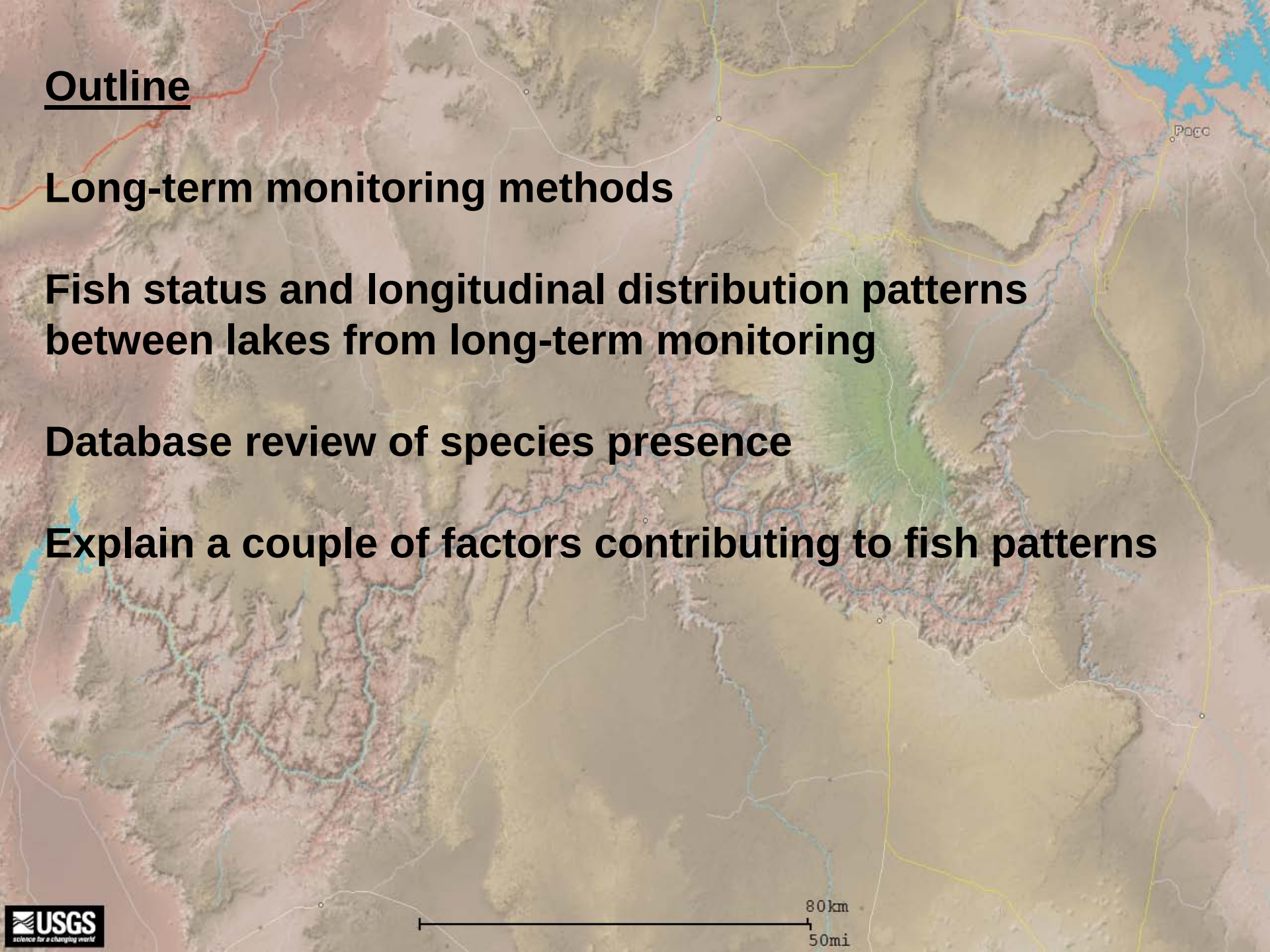
The ‘Other Fish’ Category

TWG Annual
Reporting Meeting
1-22-2012

USGS
science for a changing world



Outline

Long-term monitoring methods

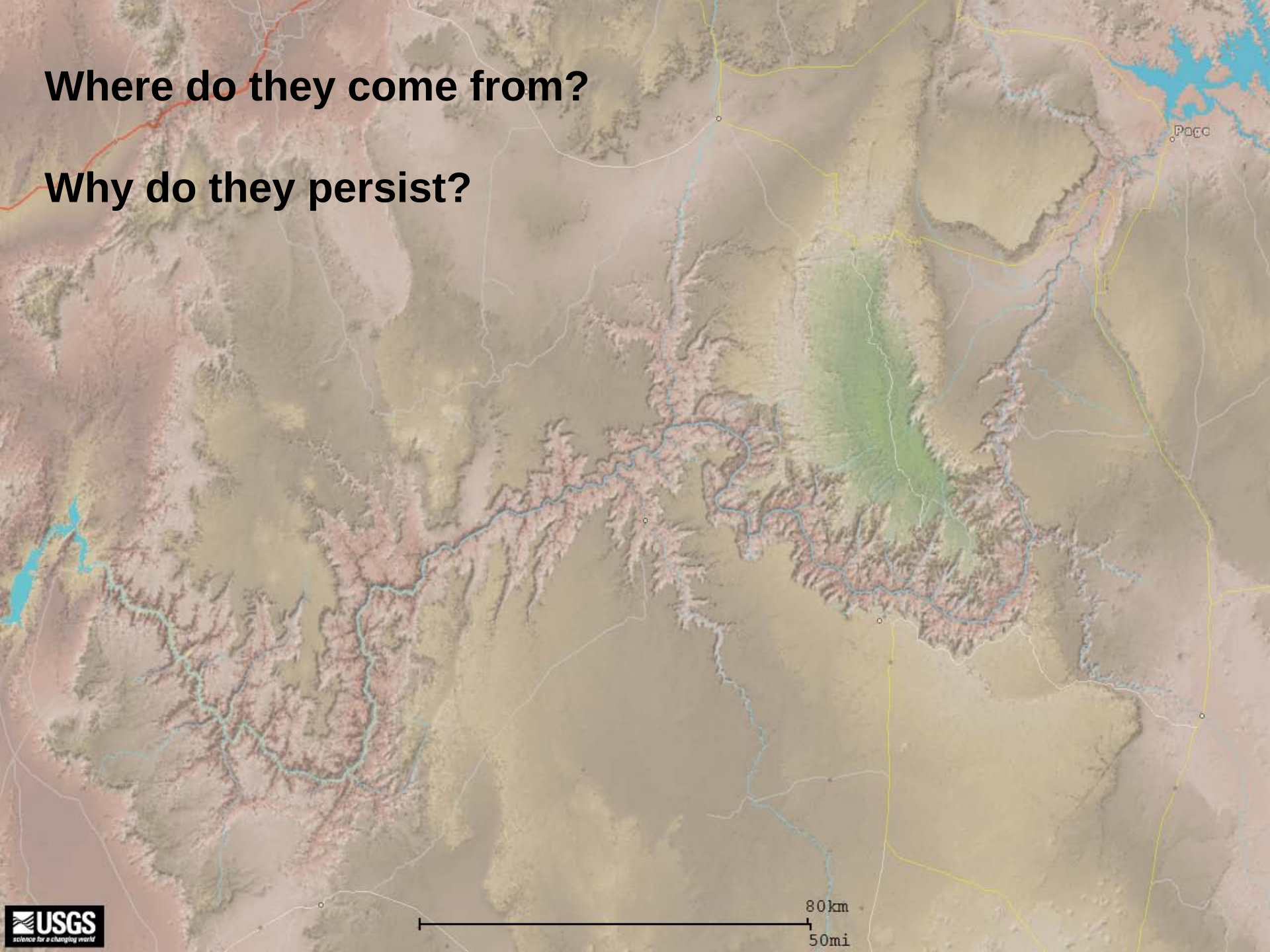
Fish status and longitudinal distribution patterns between lakes from long-term monitoring

Database review of species presence

Explain a couple of factors contributing to fish patterns

Where do they come from?

Why do they persist?

