

Spawning and Associated Movement Patterns of Pallid Sturgeon in the Lower Yellowstone River

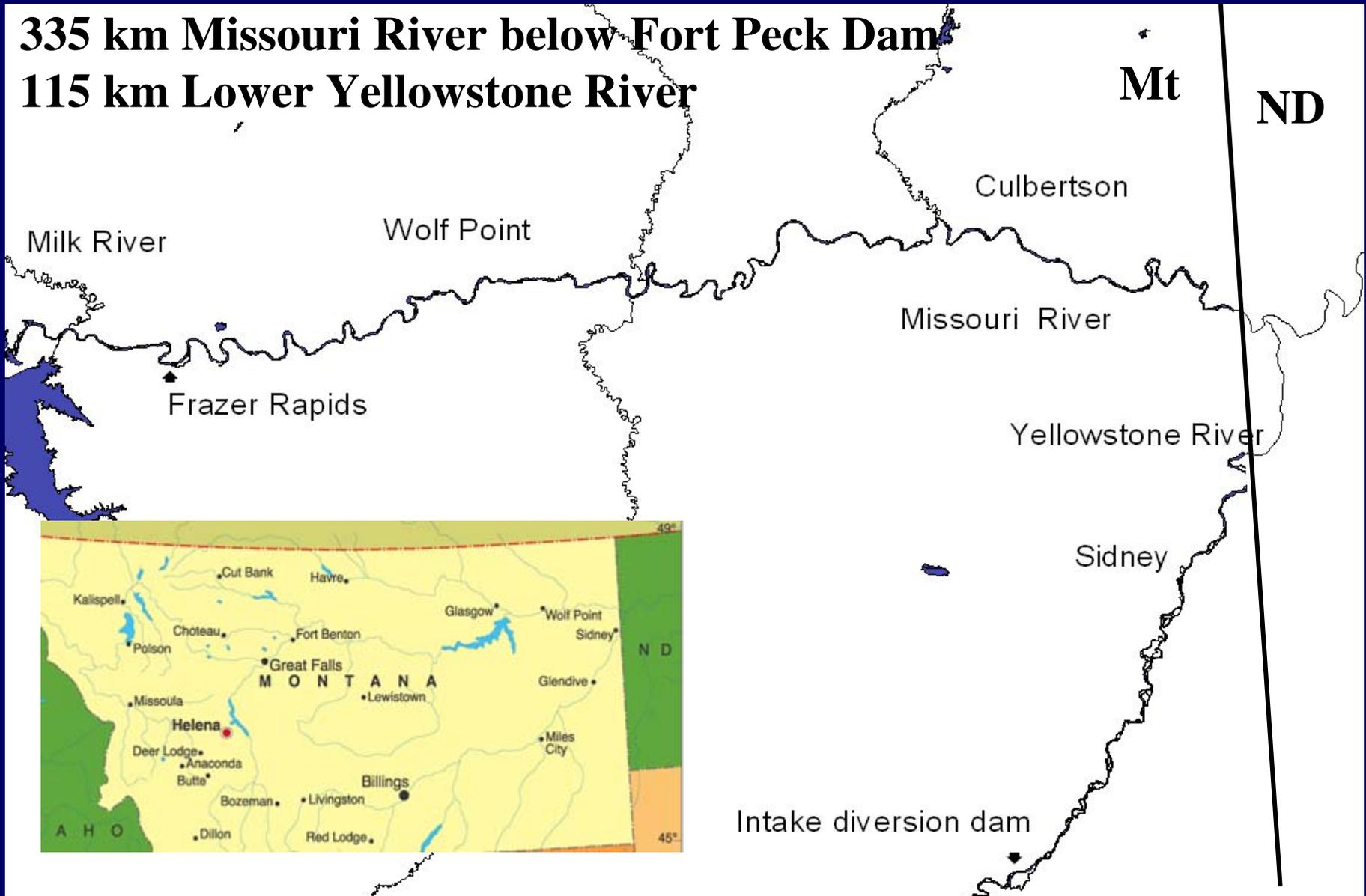
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Study Area – RPMA2

