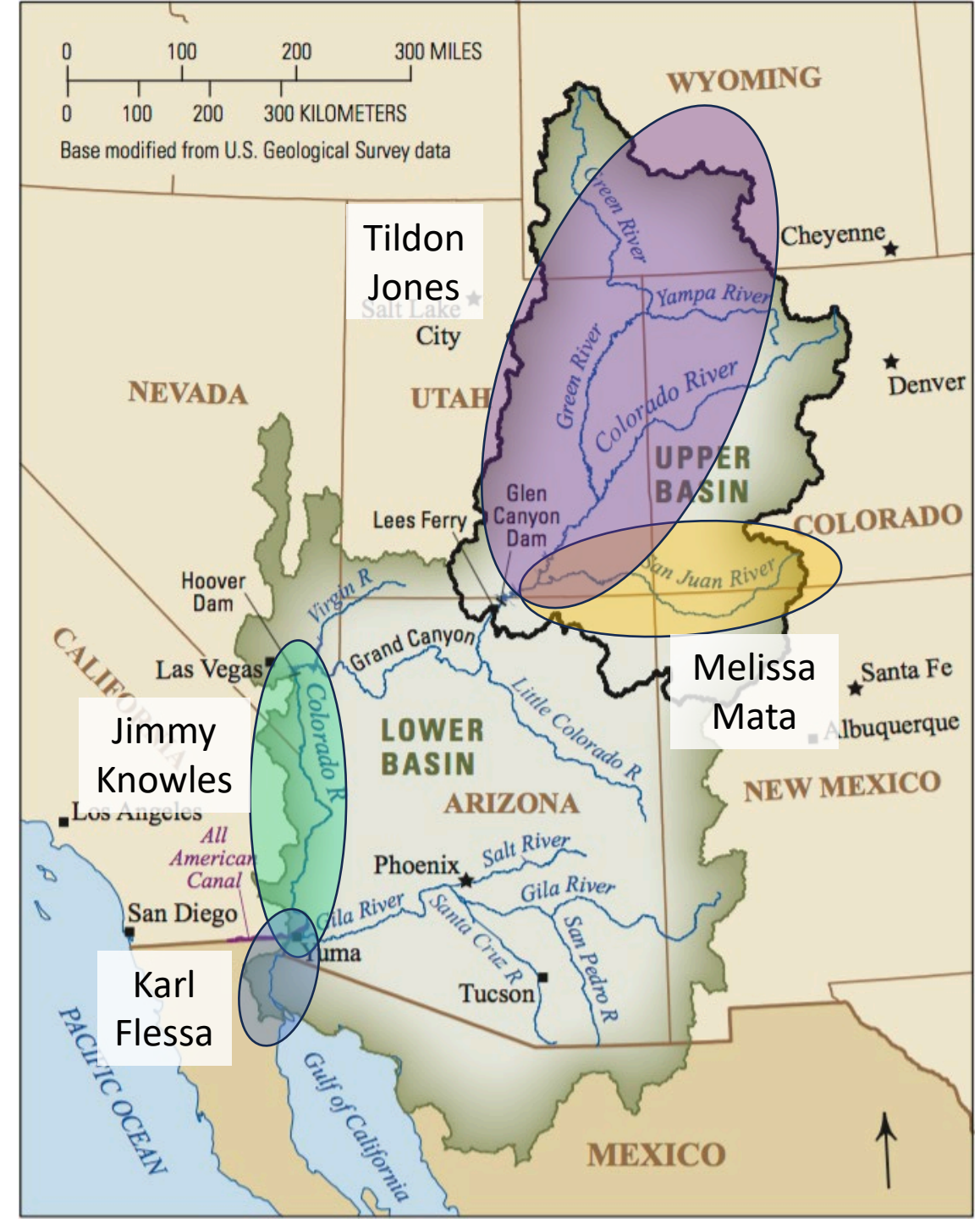


# NCER 2024 Session 11

Restoration Programs in the  
Colorado River Basin

April 16, 2024

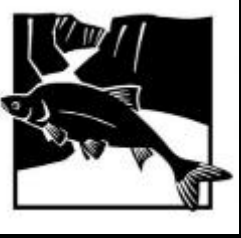




## Bridging the gap: adaptive management returns wild Razorback Sucker to the upper Colorado River basin

M. Tildon Jones, Kevin R. Bestgen, David W. Speas, Matthew J. Breen,  
Christian T. Smith, Robert C. Schelly, and Michael S. Partlow





# Acknowledgements

- Koreen Zelasko
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- David Beers, USFWS Vernal





Colorado pikeminnow  
*Ptychocheilus lucius*



Humpback chub  
*Gila cypha*



Razorback sucker  
*Xyrauchen texanus*



Bonytail  
*Gila elegans*



# Threats



Water Use & Depletions



Nonnative Fish

Photo: M. Breen, UDWR

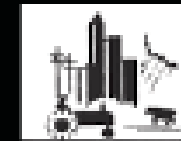


Barriers & Entrainment



Large Dams & Reservoirs





UTAH WATER USERS ASSOCIATION



COLORADO  
WATER CONGRESS  
INFORM | CONVENE | TRAIN | ACT

## Recovery Program Partners



Western Area  
Power Administration



Managing  
Flows



Habitat  
Development



Research  
and  
Monitoring



Outreach



Stocking



Nonnative  
Fish  
Control







Razorback Sucker



# Razorback Sucker recent history



- 1999—estimated ~100 wild adults in the Green River
- 1998-1999—collected broodstock
- 2008—stocking goals met
- 2013—estimated thousands of hatchery reared adults