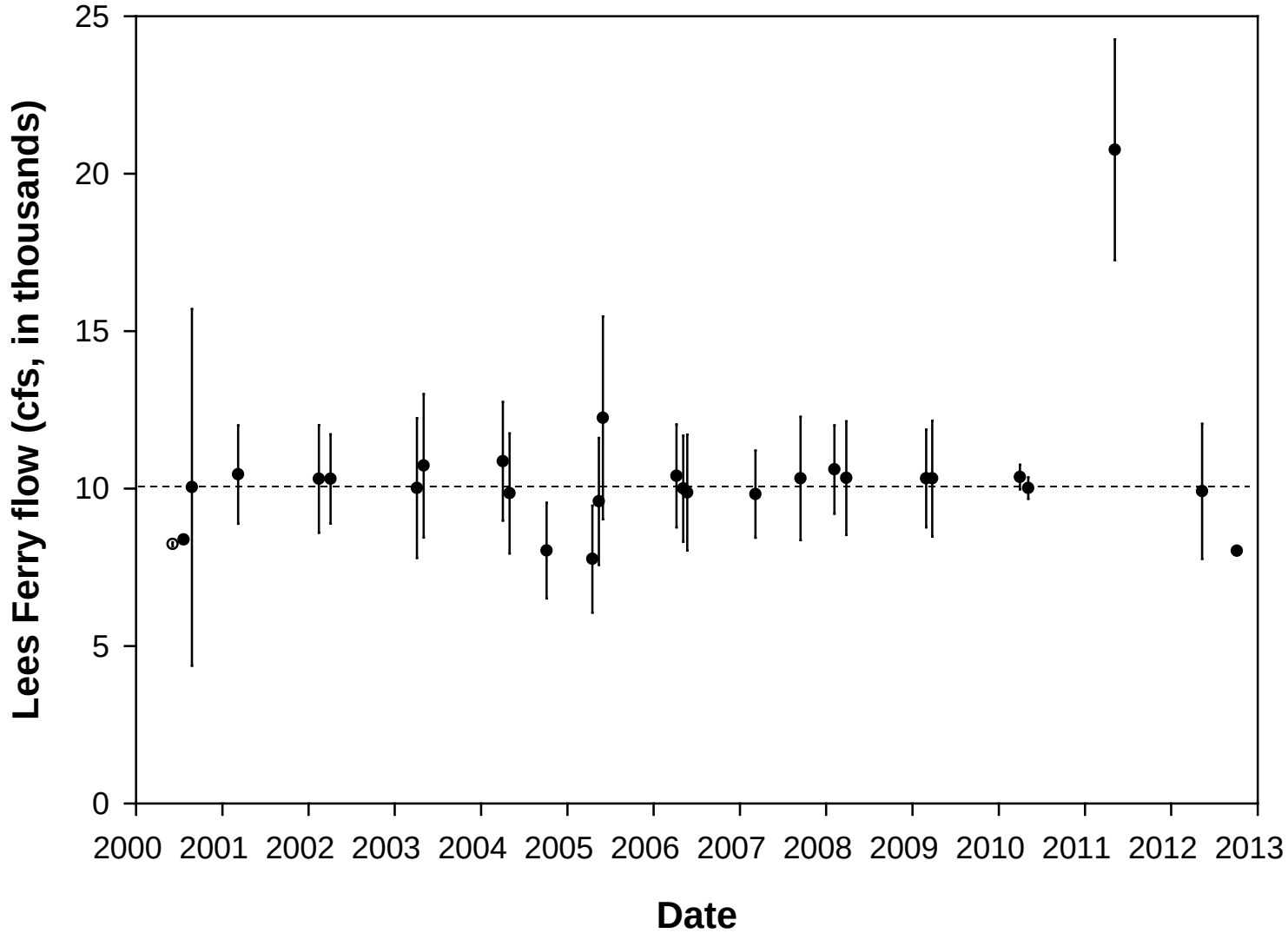


Page

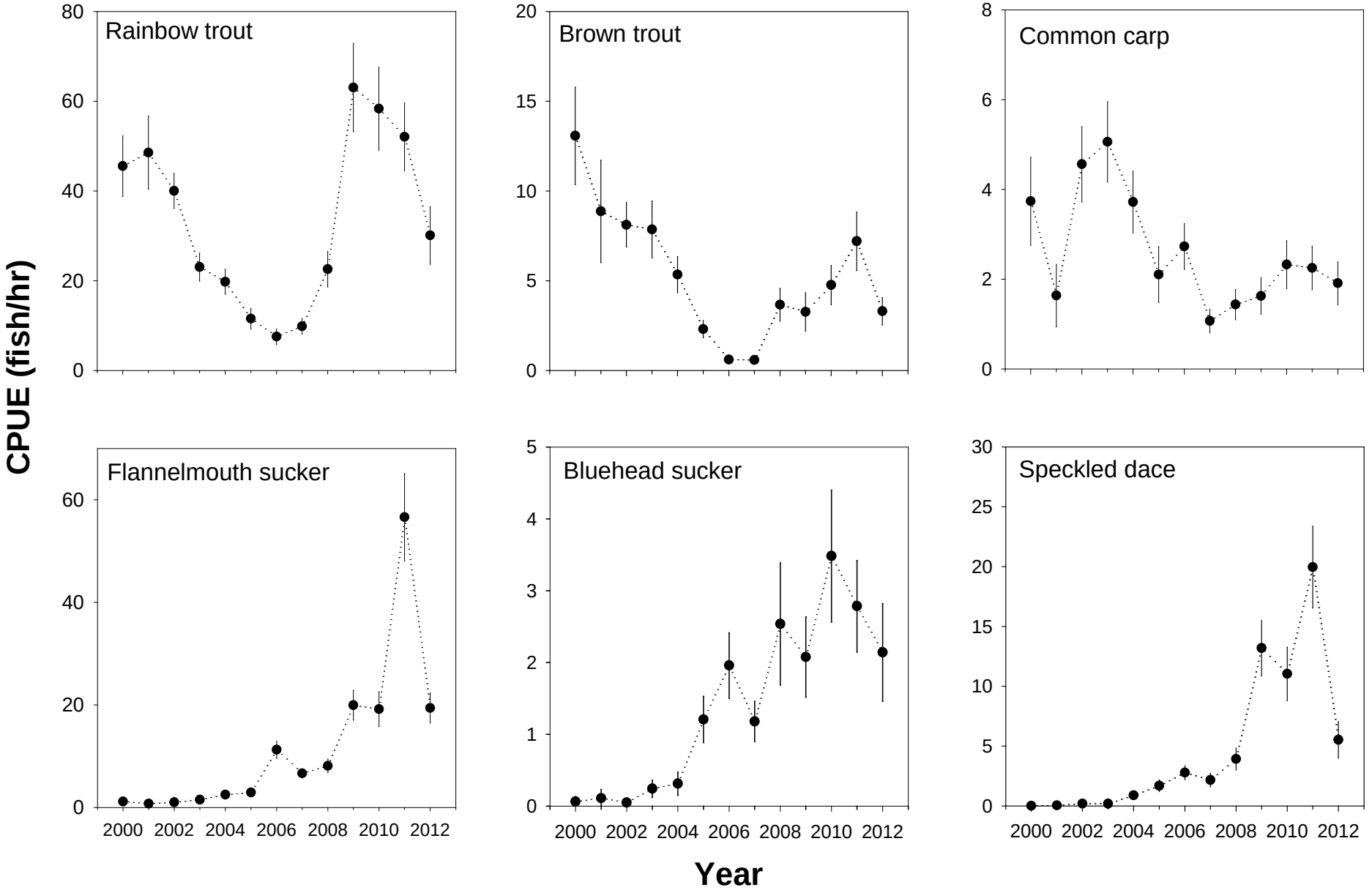
80km
50mi

USGS
science for a changing world

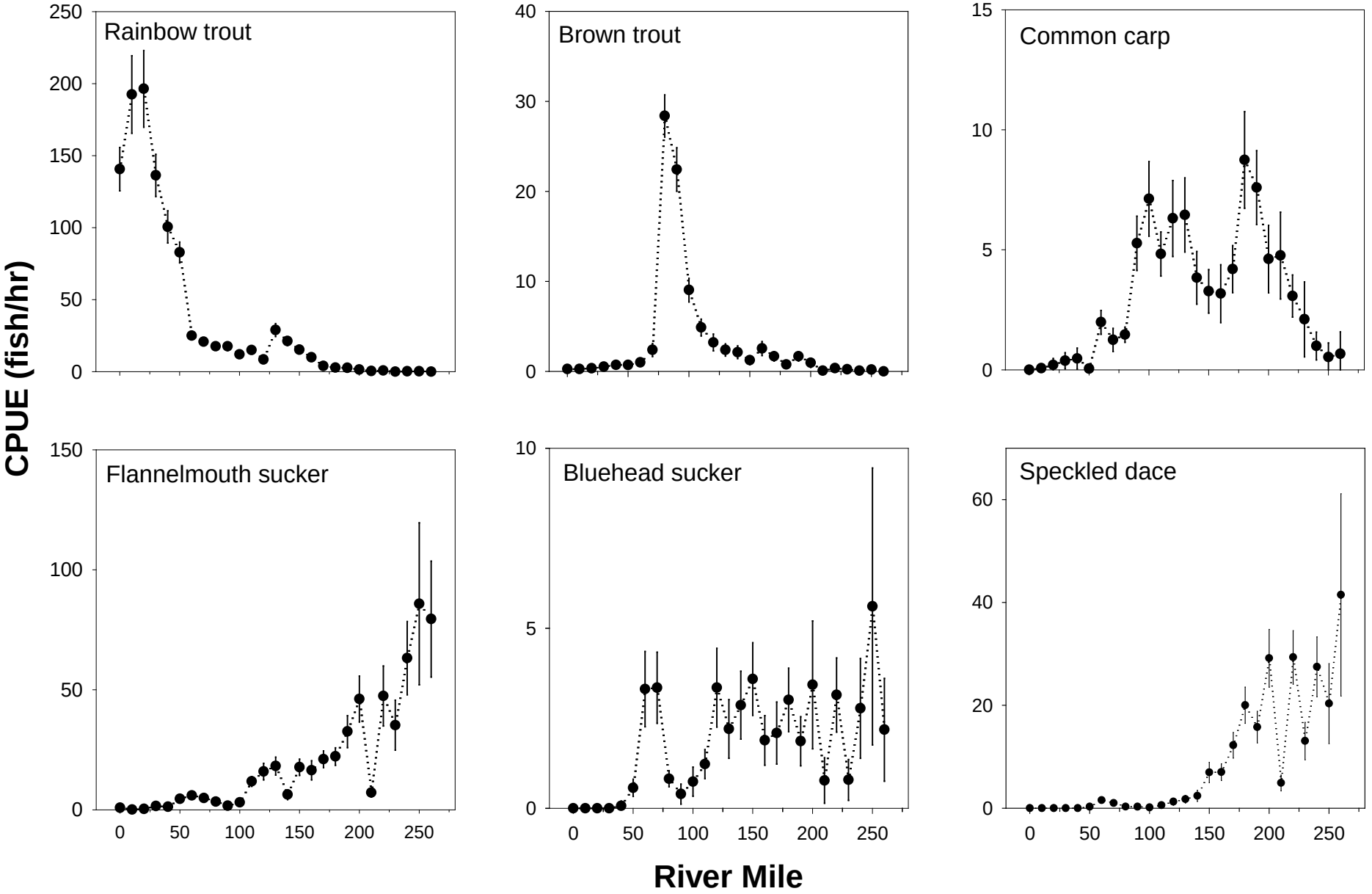
River flow


Lees Ferry flow (cfs, in thousands)
25
20
15
10
5
0
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
Date