335 km Missouri River below Fort Peck Dam
115 km Lower Yellowstone River





Adult



Juvenile

Spawning

17 dph



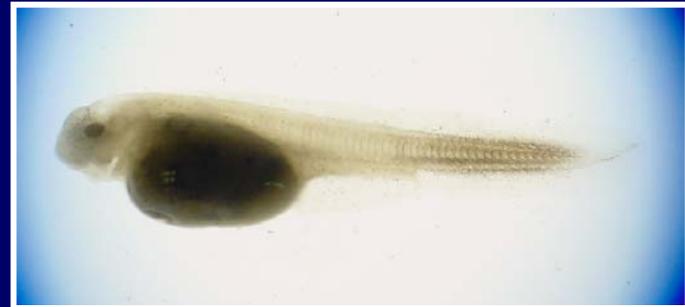
Embryo Survival

Headwater Survival

Larval Survival



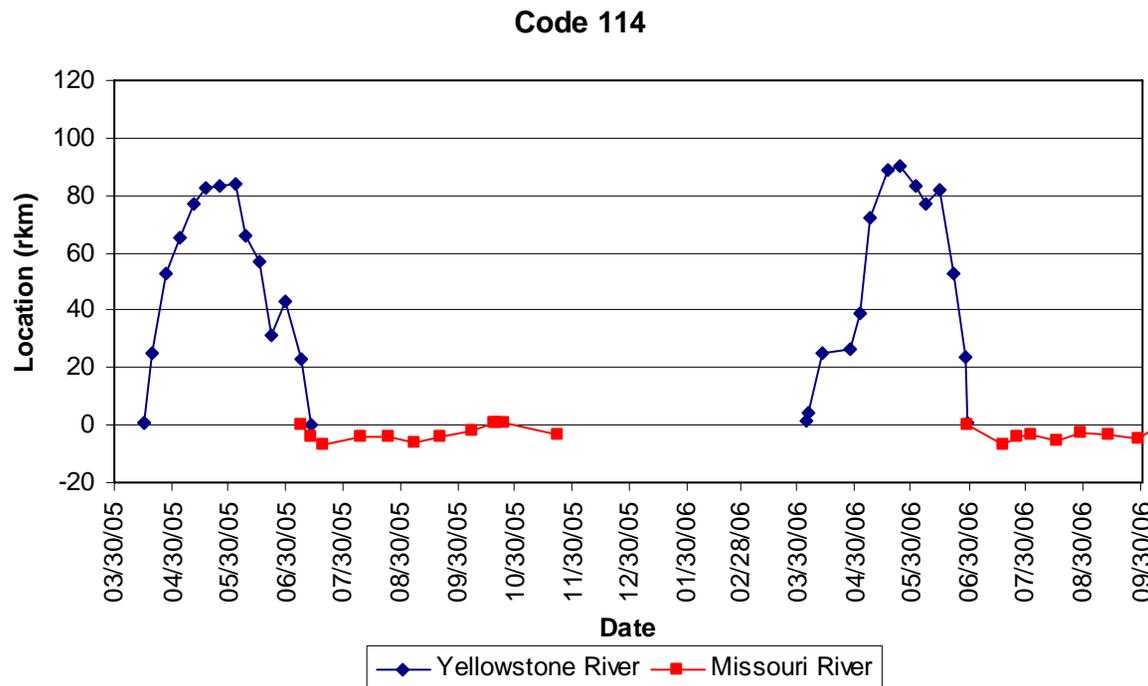
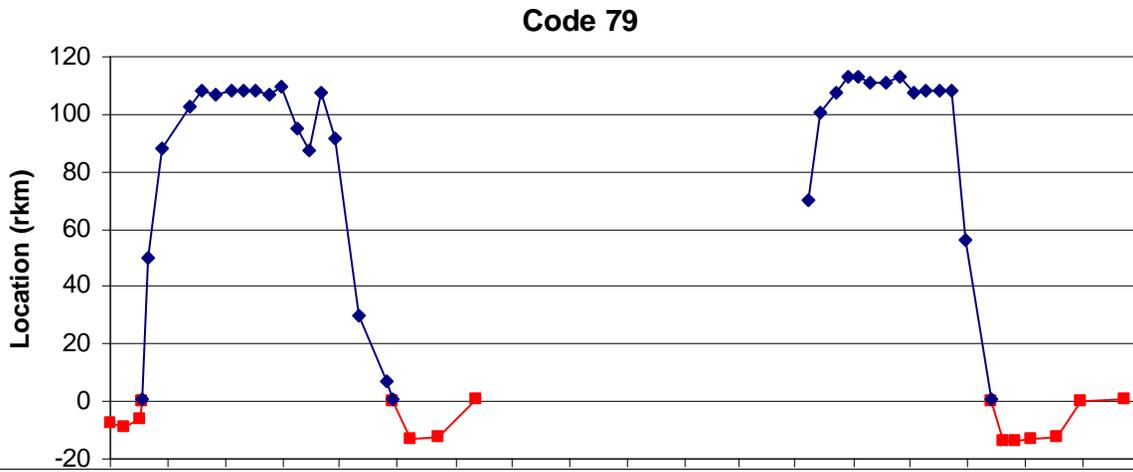
Larval Drift