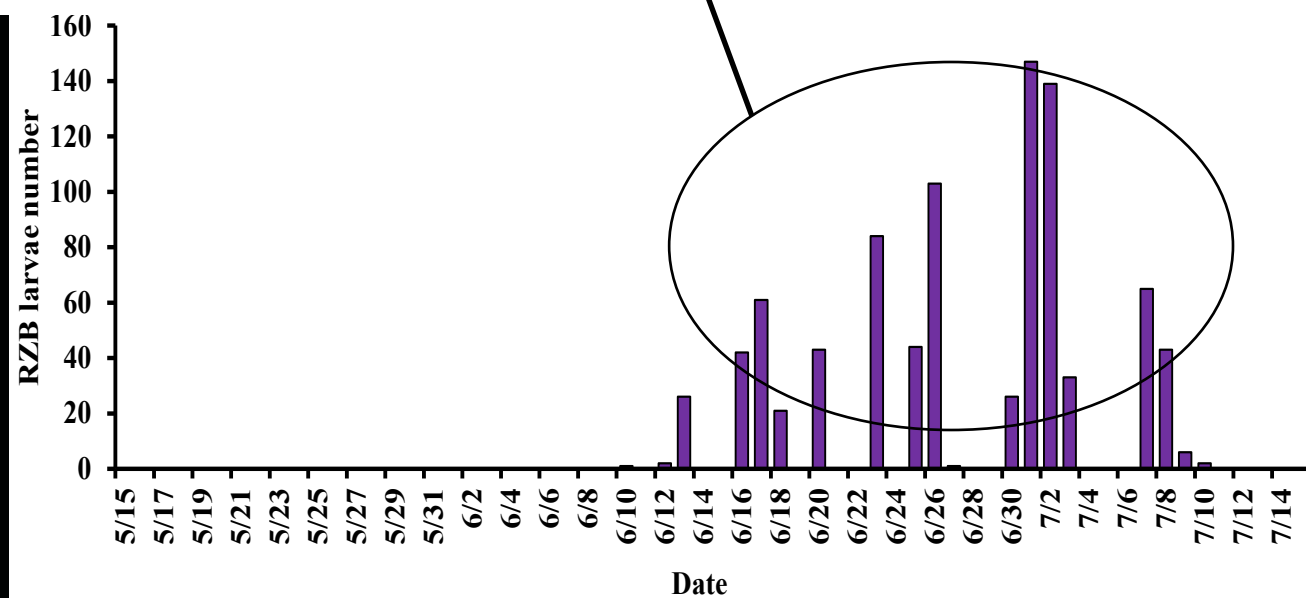
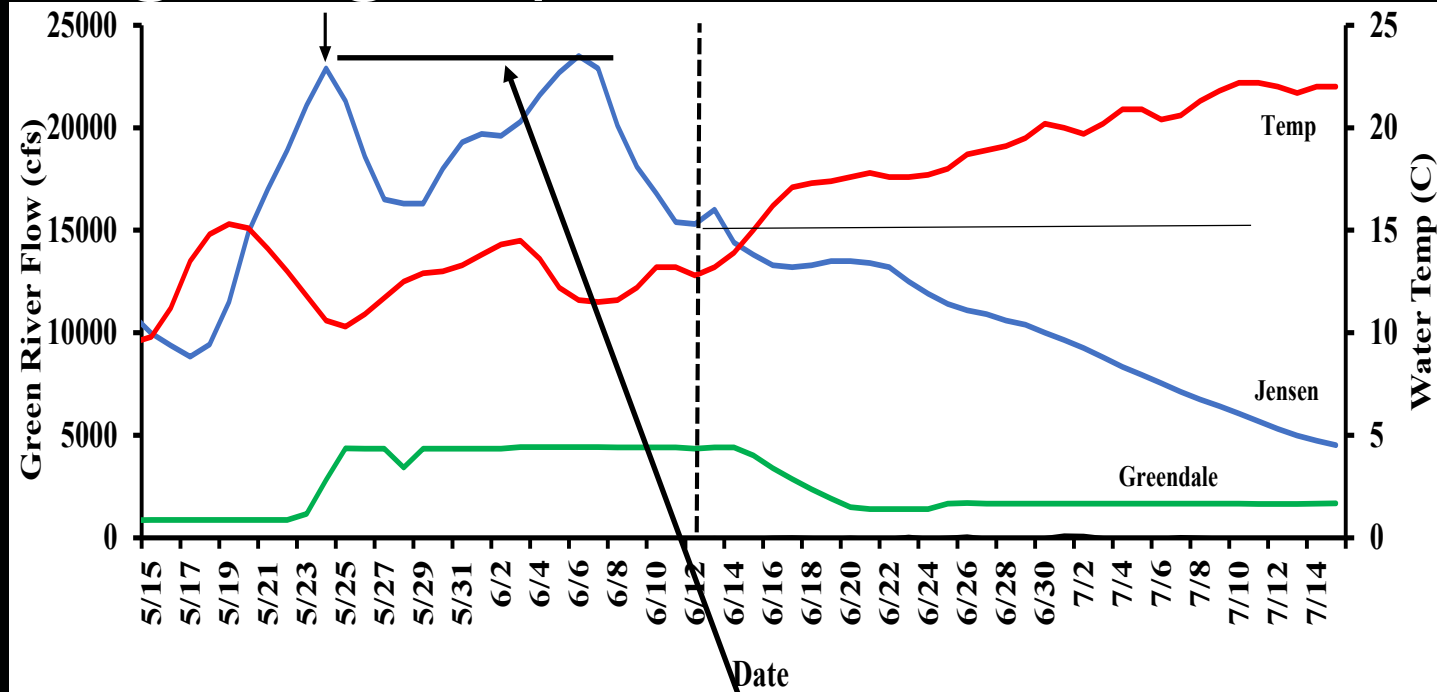
# Flaming Gorge Dam Operations