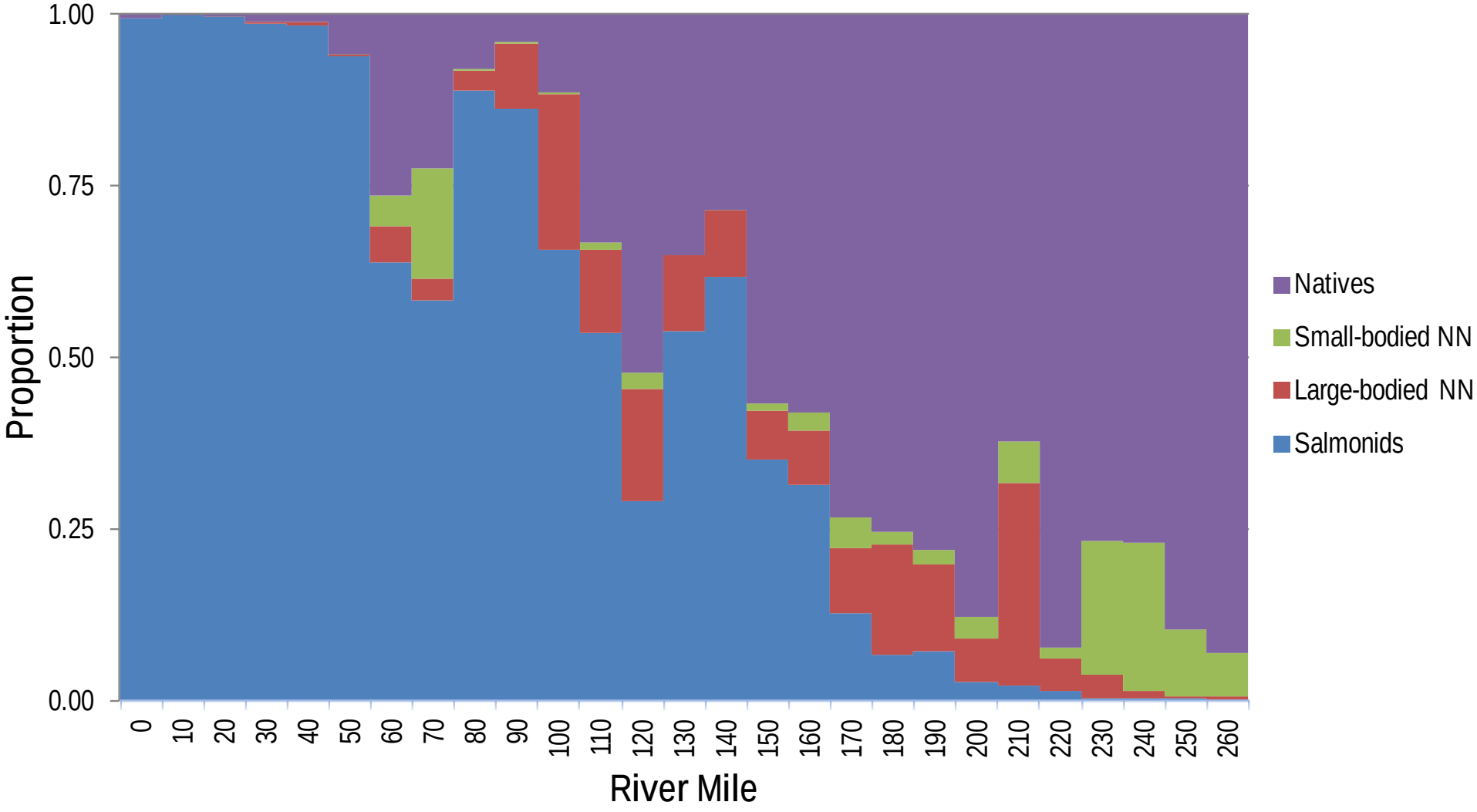
Temporal Trends



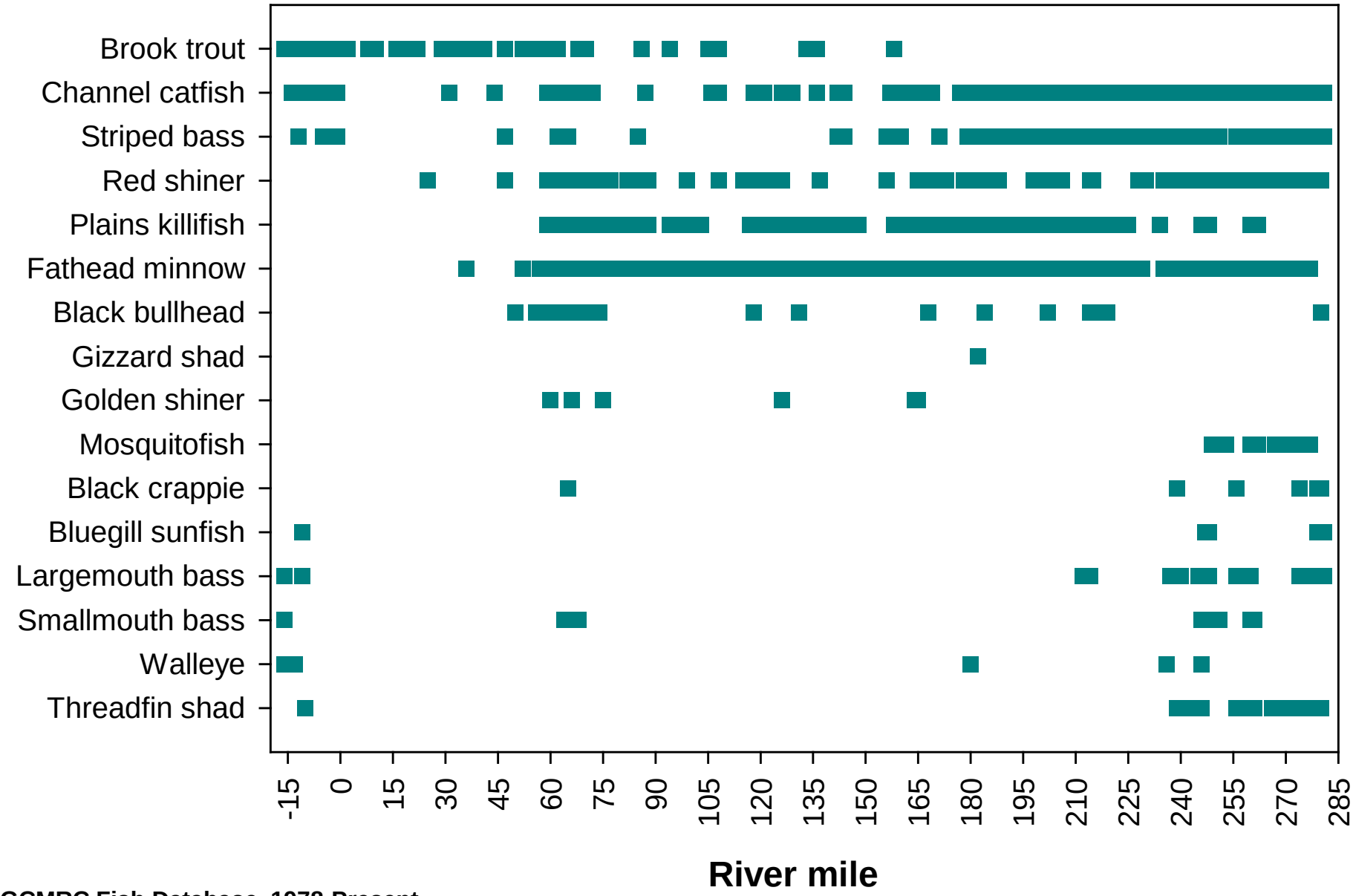
Spatial Trends



Catch composition

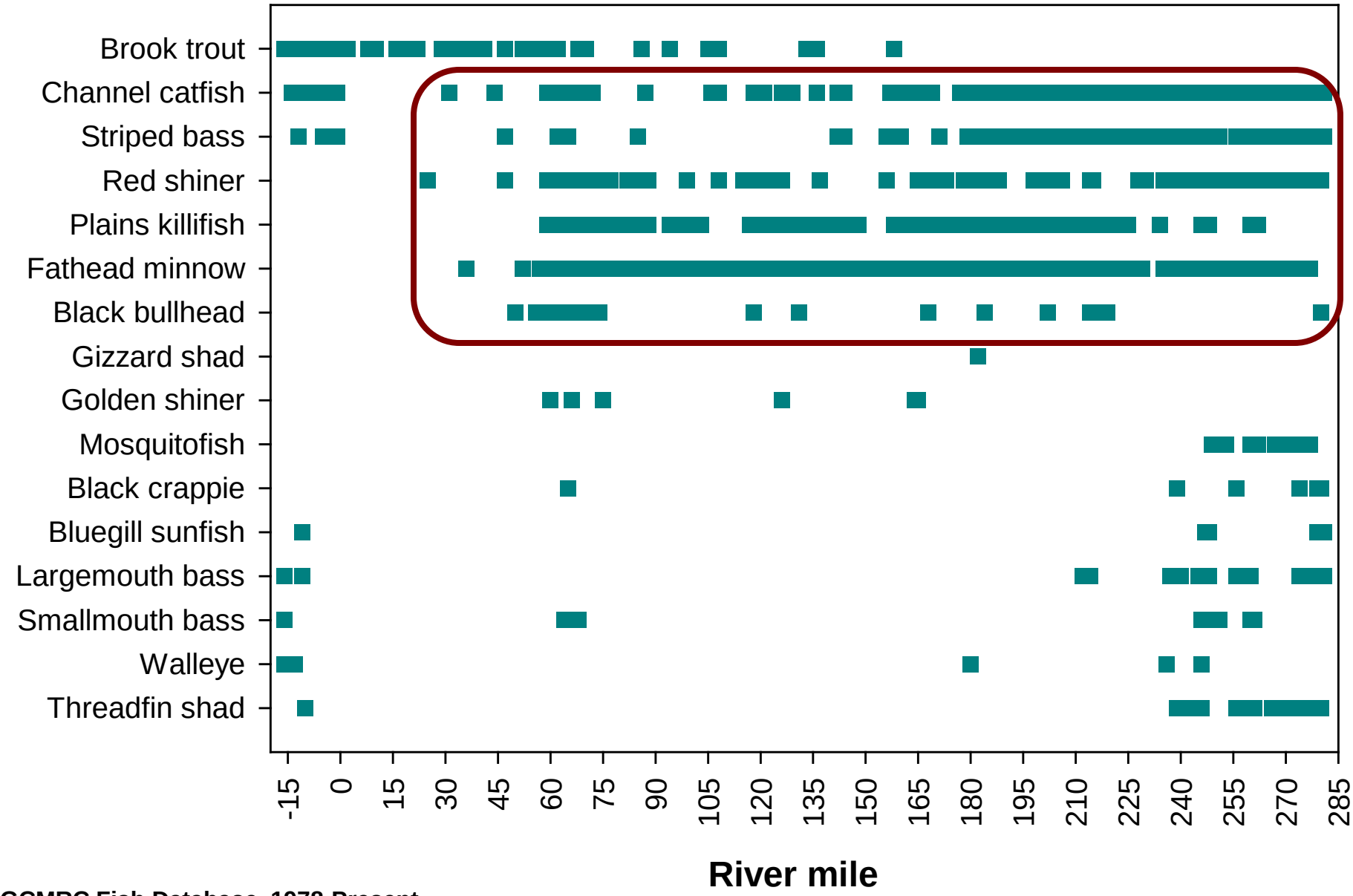


Species Presence



GCMRC Fish Database, 1978-Present

Species Presence



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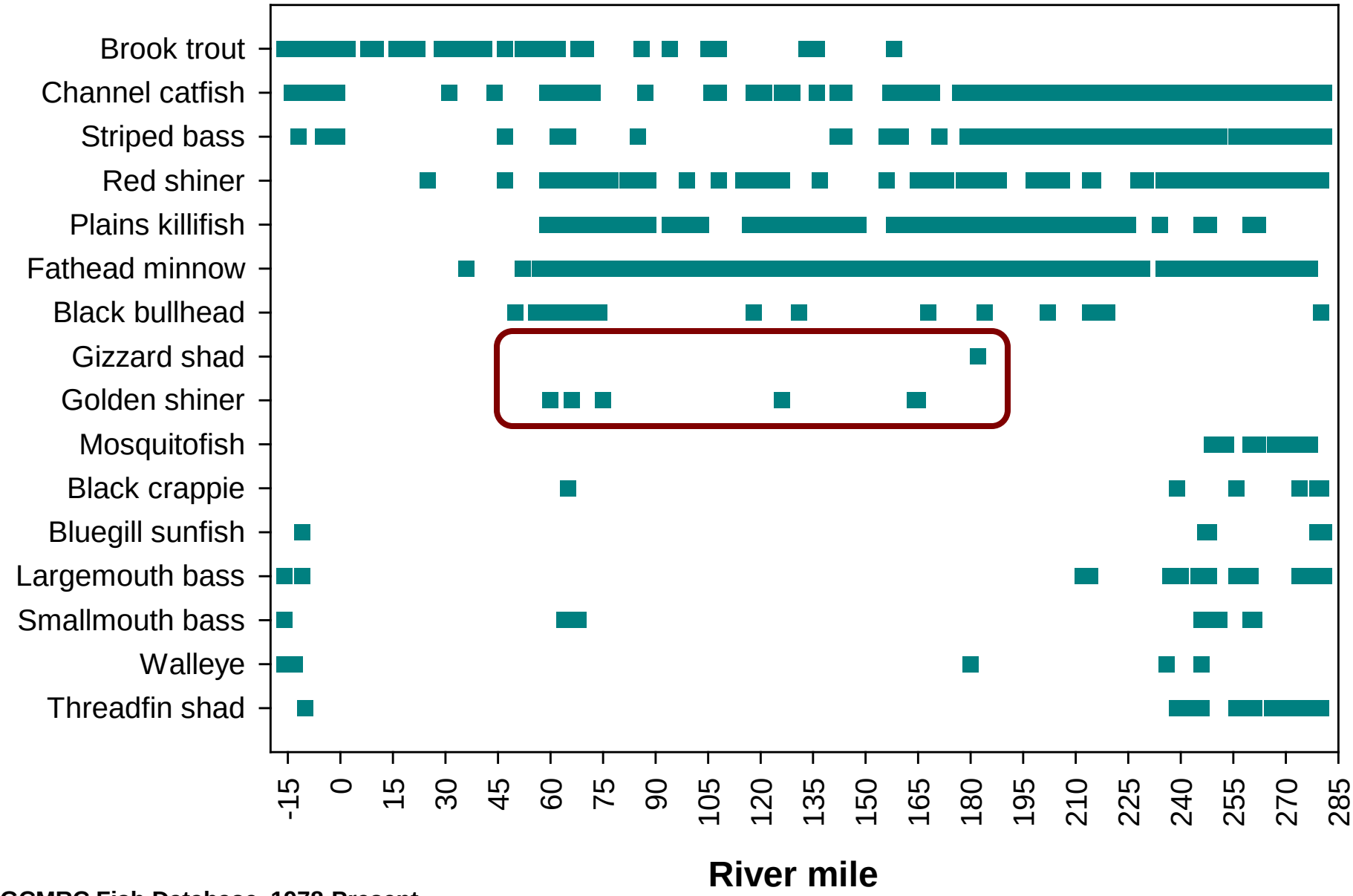
Species Presence



