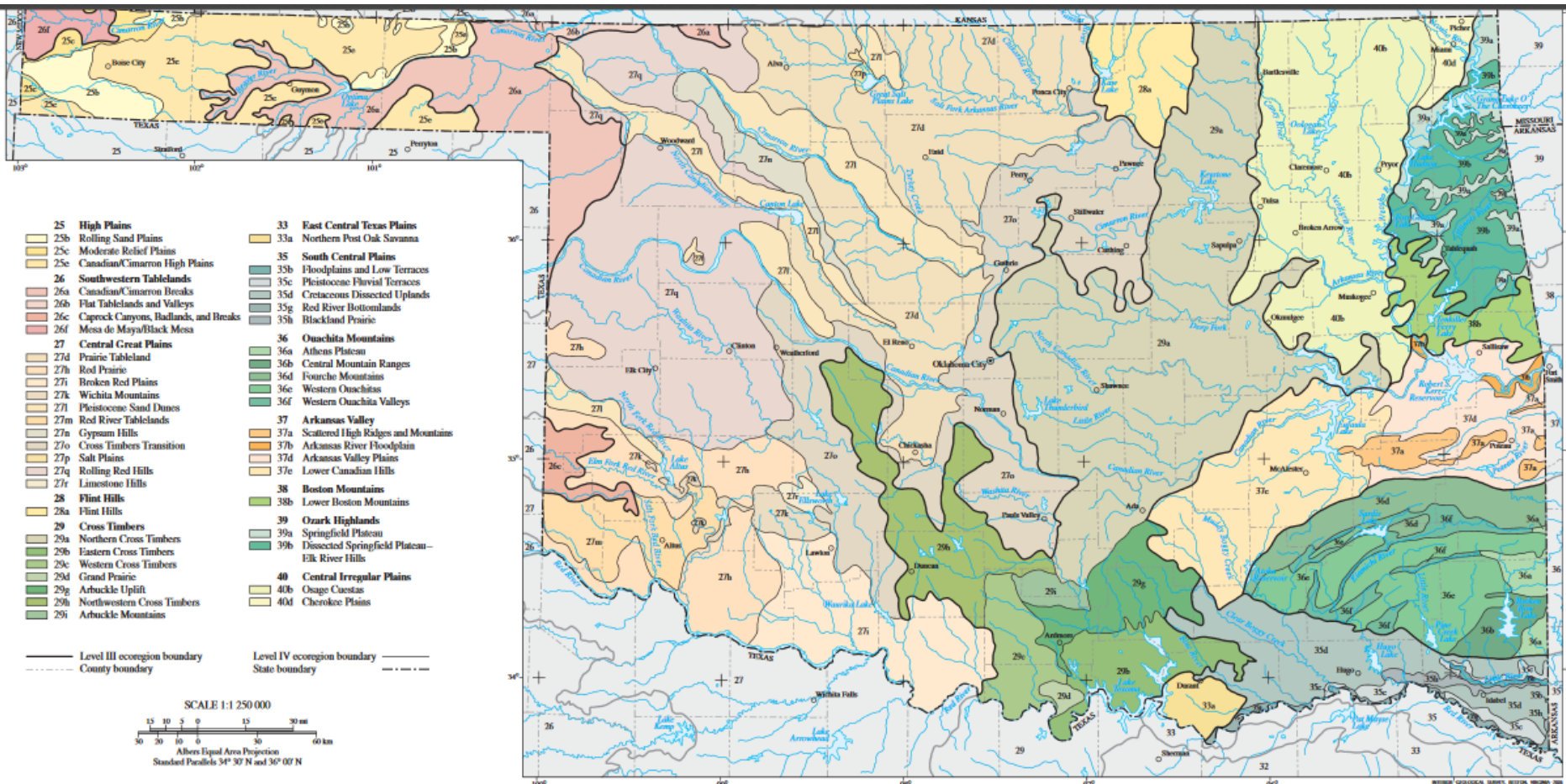


An Ecological Tour of Oklahoma Through the Eyes of an Environmental Specialist

By Christopher Hargis, Environmental Specialist IV

LEVEL 3 ECOREGIONS OF OKLAHOMA



OWRB 2013-2018 Fish Data

- Data Compilation
- Probabilistic Monitoring(NRSA, Statewide program)
- Fixed Stations(BUMP)
- N=280 Rivers/Streams
- 11 out of 12 L3 Ecoregions Sampled
- Biological condition, Stream health, Assessments
- Richness and Number of Intolerant Species