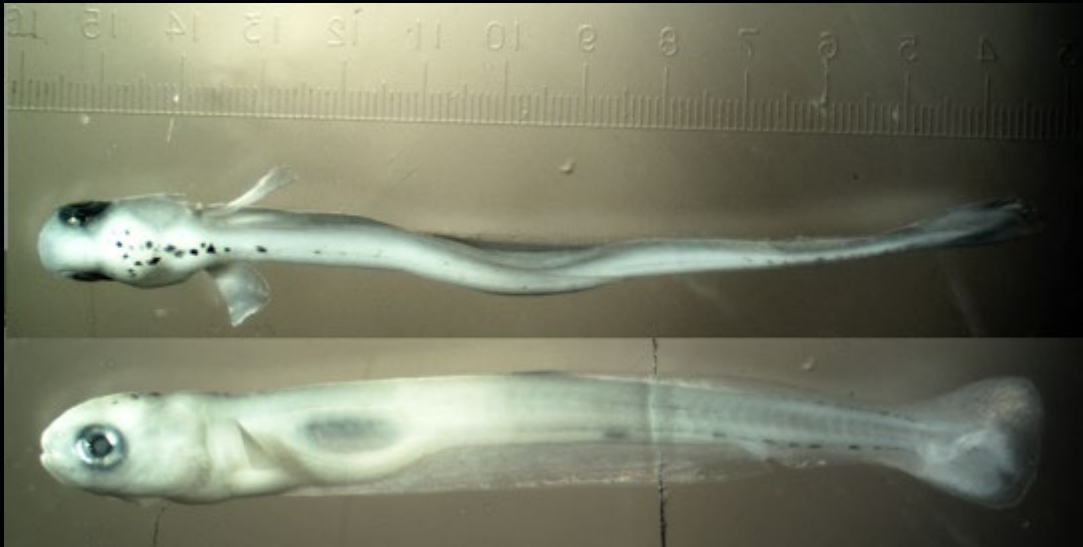


- 2000 Flow and Temperature Recommendations
- 2006 Record of Decision
- Spring peak targets to connect river to floodplains
- Revised flow recommendation in 2019