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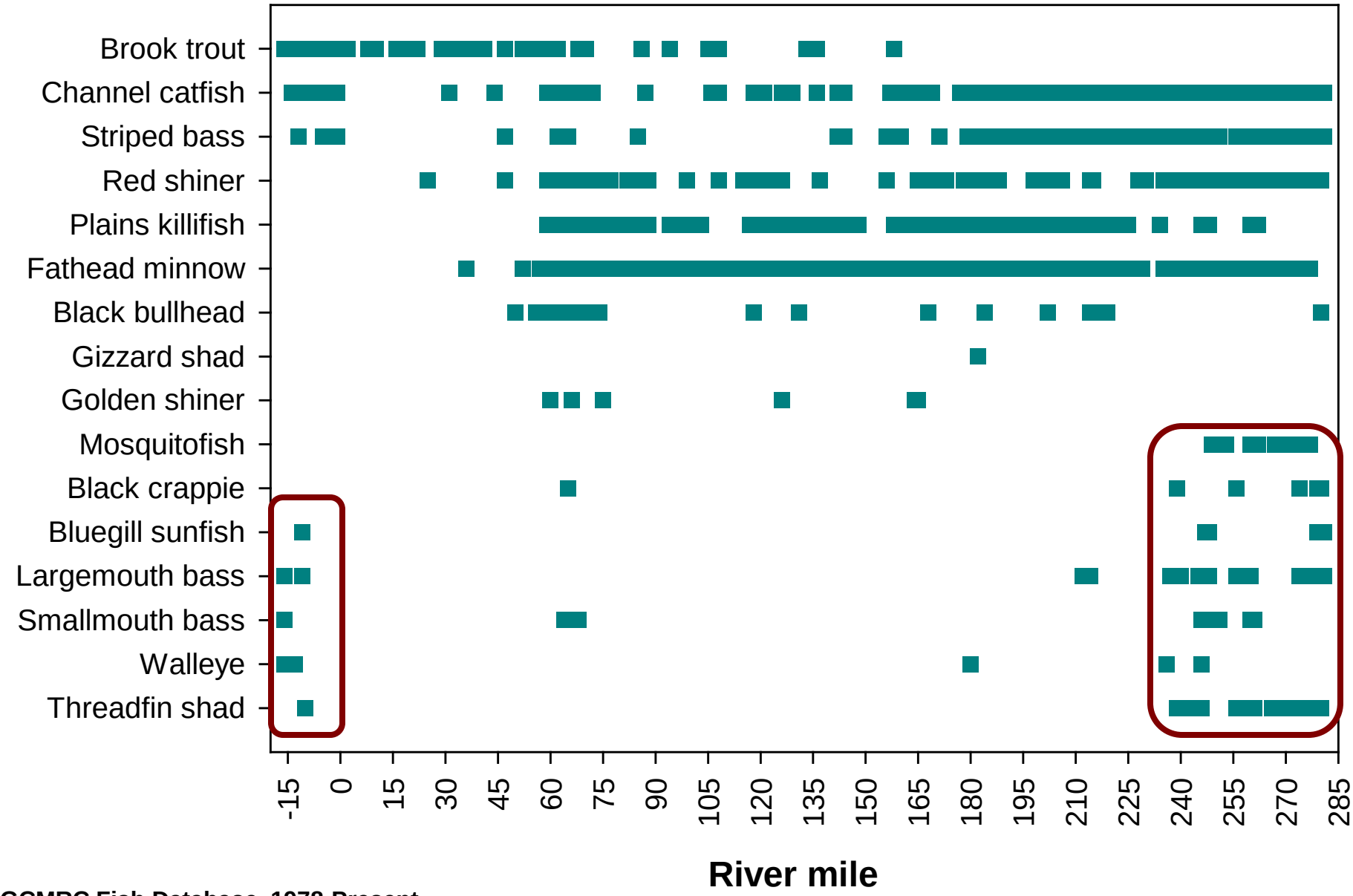
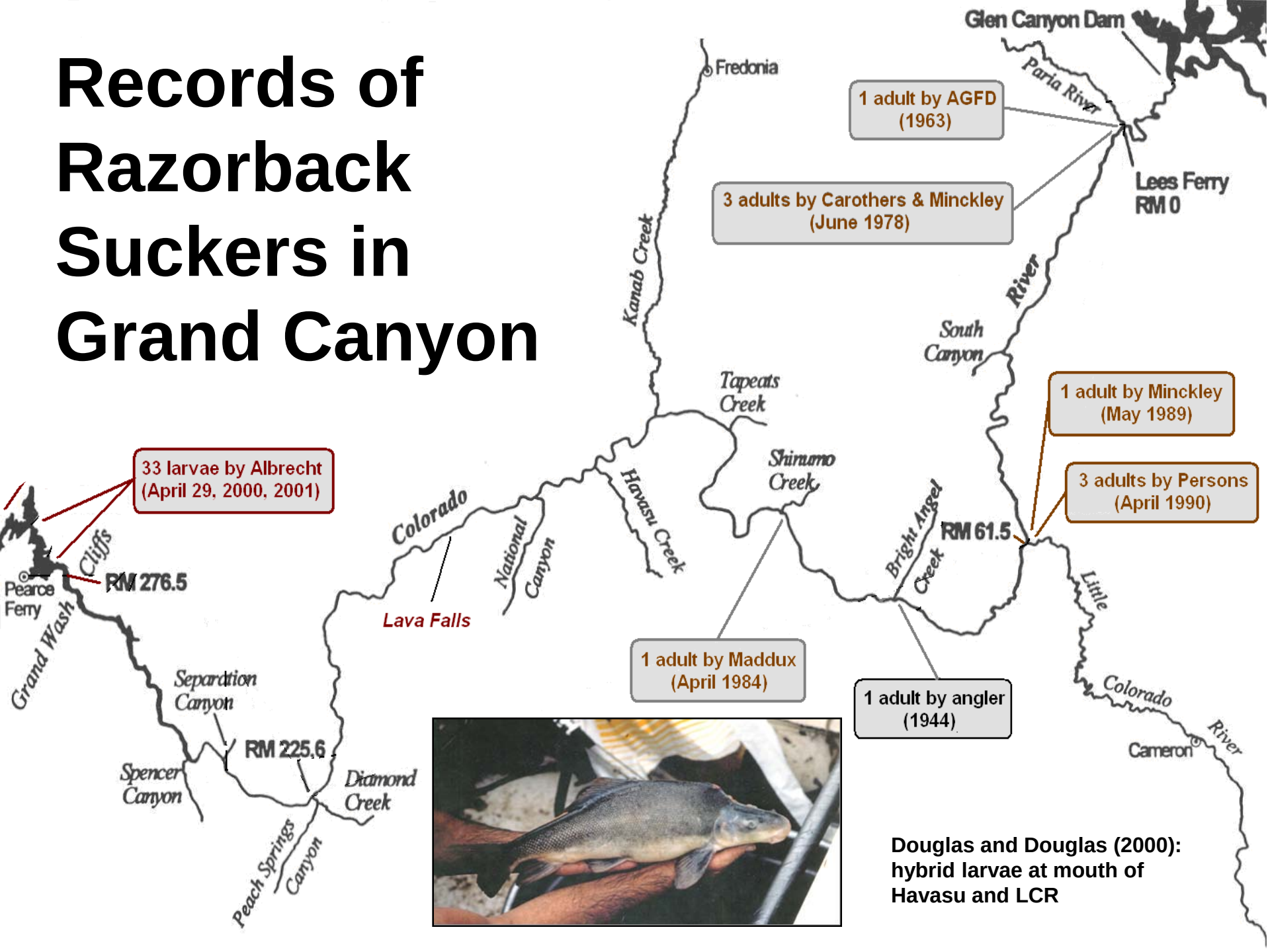
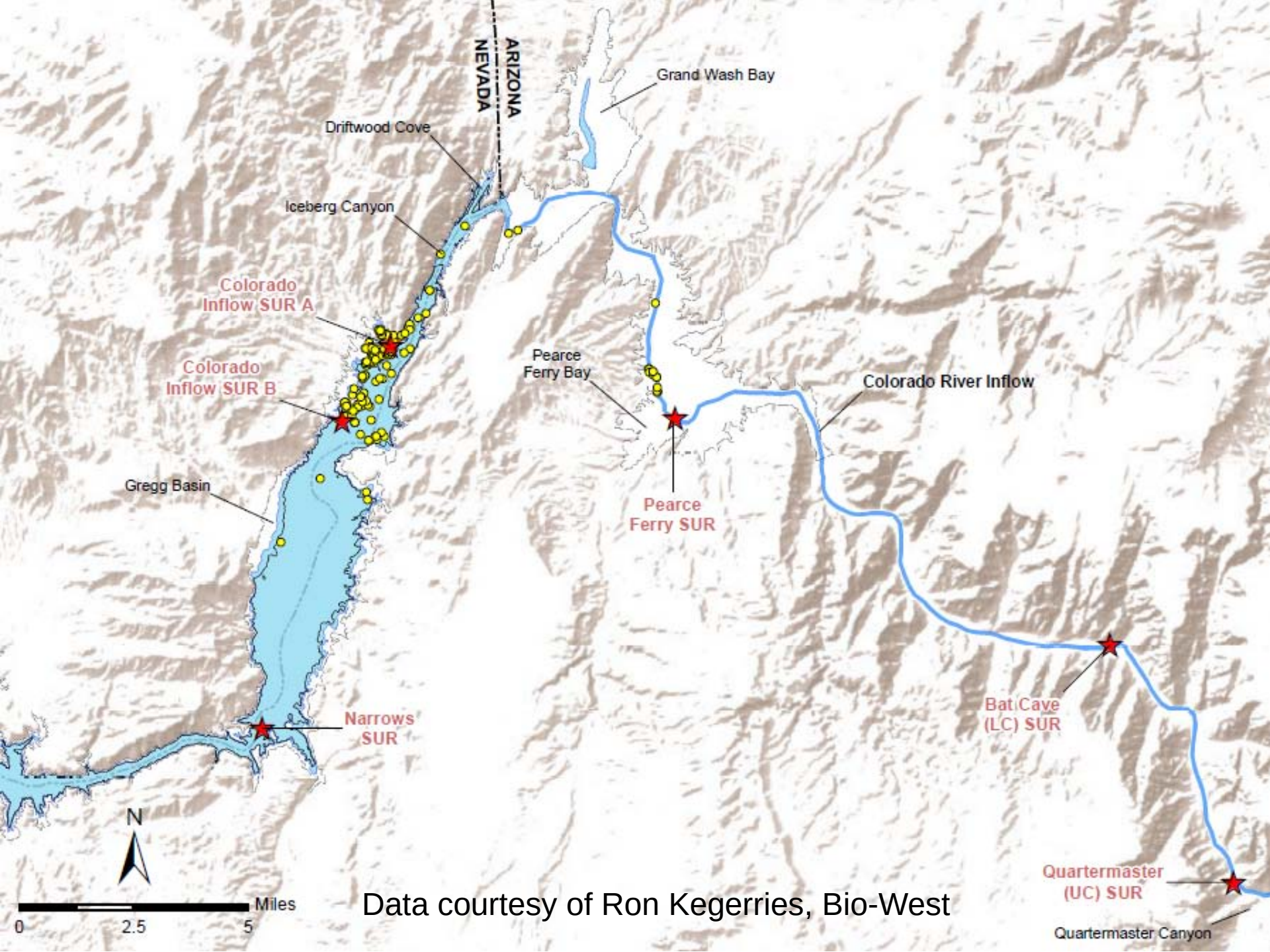


GCMRC Fish Database, 1978-Present

Records of Razorback Suckers in Grand Canyon



Douglas and Douglas (2000): hybrid larvae at mouth of Havasu and LCR

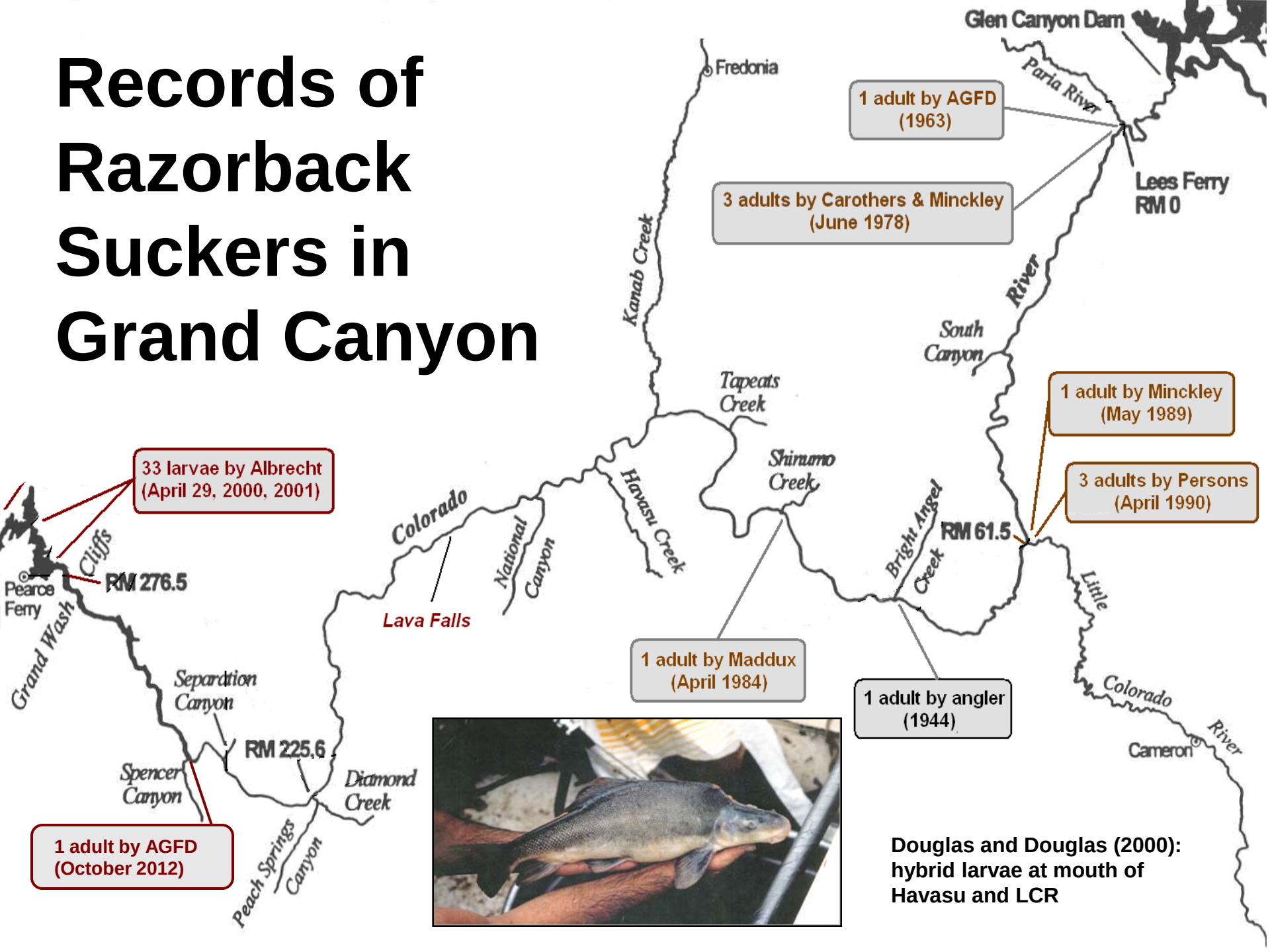


Data courtesy of Ron Kegerries, Bio-West

Razorback sucker

- Caught at RM 246 near Spencer Canyon debris fan on 10-7-2012
- Ripe male expressing gametes; tuberculate on anal and caudal fins
- Measured 543 mm total length
- No PIT tags or scarring detected with old and new scanners

Records of Razorback Suckers in Grand Canyon



Douglas and Douglas (2000): hybrid larvae at mouth of Havasu and LCR

What factors contribute to status and distribution?

