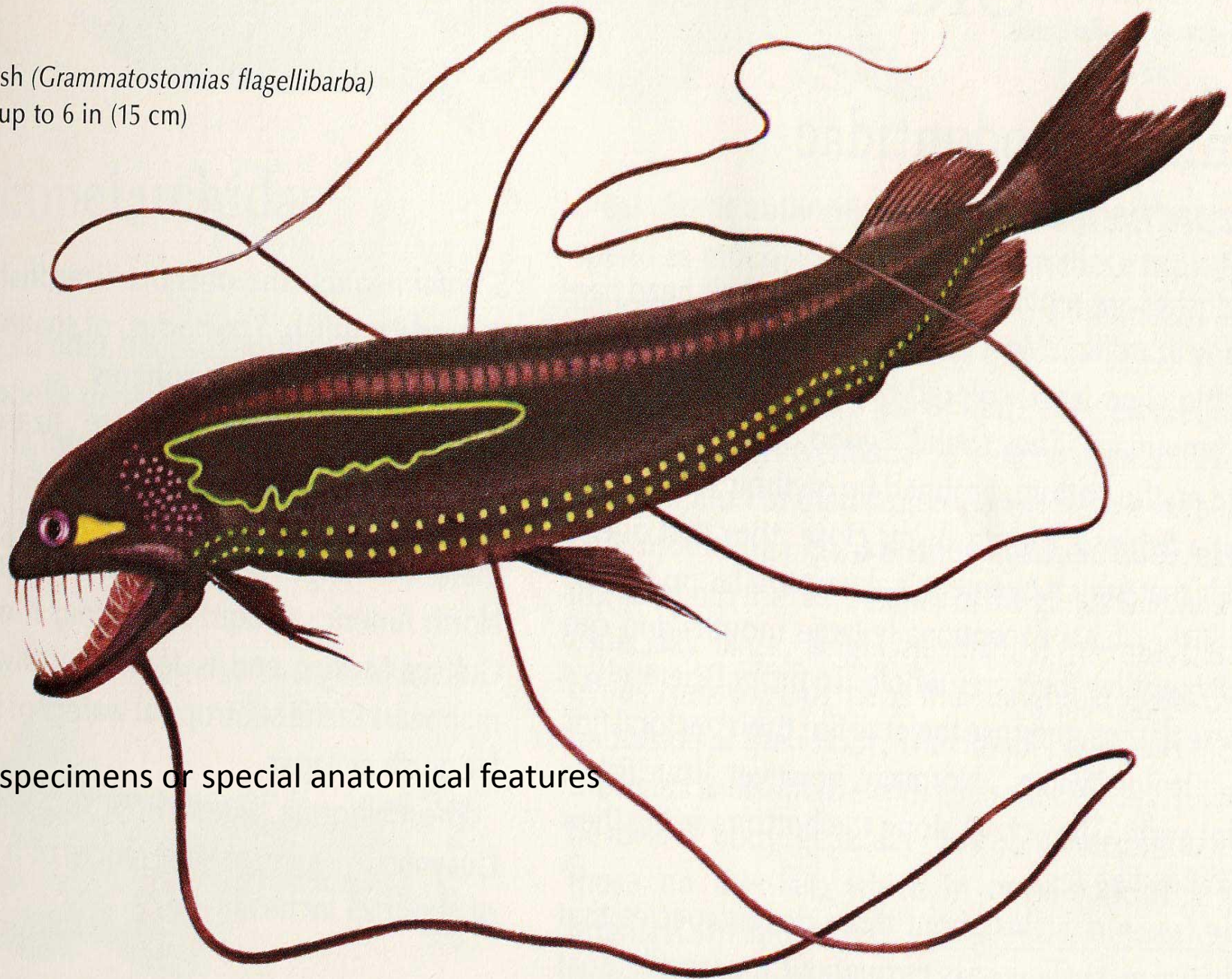
Formalin concentration can be diluted by debris and other collateral collections

Pecos River larval fish collections, 1993



If eggs and larvae are important to the study, then it is better to separate these forms from the debris and preserve them in a known solution of buffered 5% formalin...

Deepsea dragonfish (*Grammatostomias flagellibarba*)  
up to 6 in (15 cm)



Delicate specimens or special anatomical features

MSB 4806 *Hybognathus hankinsoni*

MSB DIVISION OF FISHES

76. CYPRINIDAE

*Hybognathus hankinsoni*

N=50 33 - 47 SL

COLORADO: LARIMER Co. Larimer-Weld canal at State 14 crossing, east of Ft. Collins.