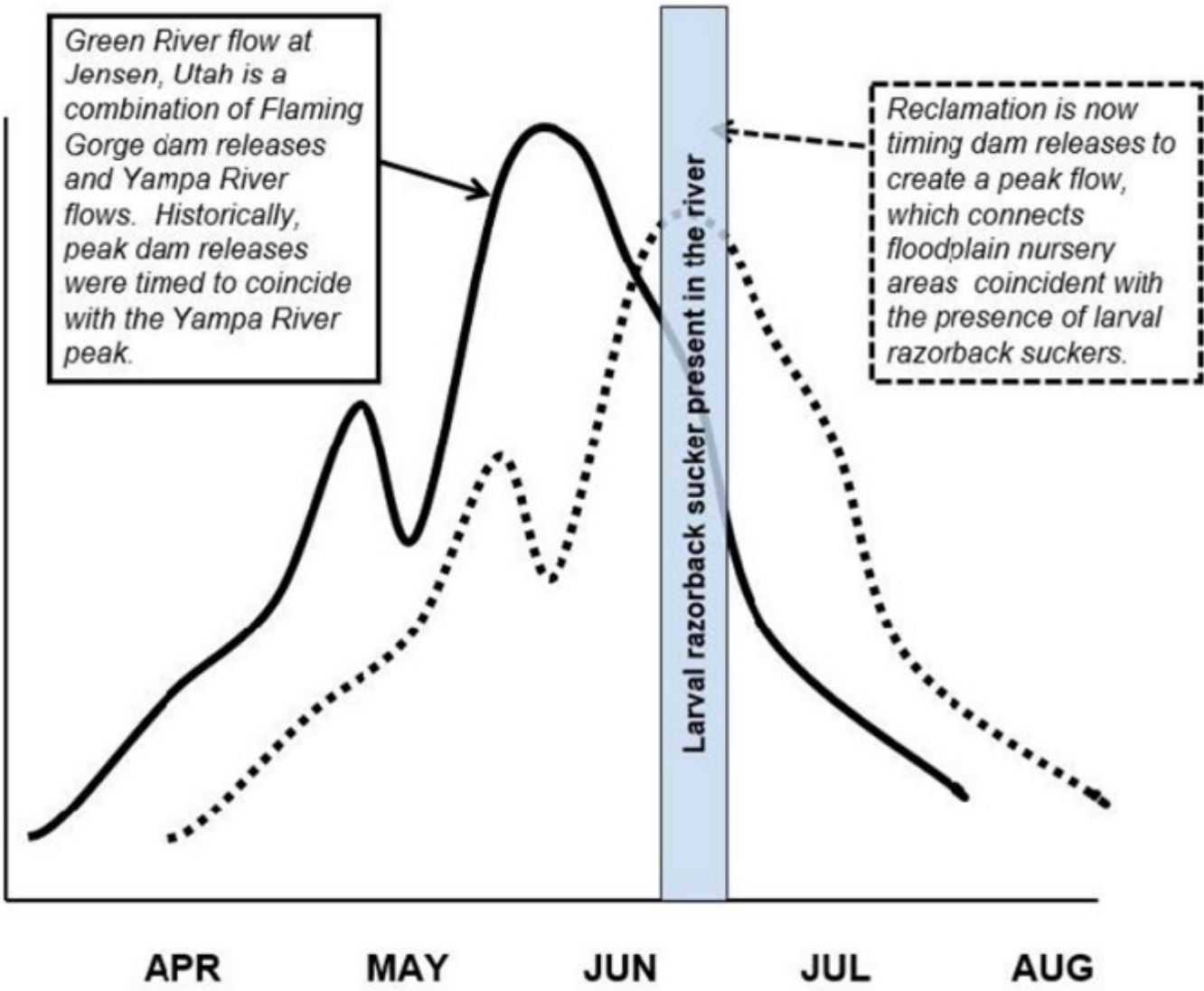


# Flaming Gorge Operations—before



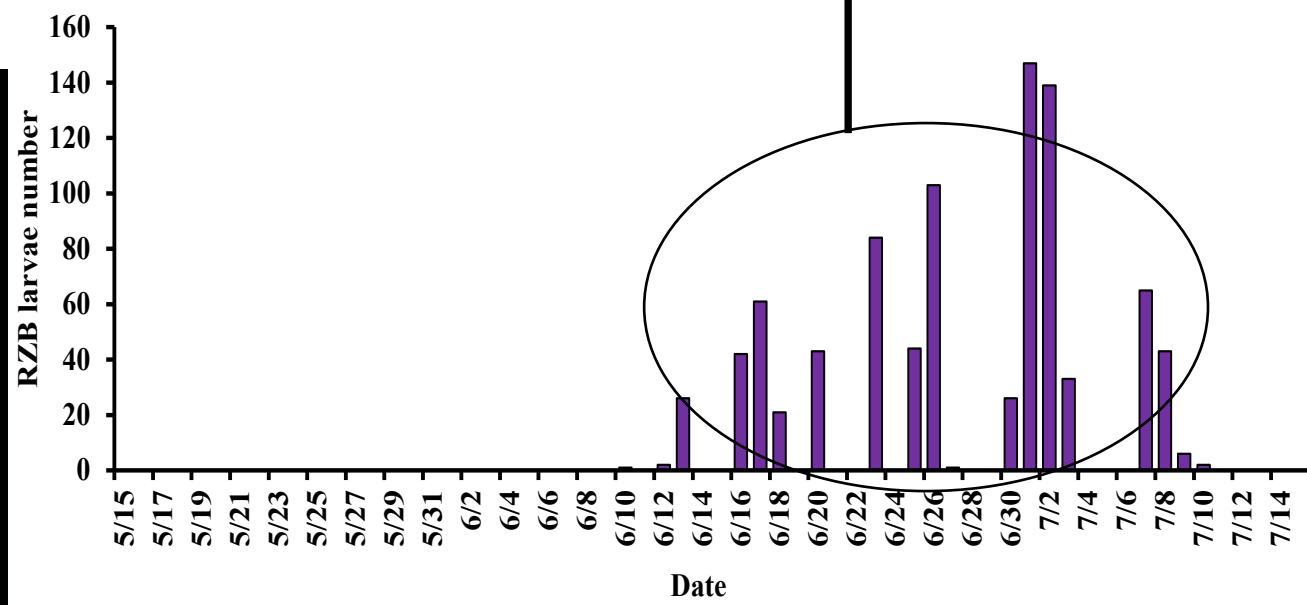
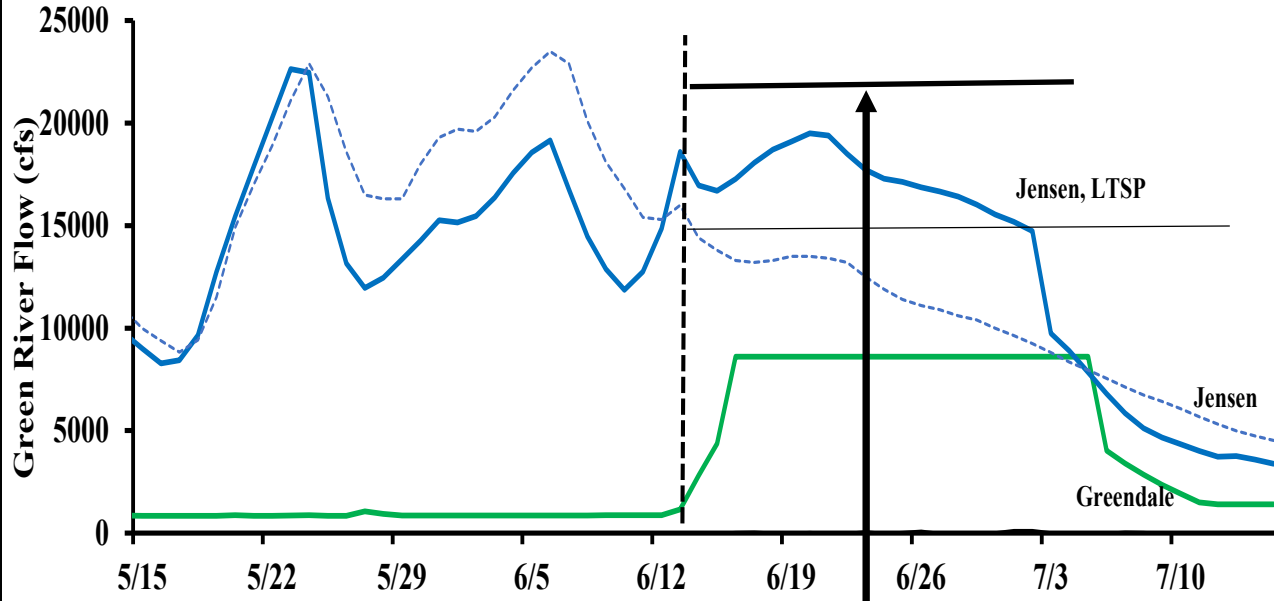