- Water temperature
- Dissolved oxygen
- Food availability
- Turbidity
- Proximity to source population
- Migratory behavior
- Physical habitat requirements
- Many others

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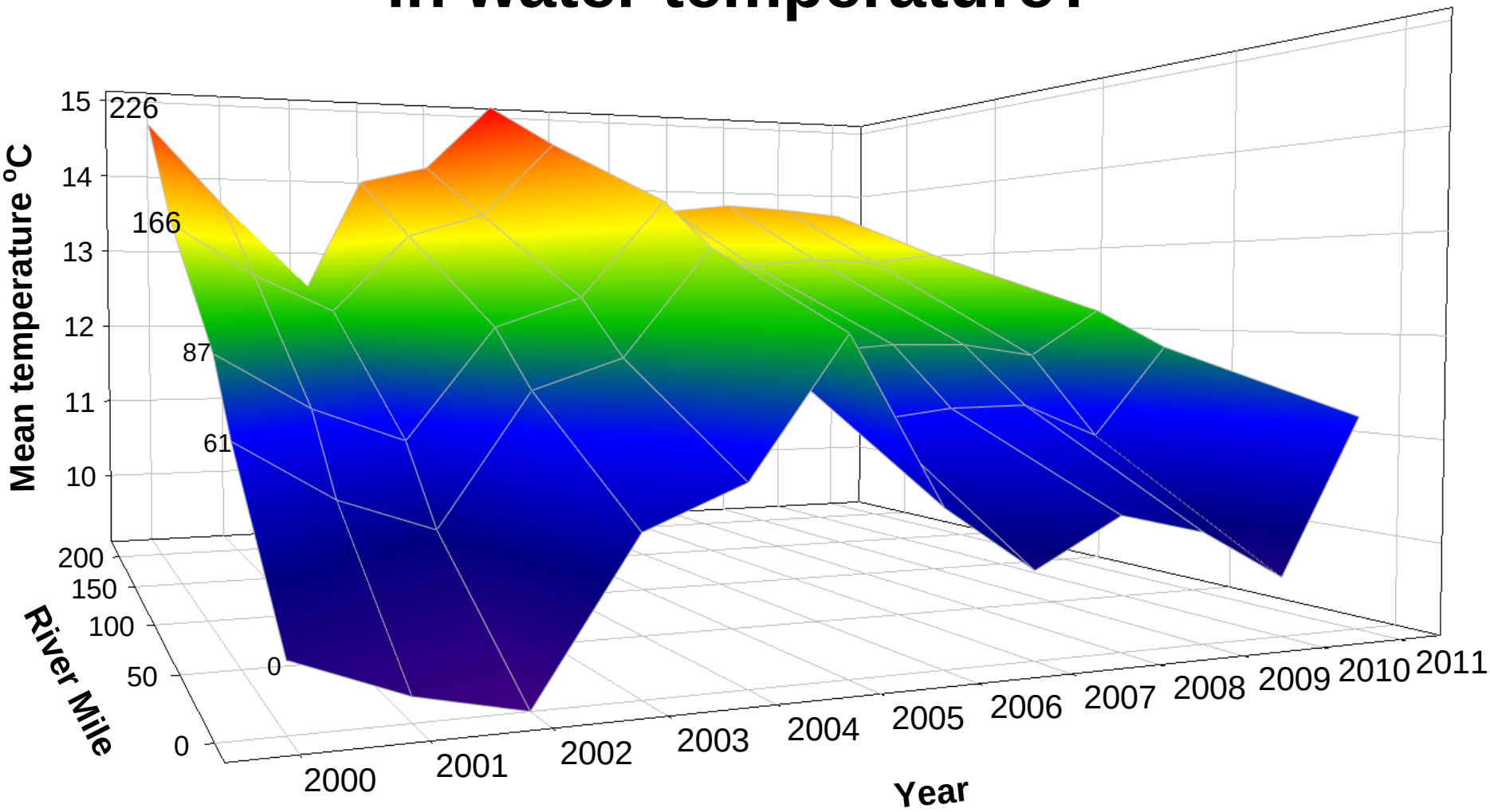
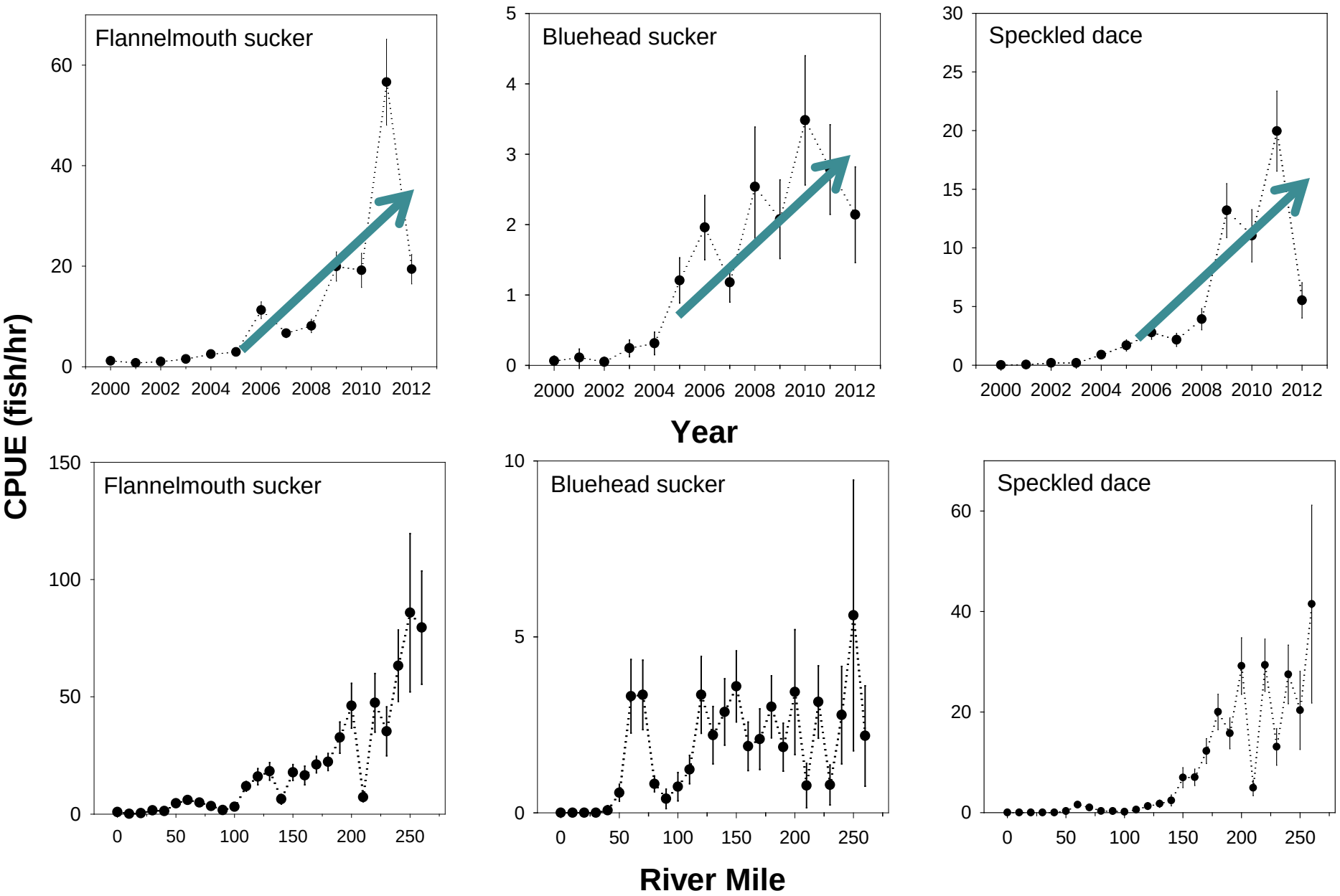
- **Many others**

How would you characterize these patterns in water temperature?