MSB 4806

70% ETH

DRAINAGE:

26 Oct 1987

K.R. Bestgen and H. Tillquist

Z4806

NK 16839-18653

C&S



ction N=15 HEADS  
653  
*Hybognathus hankinsoni*





Gr. 143 *Oncorhynchus mykiss* X *Oncorhynchus gilae*

DLP02-4921 NM:Grant Co. Gila R. Drainage: Sheep Corral Canyon.

18 JUL 2002 D.L. Propst

Field No. SPP01-002 (Sample No. (site 1))  
 State or Country: NM Locality: Rio Chama directly  
 downstream of Abiquiu Dam  
 [Canoes Quad]  
 T R S Lat: 4011277N Long: 0372191E  
 County: Rio Arriba Drainage: Rio Grande  
 Water: pools, deep runs  
 Vegetation: Attached Algae  
 Temp: 4.3°C Air: 10°C  
 Bottom: cobble, boulder  
 Shore: grasses Current: 0.1 m/sec  
 Dist. offshore: Width: 20 Tide:  
 Depth of capture: < 1 m Depth of water: < 2 m  
 Method of capture: Electrofisher (Backpack): Smith-Root Type VII  
 Seine: No. Hauls: Area: sq. m.  
 D.O.: 8.2 mg/l Conductivity: 258  $\mu$  mhos/cm. Salinity: 0.2 ‰  
 Shocking seconds: 635 Voltage: 400 Amps: 0.6  
 Collected by: S.P. Platania, W.H. Brandenburg, D.E. Gibson Date: 8 January 2001  
 Orig. preserv.: 10% formalin Time: 1430 - 1600

Released: Salmo trutta n=5; Oncorhynchus mykiss n=1

We waited at the base of the spillway until the dam flow stopped (actually after the siren sounded). We started sampling as flow stopped. We worked our way along the east bank all the way up to the spill bucket. The water level dropped only slightly due to the cut-off. We captured all but one fish (A brown trout), Not too many specimens taken... longnose dace were most abundant (big ones). There were very few yellow perch present. The dead ones were still present... I'm surprised that they weren't more decayed. We took 1 large rainbow trout, and all the rest were brown trout. There were no apparent stranding of fish due to the shut-down. Low flows meant sediment accumulation; yellow perch are no longer coming through dead --- There was a low catch rate of longnose dace during the shut down (which lasted about 1 hour)

## MSB Field data sheet

### UTM coordinates

### Habitat descriptions and measures

### Remarks section used for observations

Collector, S.P. Platania, MSB Division of  
 Fishes for US Army Corps of Engineers





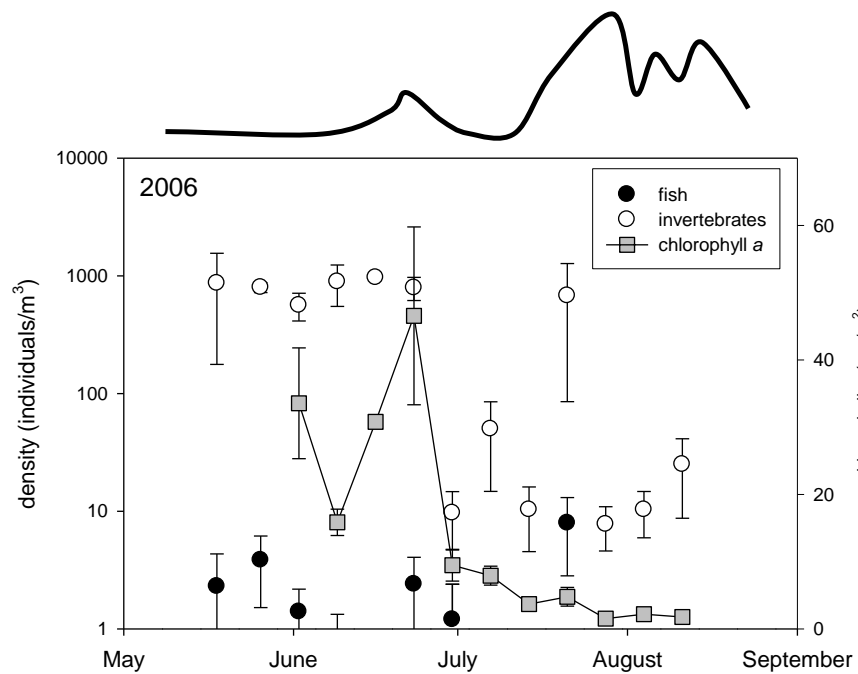
# Documenting Effort (CPUE)

- Active Sampling
  - Number of seine hauls
  - Measuring tape with seine haul
  - Number of electrofishing seconds
- Passive sampling
  - Time elapsed
  - Amount of river flow past a fixed point
  - Number of fish per trap night