Flows measured @ Jensen, UT

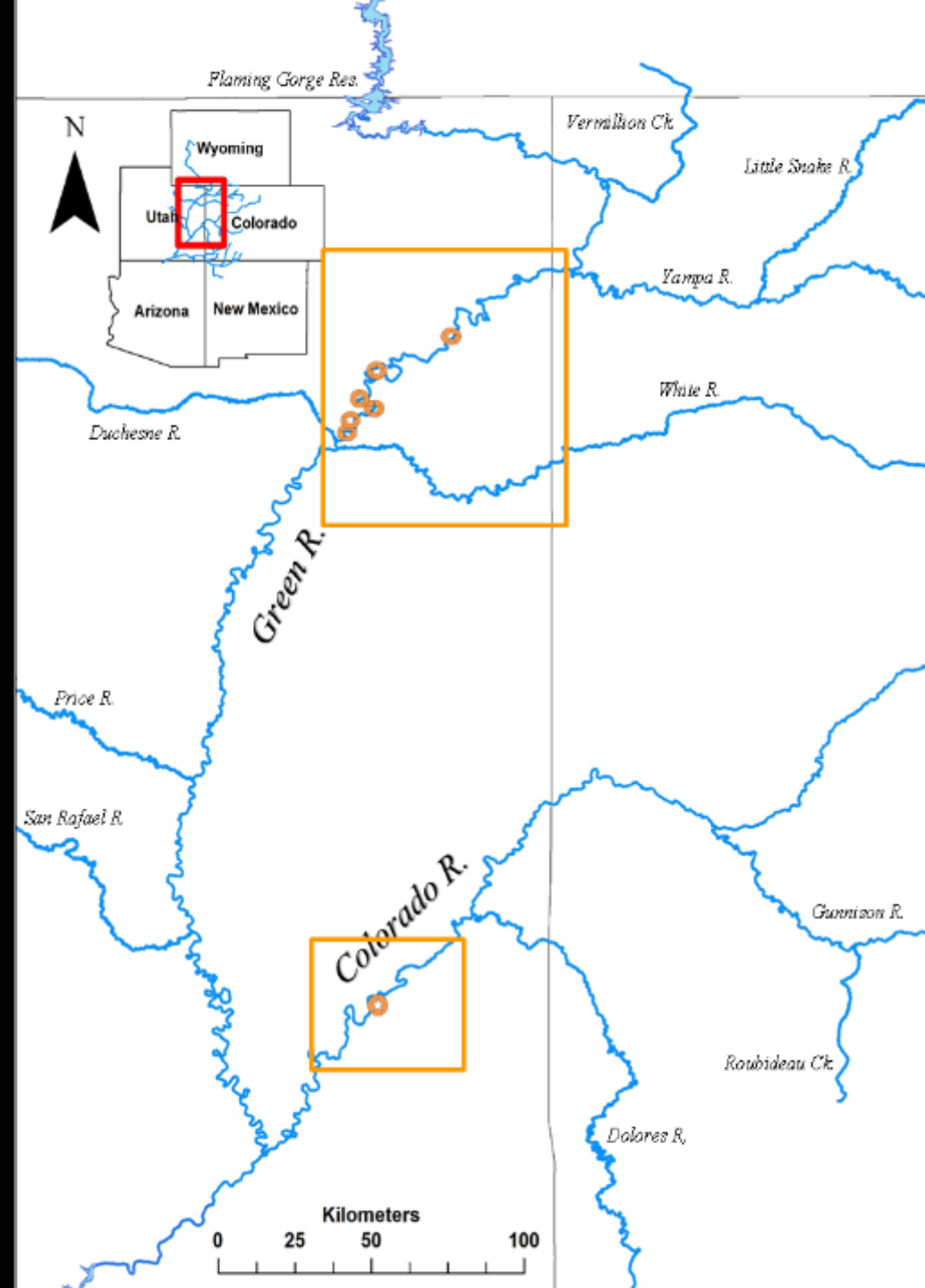


- The Larval Trigger Concept





Stewart Lake  
Stirrup  
Johnson Bottom  
Leota Bottom  
Sheppard Bottom  
Old Charley Wash  
Matheson Wetland Preserve





# Managed wetlands

- Screens to prevent nonnative fish colonization
- Gates to control timing and rate of inflow from river
- Ideally, supplemental water source to maintain water quality through summer
- **Not all wetlands are managed**

Speas et al. 2017



# Razorback Sucker wild age-0 captures

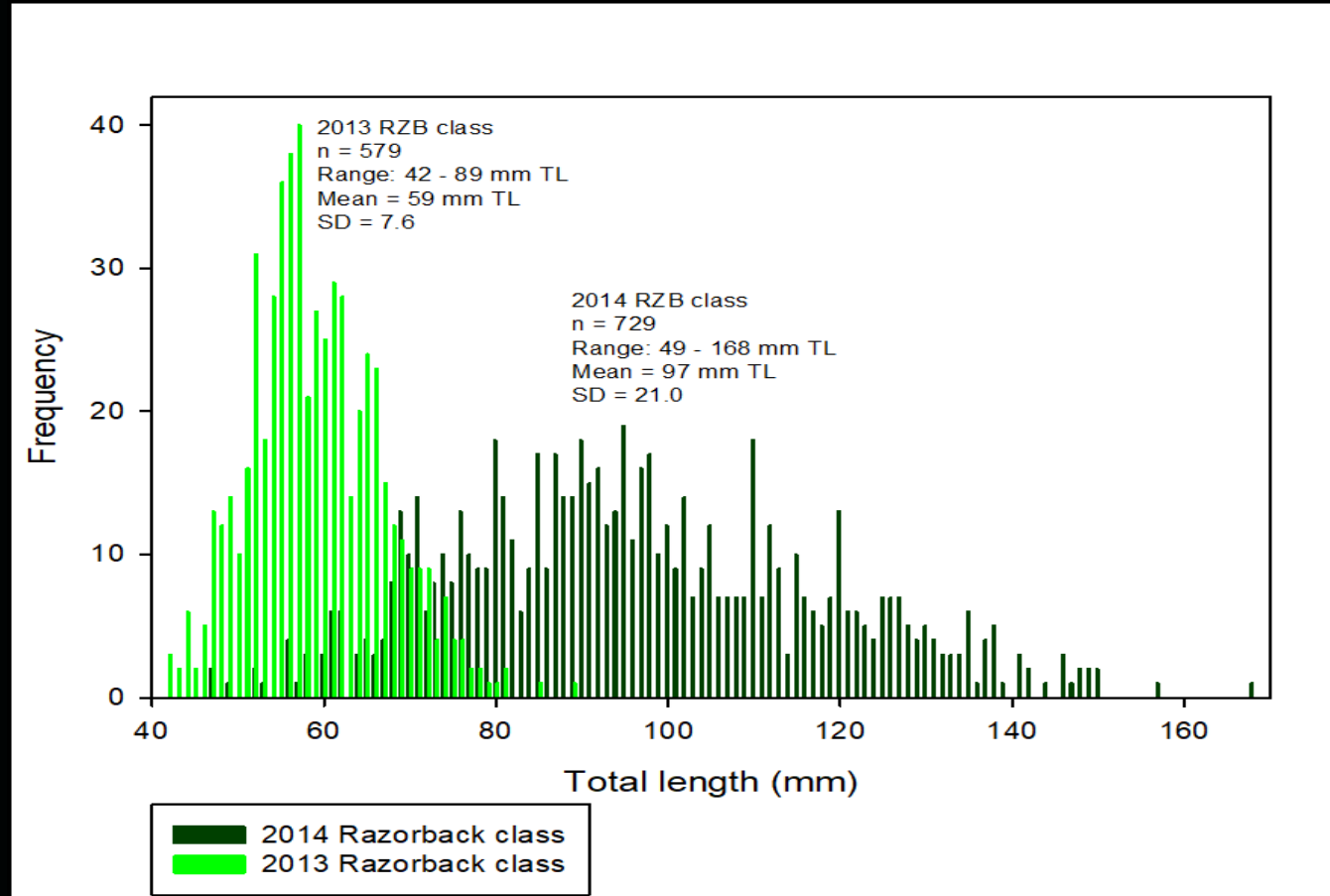
Wetland	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	total
Stewart		613	749	87	2110	2	10	417	32	xxx	3294	<b>7314</b>
Johnson				115			xxx	10	176	xxx	117	<b>418</b>
Sheppard						13	xxx	21		xxx	xxx	<b>34</b>
Old Charley							xxx	188	9	xxx	615	<b>812</b>
Matheson										4		<b>4</b>
Stirrup	*	*	*	*	*	*	xxx	16	*	xxx	551	<b>567</b>
Leota ("semi-managed")			35				xxx	10		xxx	xxx	<b>45</b>
	<b>0</b>	<b>613</b>	<b>784</b>	<b>202</b>	<b>2110</b>	<b>15</b>	<b>10</b>	<b>662</b>	<b>217</b>	<b>4</b>	<b>4577</b>	<b>9190</b>