Objectives

- 1) **Determine movements of gravid female pallid sturgeon**
- 2) **Identify pallid sturgeon spawning reaches and specific sites when possible**
- 3) **Determine if pallid sturgeon will spawn with a transmitter**
- 4) **Determine spawning periodicity of pallid sturgeon**
- 5) **Attempt to collect eggs and larvae from pallid sturgeon in the wild**
- 6) **Assist the pallid sturgeon propagation program**

Methods – Part 1: Implant two gravid pallid sturgeon



Two gravid females previously used in the propagation program (2004)

With two years of non-spawning migration data

Use similar reaches of Yellowstone River

Tags working well

But...

Telemetry Cont.

Code 114 had not moved since the fall, 2006 – assumed to have died. Code 79's transmitter was very difficult to detect.

Implant another gravid female – Code 155

Total Telemetered Fish

2 Gravid Females

2 Non-gravid females

11 Males

Attempt to relocate at least once/day.

Recapture later to verify spawning via gonadal biopsy and blood work.



Methods – Part 2: Larval Fish Collections

**Larval sample in lower reaches of the river
- paired D-nets fished on the bottom**

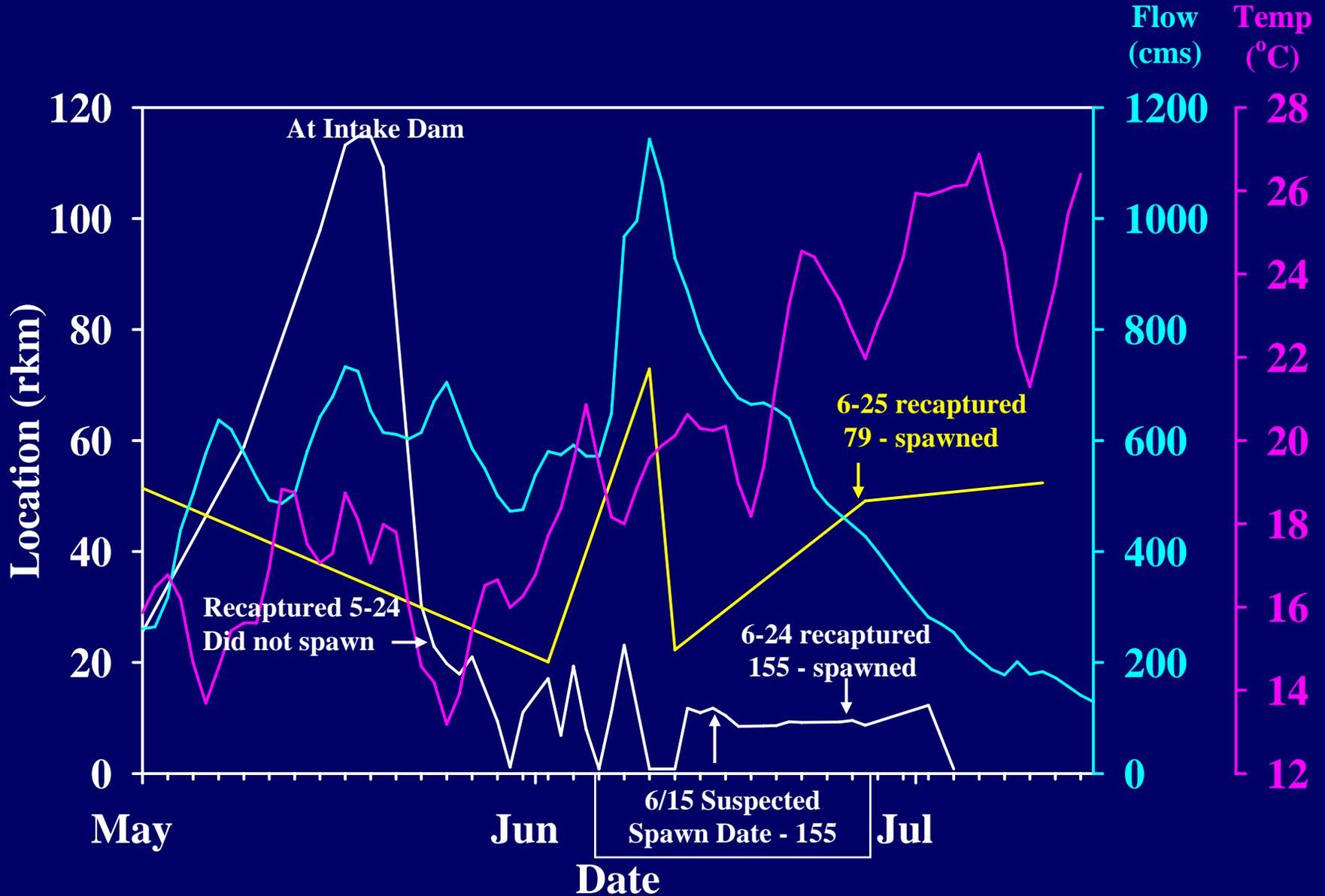


Larvae picked on-site

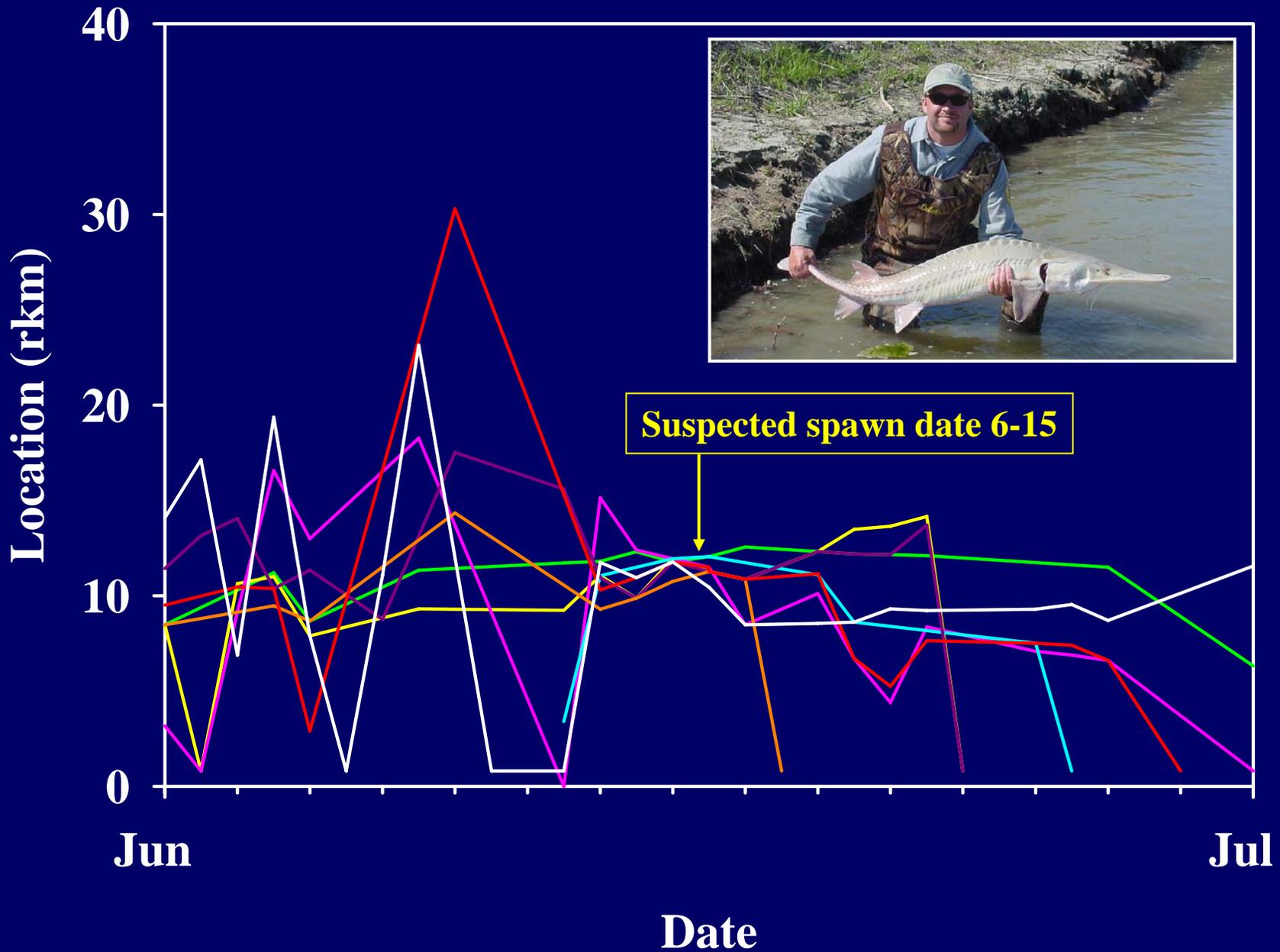


**Larvae preserved in alcohol and identified
in the lab**

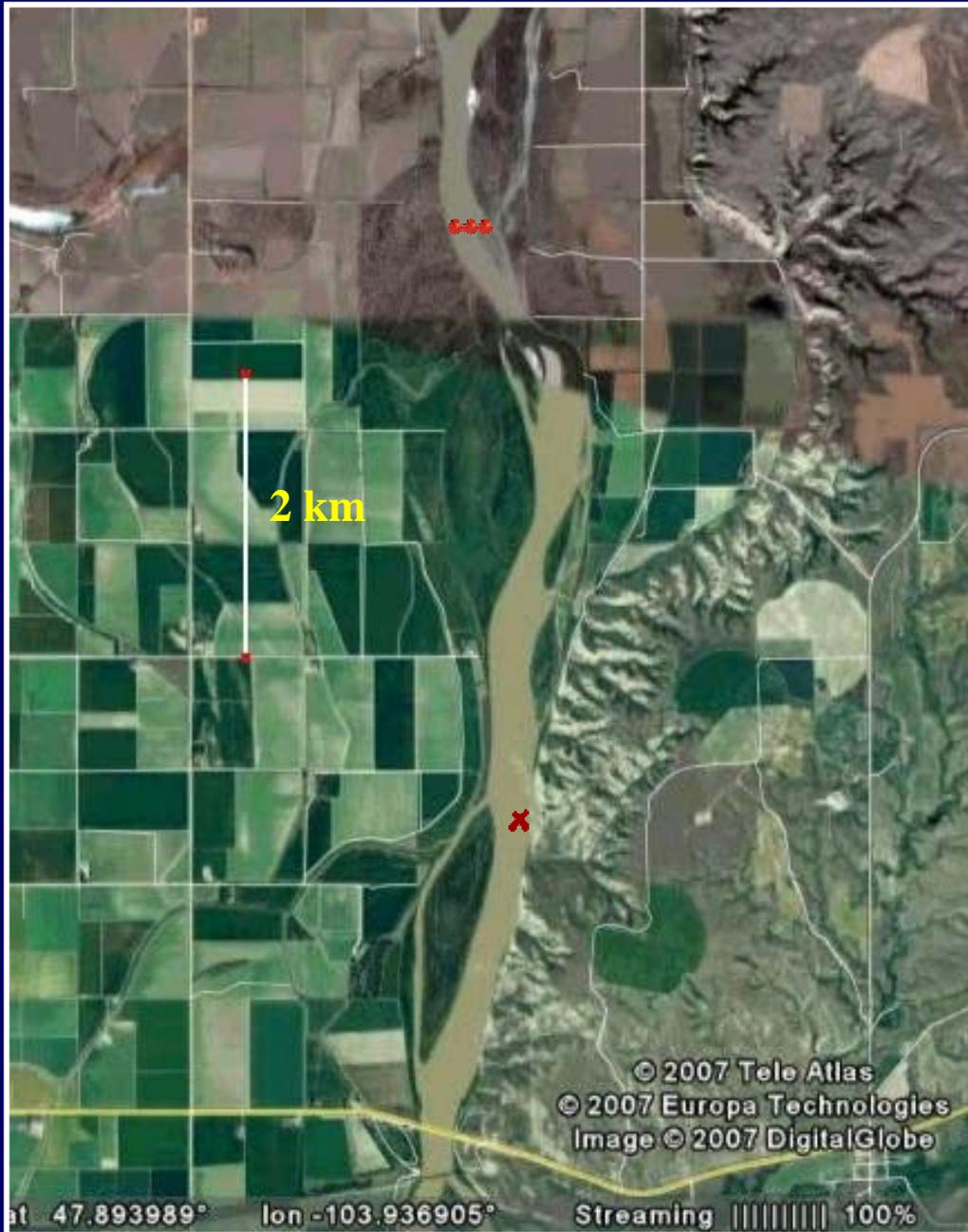
Chronology of Code 79 and Code 155



Movements of the Aggregation



Suspected spawn date 6-15



Based on:

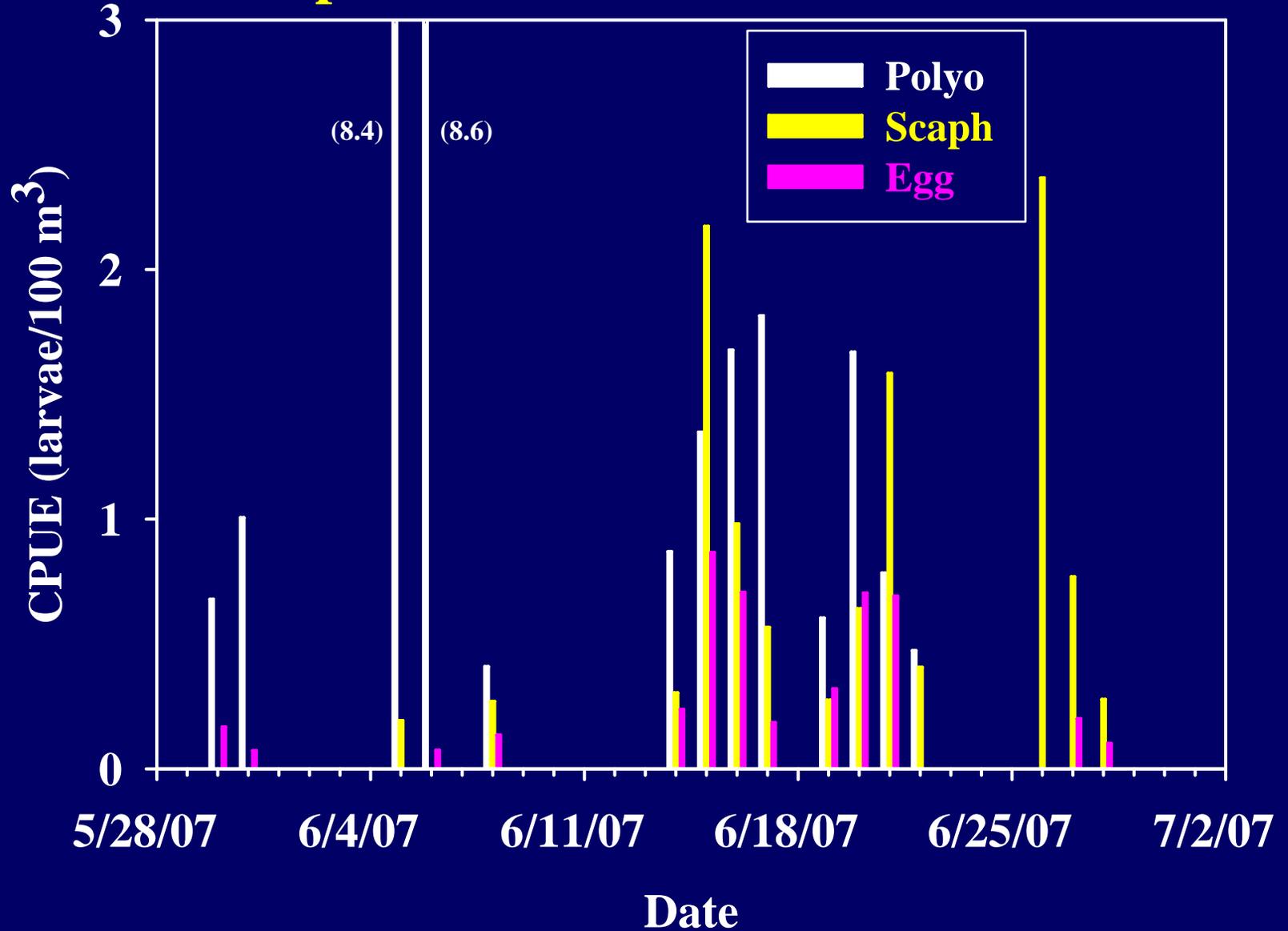
- 1) Change in movement pattern*
- 2) 155 was part of an aggregation of males*



Steroid Analysis of Code 79 and Code 155

Code 79		Code 155	
4-5-07	6-25-07	4-18-07	6-24-07
W = 18 kg	W = 14 kg (22 % loss)	W = 16 kg	W = 14 kg (12.5 % loss)
KT = 5.78	KT = ND	KT = 5.22	KT = ND
T = 44.19	T = ND	T = 49.69	T = ND
E2 = 13.81	E2 = ND	E2 = 2.62	E2 = ND

Acipenserform Larvae CPUE



Polyo. – 458 Eggs – 56 Scaph. – 107 Unk. – 9

Summary

- **Pallid sturgeon do spawn in the Yellowstone River near Fairview & somewhere above**
- **Upstream migration apex is not necessarily the spawn location**
- **Rapid, long-distance downstream dispersal after spawning is not characteristic of female pallids in the Yellowstone River**
- **It appears pallid sturgeon spawn on the descending limb of the hydrograph**
- **Pallid sturgeon will spawn with transmitters implanted in them
Codes 155 and 79 in the wild, code 31 at GPNFH**
- **Spawning periodicity of female pallid sturgeon is 2+ years based on three telemetered fish and several PIT tagged fish**

Summary cont.

Assist the pallid sturgeon propagation program

- Lead us to good fishing holes
- 3 telemetered males and 1 telemetered female went to hatcheries in 2007.



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