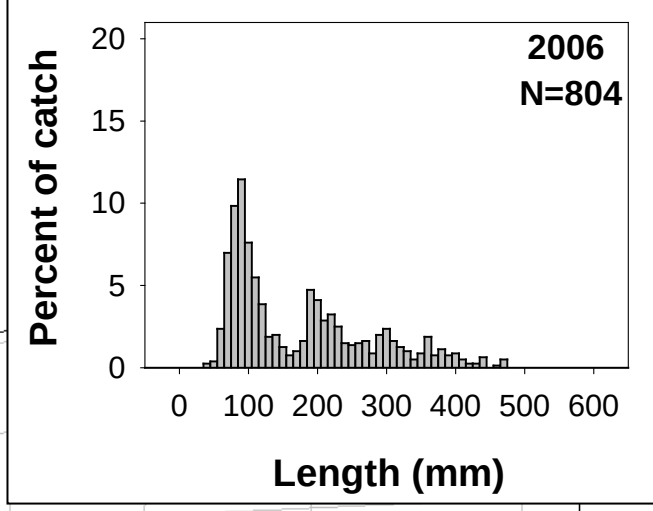


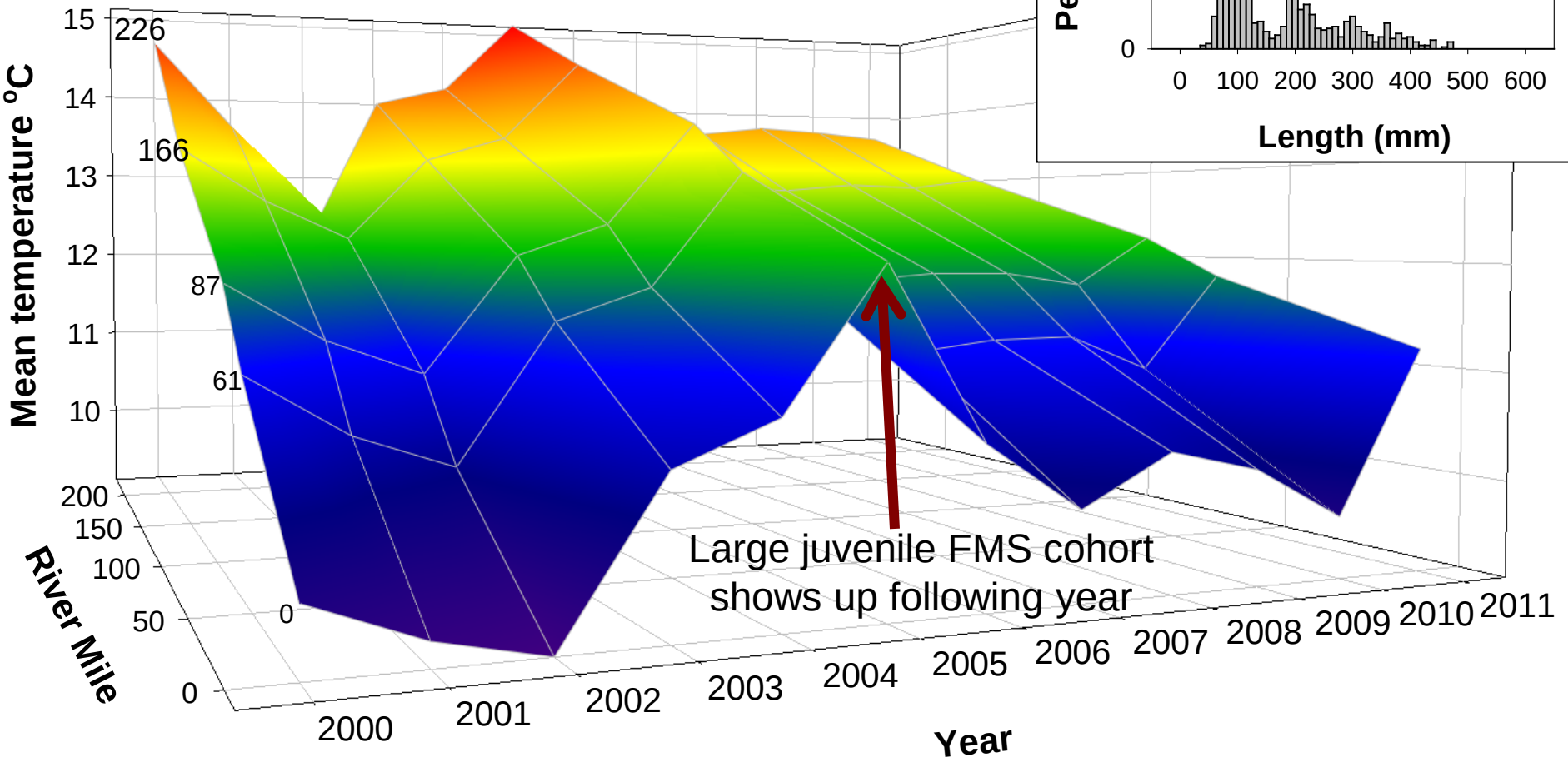
Data courtesy of Nick Voichick, GCMRC

Spatial and Temporal Native Fish Trends



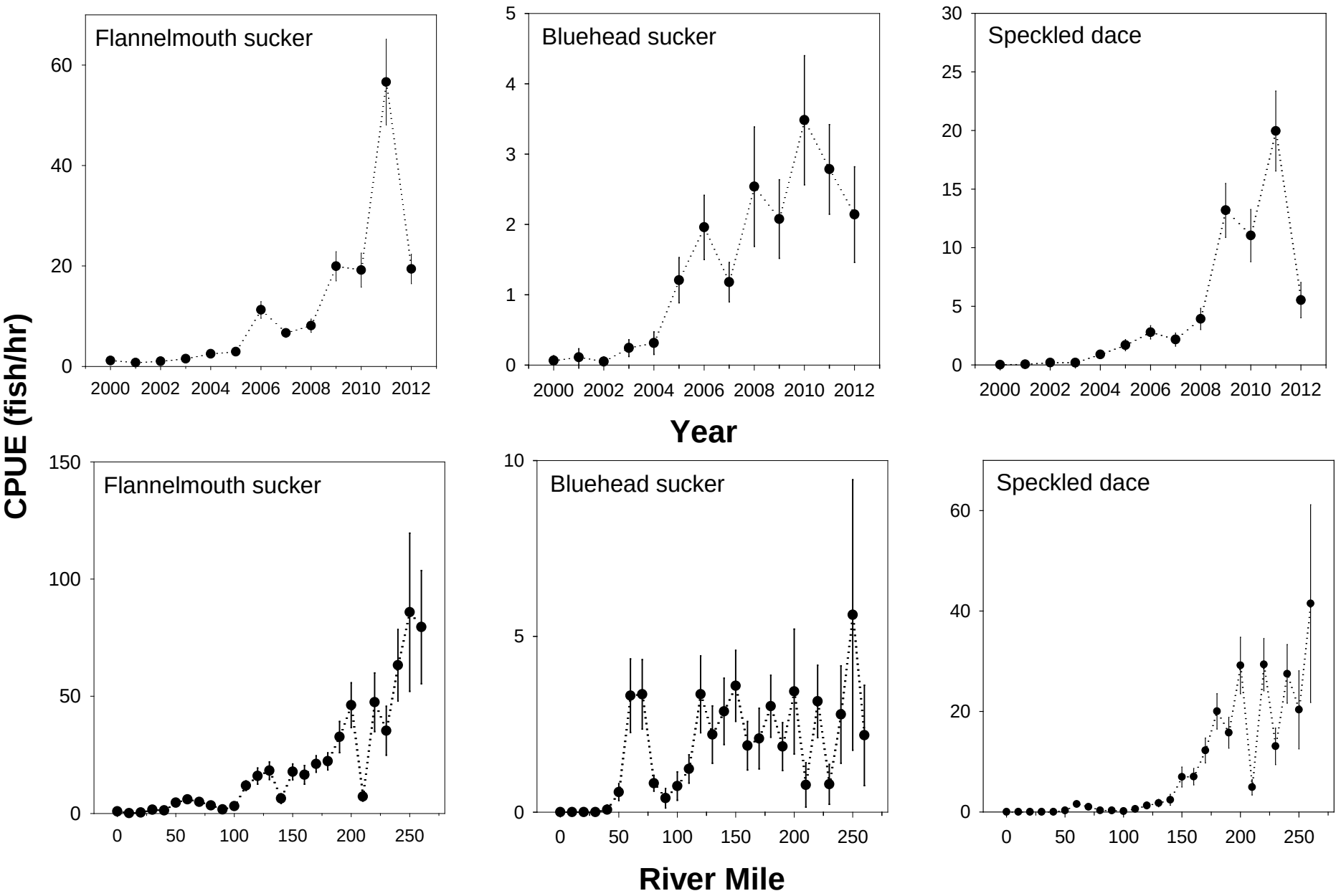
Temperature





Data courtesy of Nick Voichick, GCMRC

Spatial and Temporal Native Fish Trends



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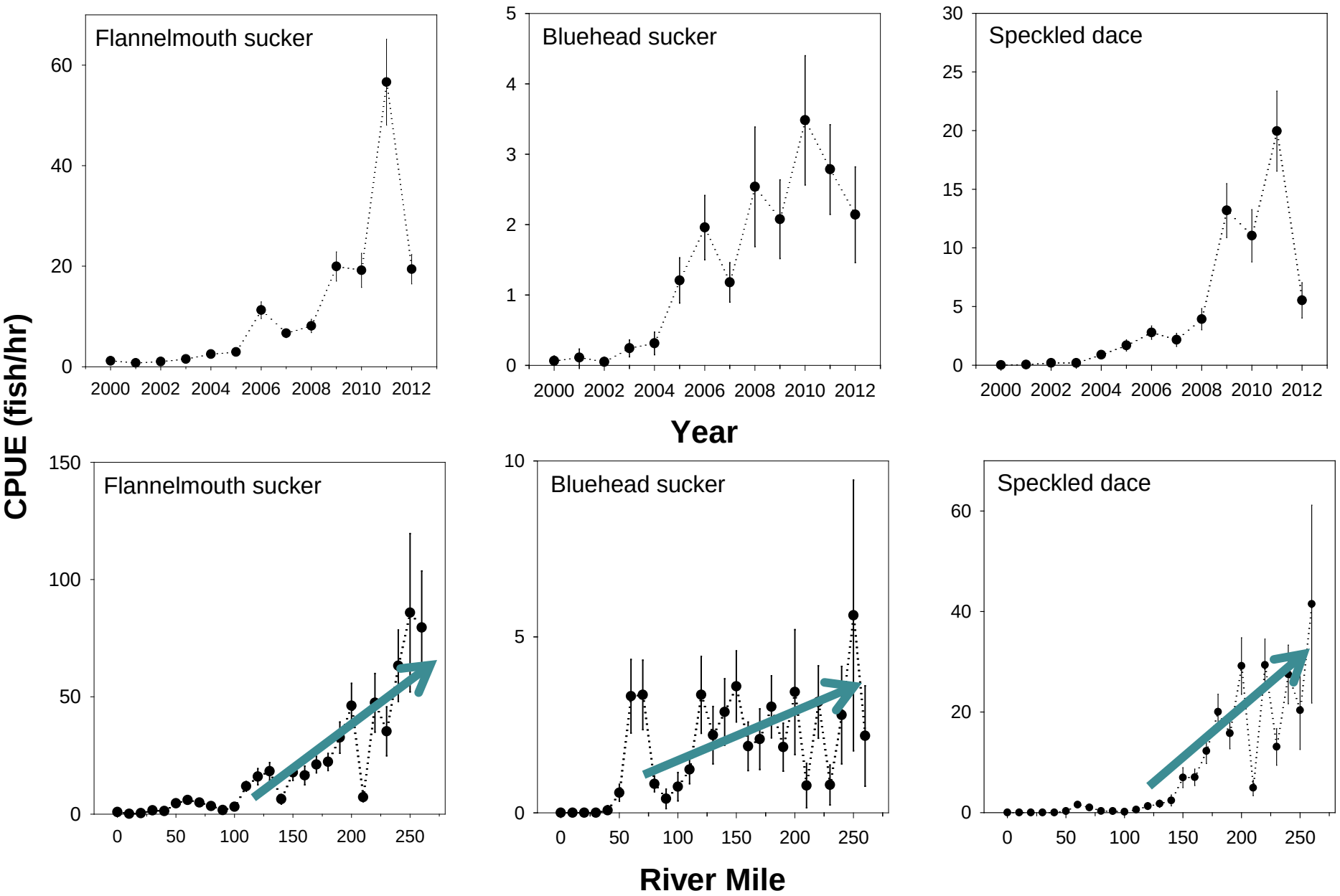
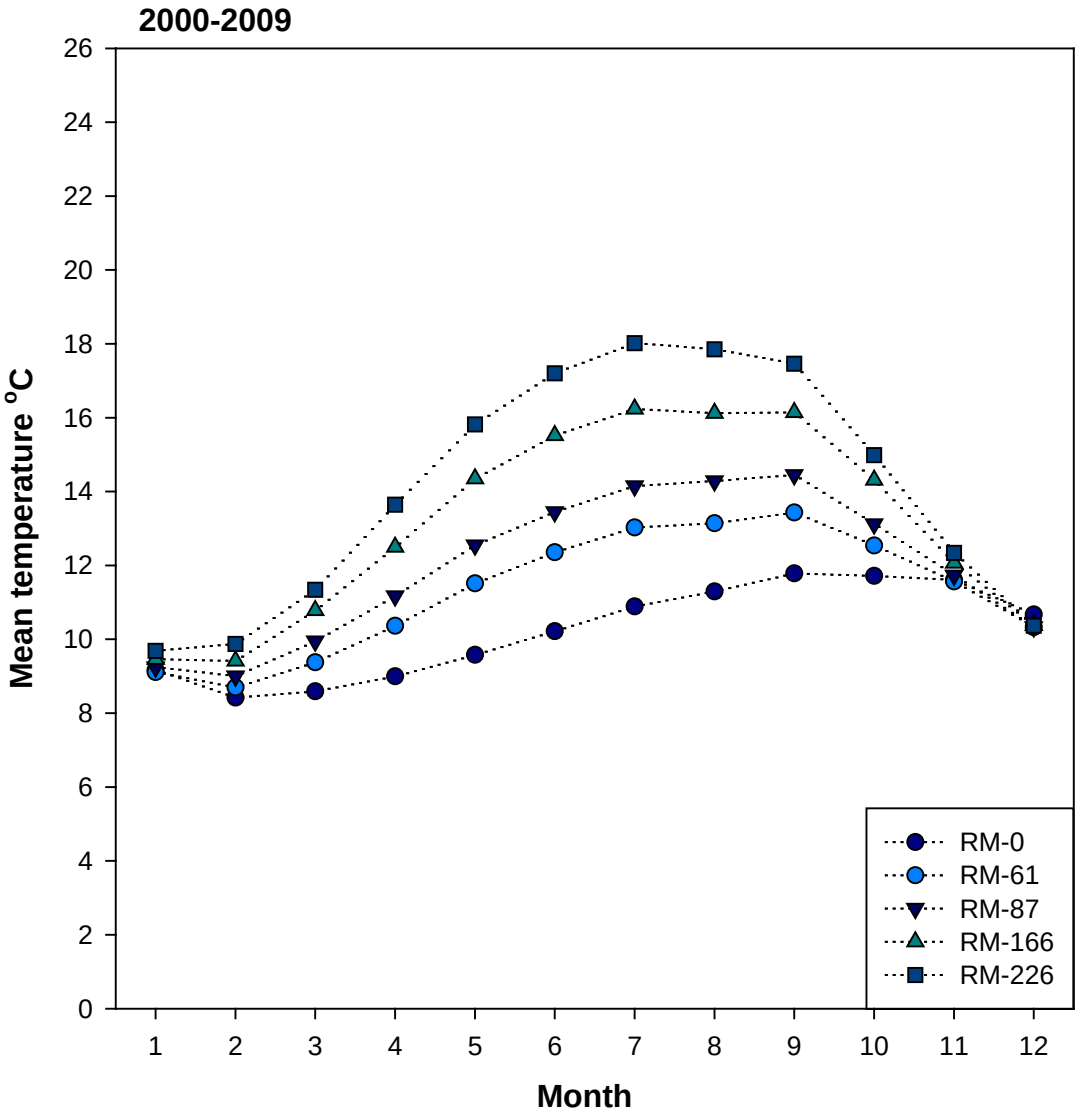
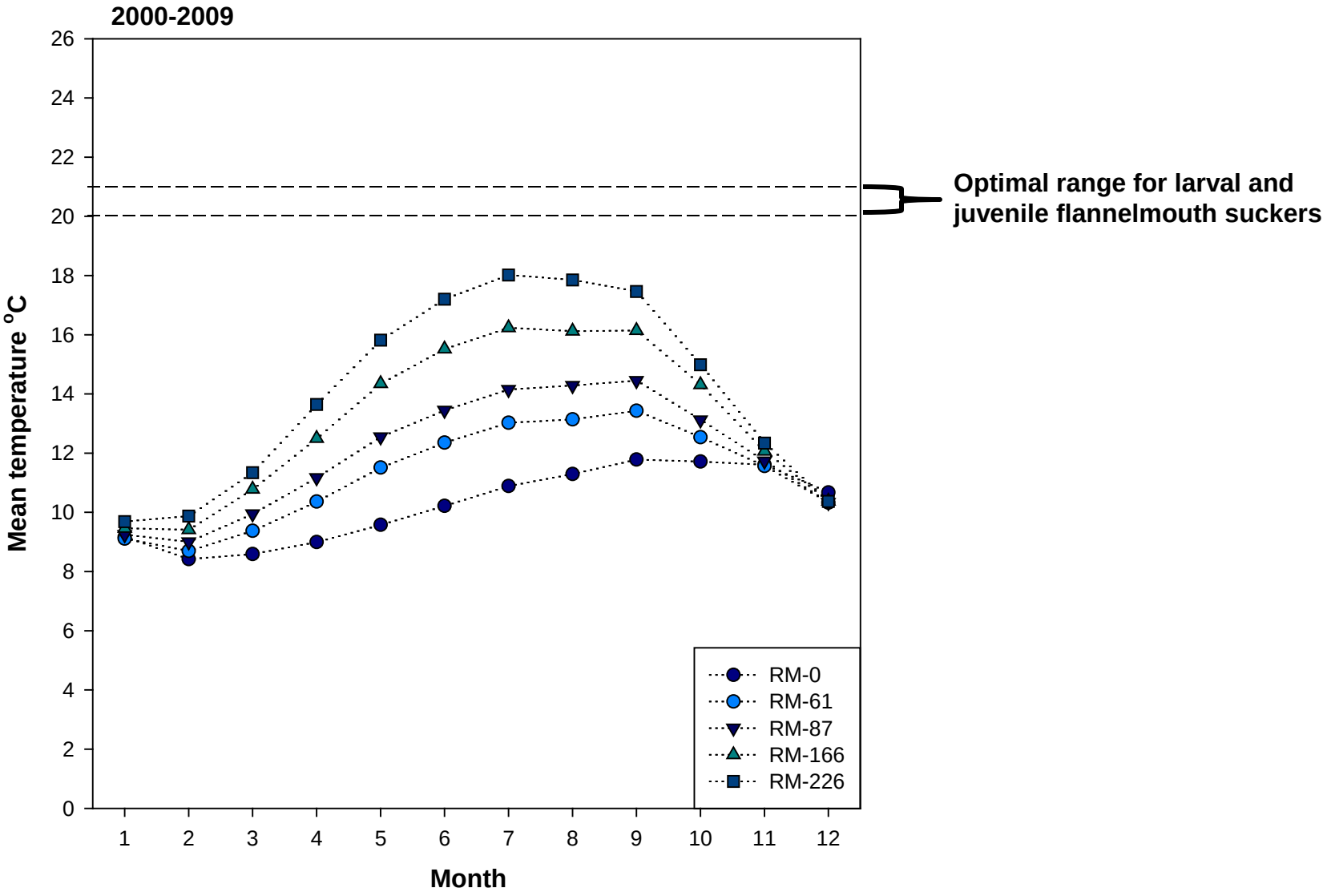