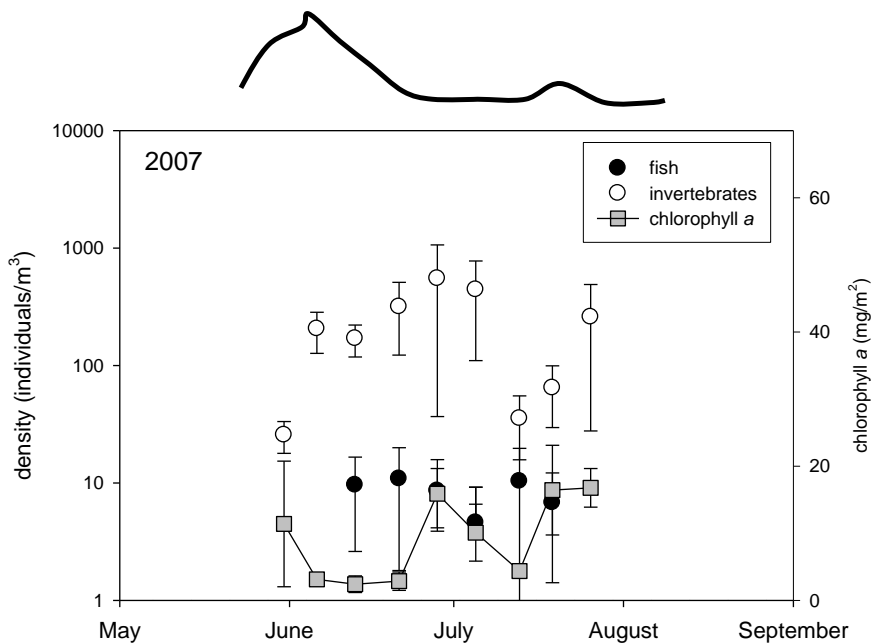


# Information sought

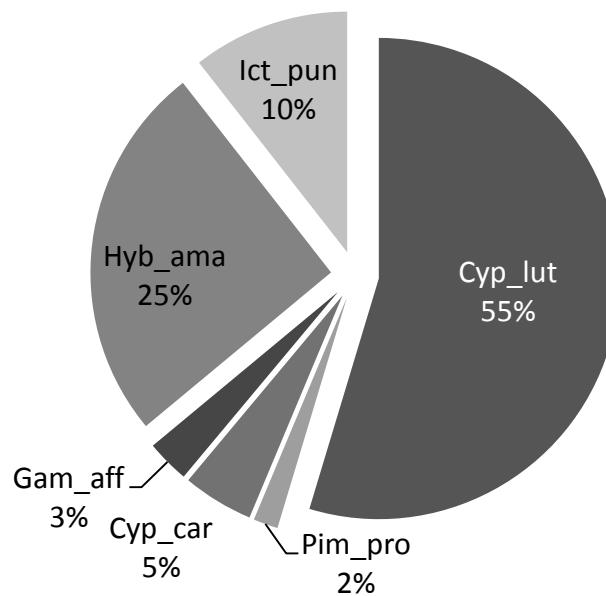
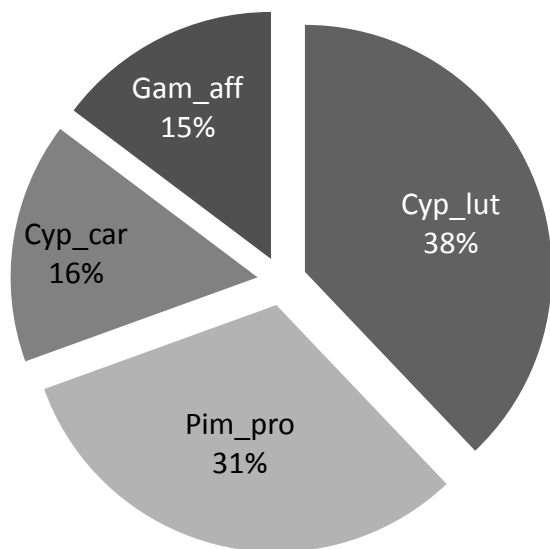
- Biomass and taxonomic composition of algae
- Density and taxonomic composition of meio-invertebrates and macroinvertebrates
- Density and taxonomic composition of fishes
- Water chemistry, soil and water column nutrients, sediment composition, temperature, habitat area, etc.



2006 ↻



2007 ↻



# Challenges

- Taxonomic knowledge across major kingdoms and phyla
- Massive processing effort
- Archiving samples with very different properties (preservation, storage, consumptive use, etc.)
- Integrating data into form that can be analyzed (lots of multivariate methods)