SPECIES RICHNESS BY ECOREGION

Level 3 Ecoregions	Average # of Fish Species	Number of sites sampled per ecoregion(n=280)	Richness Ranges
Ozark Highlands(39)	29.7	18	9-45
Boston Mountains(38)	29.3	3	28-32
South Central Plains(35)	27.2	22	17-34
Arkansas Valley(37)	26.7	23	9-40
Central Irregular Plains(40)	22.2	31	3-34
Flint Hills(28)	20.0	2	19-21
East Central Texas Plains(33)	18.5	2	16-21
Ouachita Mountains(36)	17.7	29	2-35
Crosstimbers(29)	16.3	48	4-30
Central Great Plains(27)	13.8	97	3-28
Southwestern Tablelands(26)	3.7	5	1-13
High Plains(25)	N/A	0	N/A

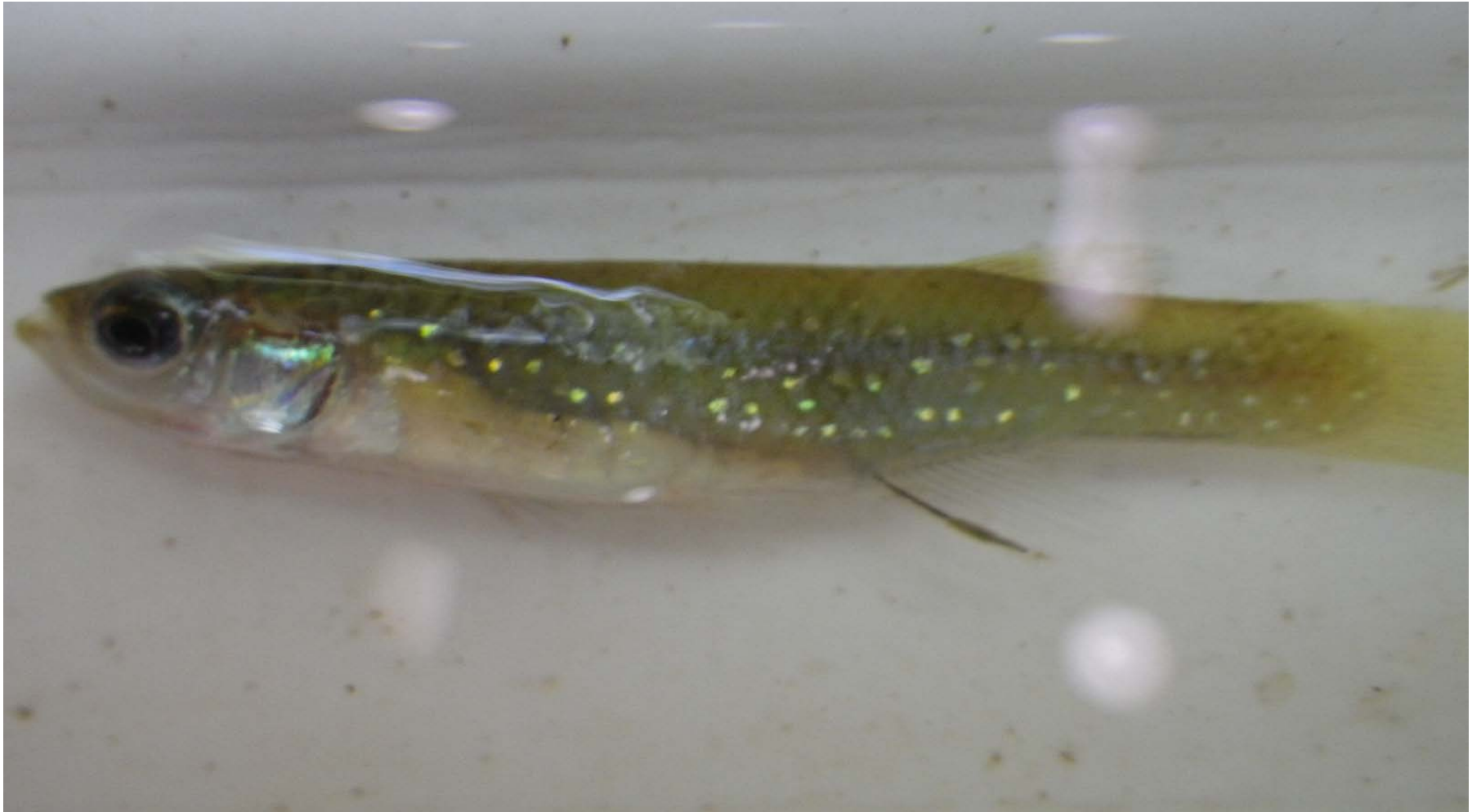
INTOLERANT SPECIES BY ECOREGION

Level 3 Ecoregions	Average Number of Intolerant Species	Accounts(# of sites)	Intolerant Species Ranges	Percentage of Average Richness
Boston Mountains(38)	19.7	59(3)	18-21	67.4%
Ozark Highlands(39)	16.2	291(18)	4-28	54.7%
Ouachita Mountains(36)	10.8	314(29)	2-22	61.2%
Arkansas Valley(37)	9.2	212(23)	3-20	34.6%
South Central Plains(35)	8.9	195(22)	1-21	32.8%
East Central Texas Plains(33)	7.0	14(2)	5-9	37.8%
Flint Hills(28)	5.0	10(2)	2-8	25%
Central Irregular Plains(40)	4.7	144(31)	0-9	21%
Crosstimbers(29)	2.5	122(48)	0-10	15.6%
Central Great Plains(27)	1.5	141(97)	0-5	10.5%
Southwestern Tablelands(26)	0.6	3(5)	0-1	16.4%
High Plains(25)	N/A	N/A	N/A	N/A

Arkansas Valley