xxx = no water or connection



# Influence of growing season

- Time in wetland
- 2013 = 54 days
- 2014 = 92 days



2022

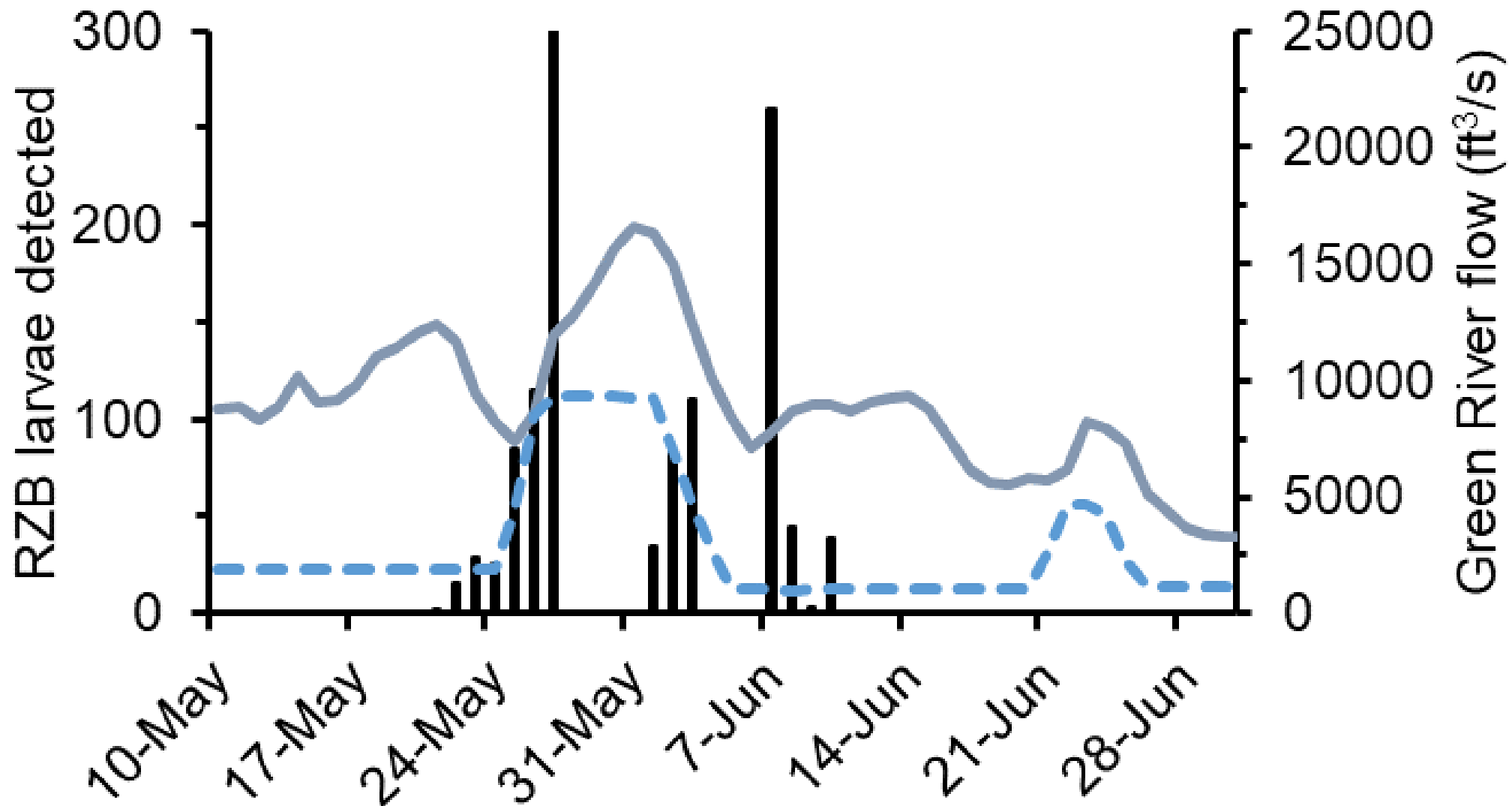
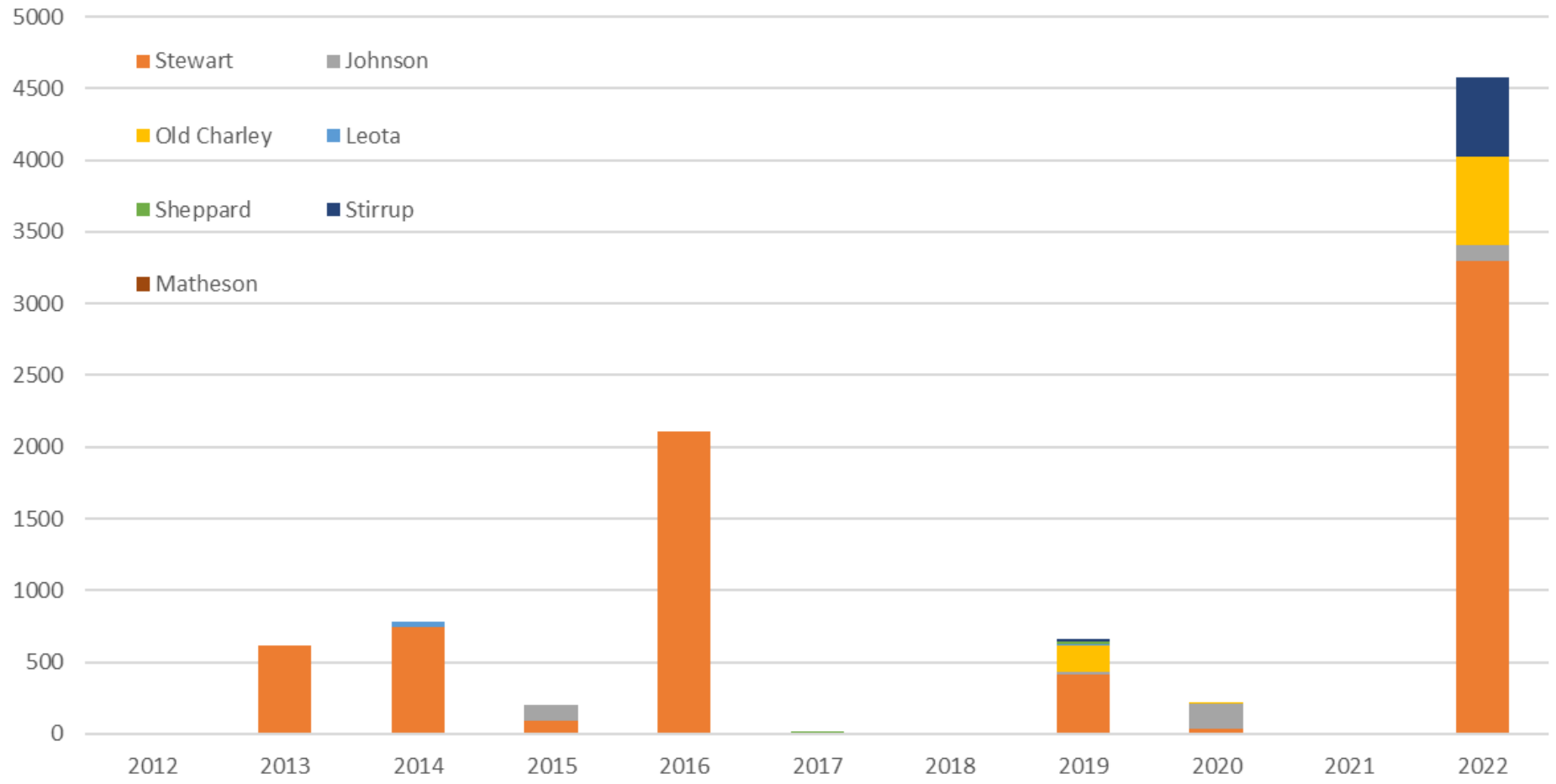


Figure: K.R. Bestgen and C.T. Smith 2023





# Important factors

- Nonnative fish
  - Screening & “reset” in 2021
- Timing
- Burn and vegetation mgmt.

Photo: M. Partlow, UDWR



# Recruitment Data

- 3 individuals detected at age-6+ (2020-2022)
  - Detections at spawning bar and nearby
- Previous encounters
  - Captures and detections near Stewart Lake connection to Green River
- 67 fish re-encountered from 2022 year class



# Challenges/next steps

- Vegetation and sedimentation in wetlands
  - Dry for a year and/or burn
- Nonnative fishes
- Water supplies to maintain water quality
- Clearly more juveniles/recruits needed on a recurring basis
  - Recovery Goals recommend 5,800 adults
  - Estimated survival 0.8 (Zelasko et al. 2022)
  - $5,800 \times 0.2 = 1,160$  fish recruiting to adult size annually to maintain population







[coloradoriverrecovery.org](http://coloradoriverrecovery.org)

[tildon\\_jones@fws.gov](mailto:tildon_jones@fws.gov)