A different look at water temperature



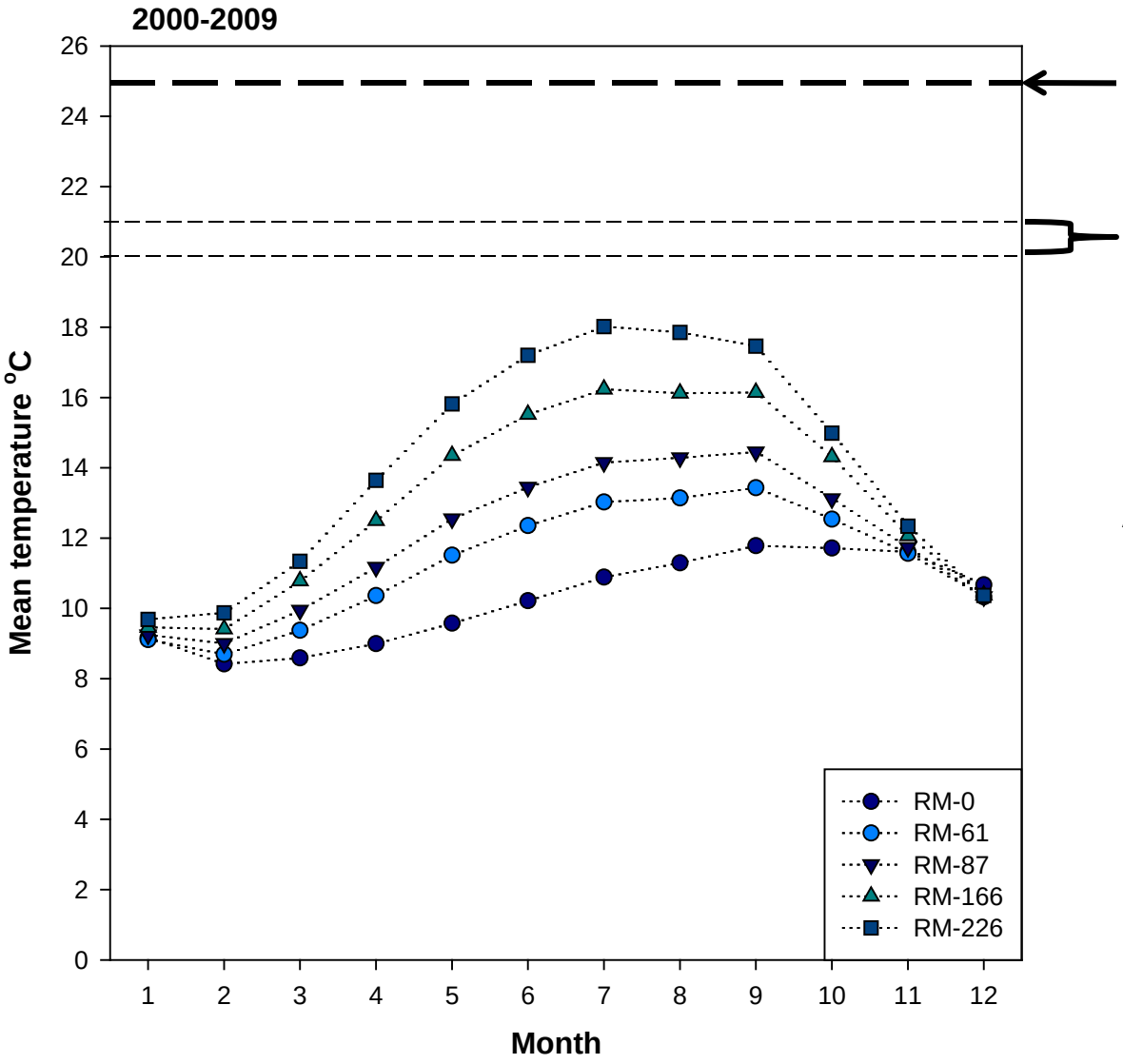
Data courtesy of Nick Voichick, GCMRC

Flannelmouth sucker optima



Data courtesy of Nick Voichick, GCMRC; Temperature optima data compiled by Lamarra (2007)

Flannelmouth sucker optima



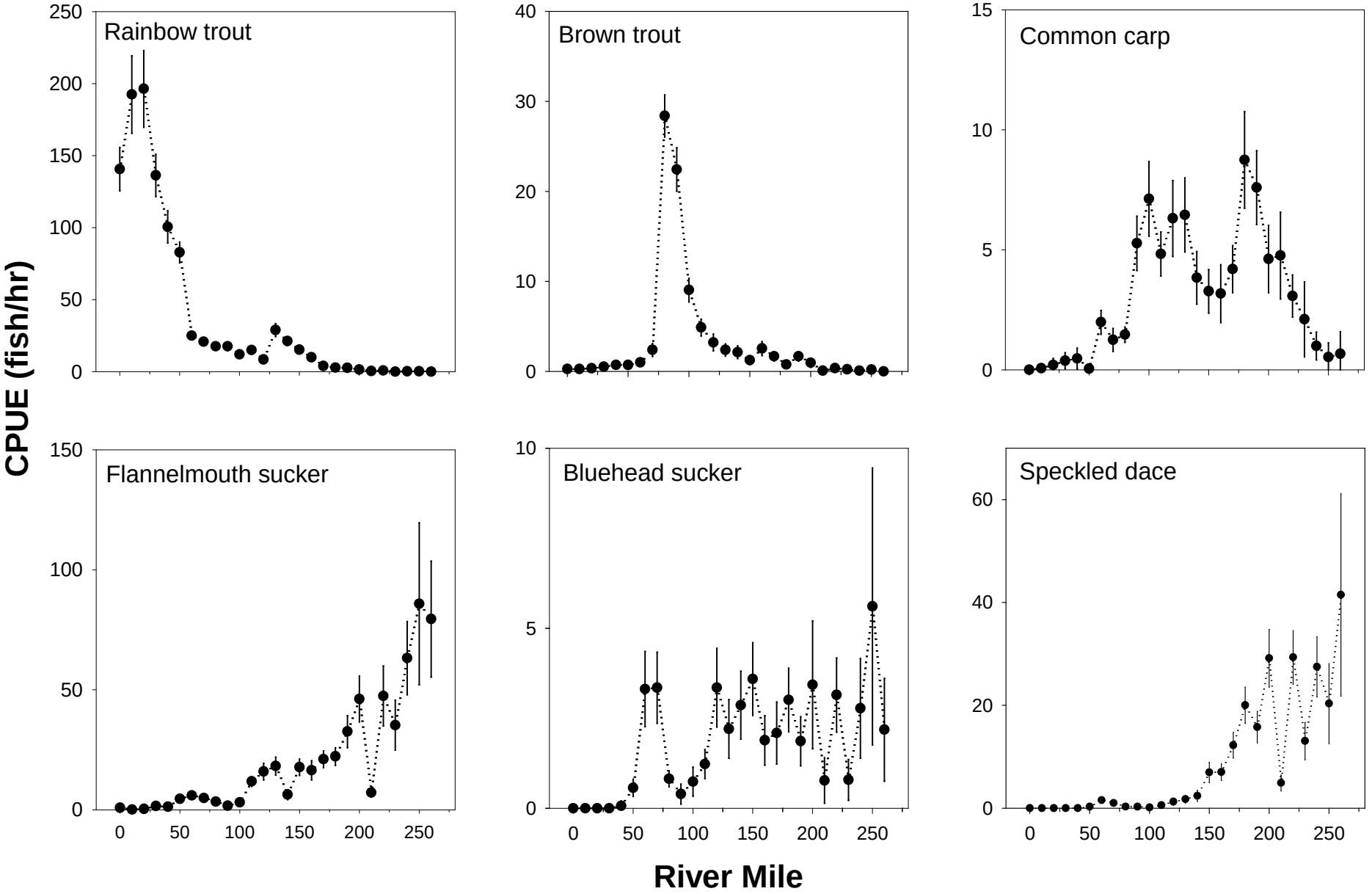
Optimal for adult flannelmouth sucker growth

Optimal range for larval and juvenile flannelmouth suckers

Adult flannelmouth suckers known to inhabit 10-30°C

Data courtesy of USGS Grand Canyon Monitoring and Research Center; Temperature optima data compiled by Lamarra (2007)

Proximity to population sources



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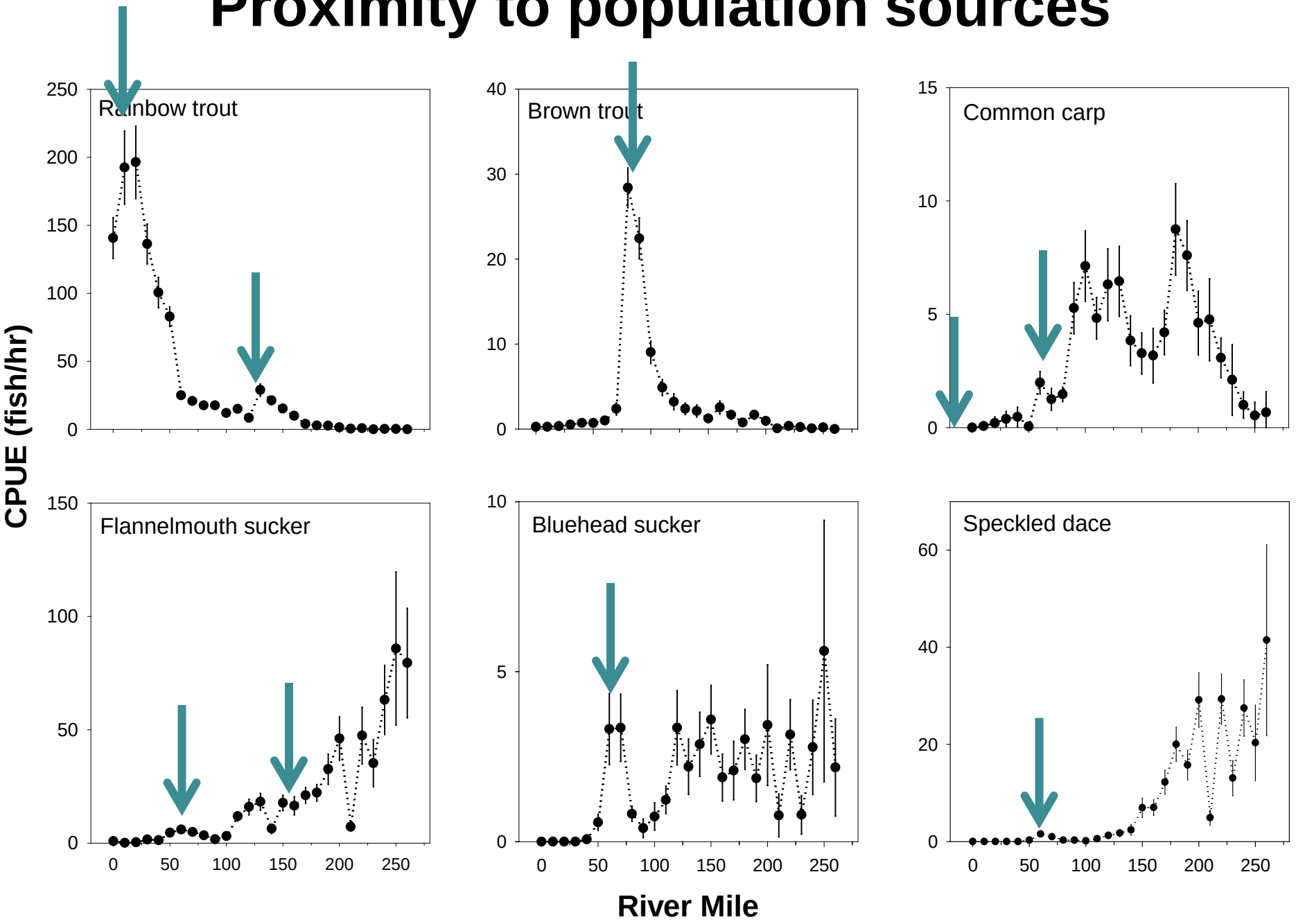

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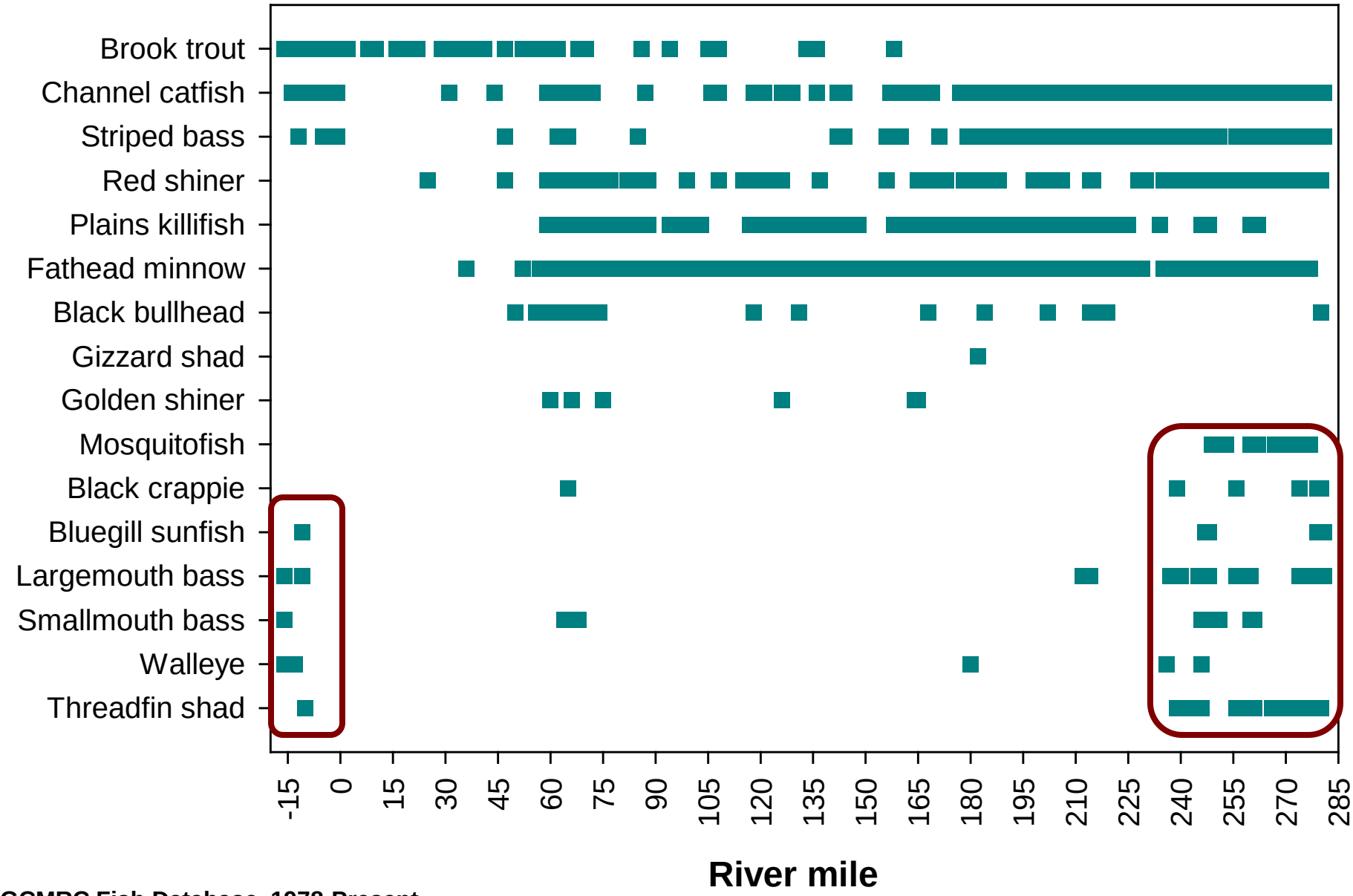

GCMRC Fish Database, 1978-Present

Proximity to population sources

- **Salmonids**
  - **Tailwater**
  - **Coldwater tributaries (i.e., Bright Angel and Tapeats Creek)**

- **Native fishes**
  - **Little Colorado River**
  - **Other tributaries**

- **Other nonnatives**
  - **Lake associated species – just below Lake Powell or above Lake Mead**
  - **Little Colorado River**
  - **Other tributaries**
  - **Large backwaters (e.g., Lees Ferry slough)**
  -

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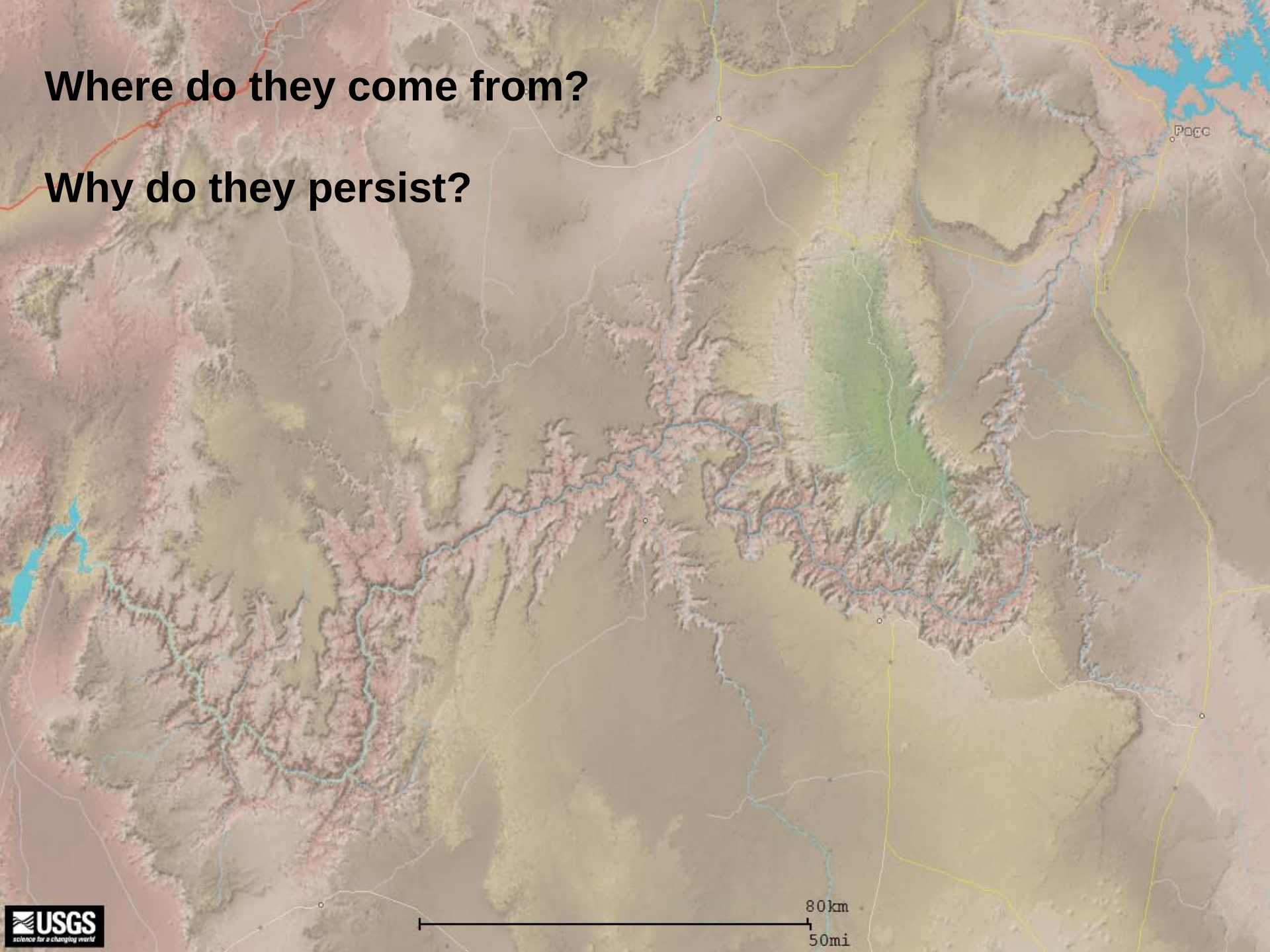

Questions?