- Little Vian Creek, NRS18_OK_10920
- Richness-27(2014), 24(2018)-NRSA Trend Site
- Number of Intolerant Species-11(2014), 13(2018)
- 1st Order Stream
- A tale of two creeks, reservoir
- Diverse bottom substrates
- Golden Topminnow
- Fishes of Oklahoma-SE OKLA only; Little River

GOLDEN TOPMINNOW



Boston Mountains

- Lee Creek @ Short
- Generally pretty good water quality
- Bald eagles
- Rocky, flowing, clear water
- Richness- 28 in 2009, 32 in 2013
- Number of Intolerant Species- 17(2009), 18(2013)

LEE CREEK @ SHORT



Scenic River
Designation for
Oklahoma.

OWRB BUMP
Trend Site.

Enters our state
From Arkansas.

Arkansas-
Extraordinary
Resource
Waterway

Central Great Plains

- Salt Fork of the Arkansas River @ Tonkawa
- BUMP Site
- Extra Monitoring
- OKRMT
- 2018-Richness=19
- 2013-Richness=22
- 2018-3 Intolerant species
- 2013-2 Intolerant species



Central Irregular Plains

- Madden Creek, OKRV-2074
- 6/30/2015
- Tributary to Oologah lake in NE OKLA
- Richness- 9 species
- Number of Intolerant Species-2
- Unusual water chemistry(cold water, high conductivity/total hardness)
- Wetlands all along riparian zone

CENTRAL IRREGULAR PLAINS



Water temperature- 16.51 degrees C(61.72 F)
Specific Conductivity-3548
Total Hardness-2630



Madden Creek's Wetland Riparian Zone

Cross Timbers

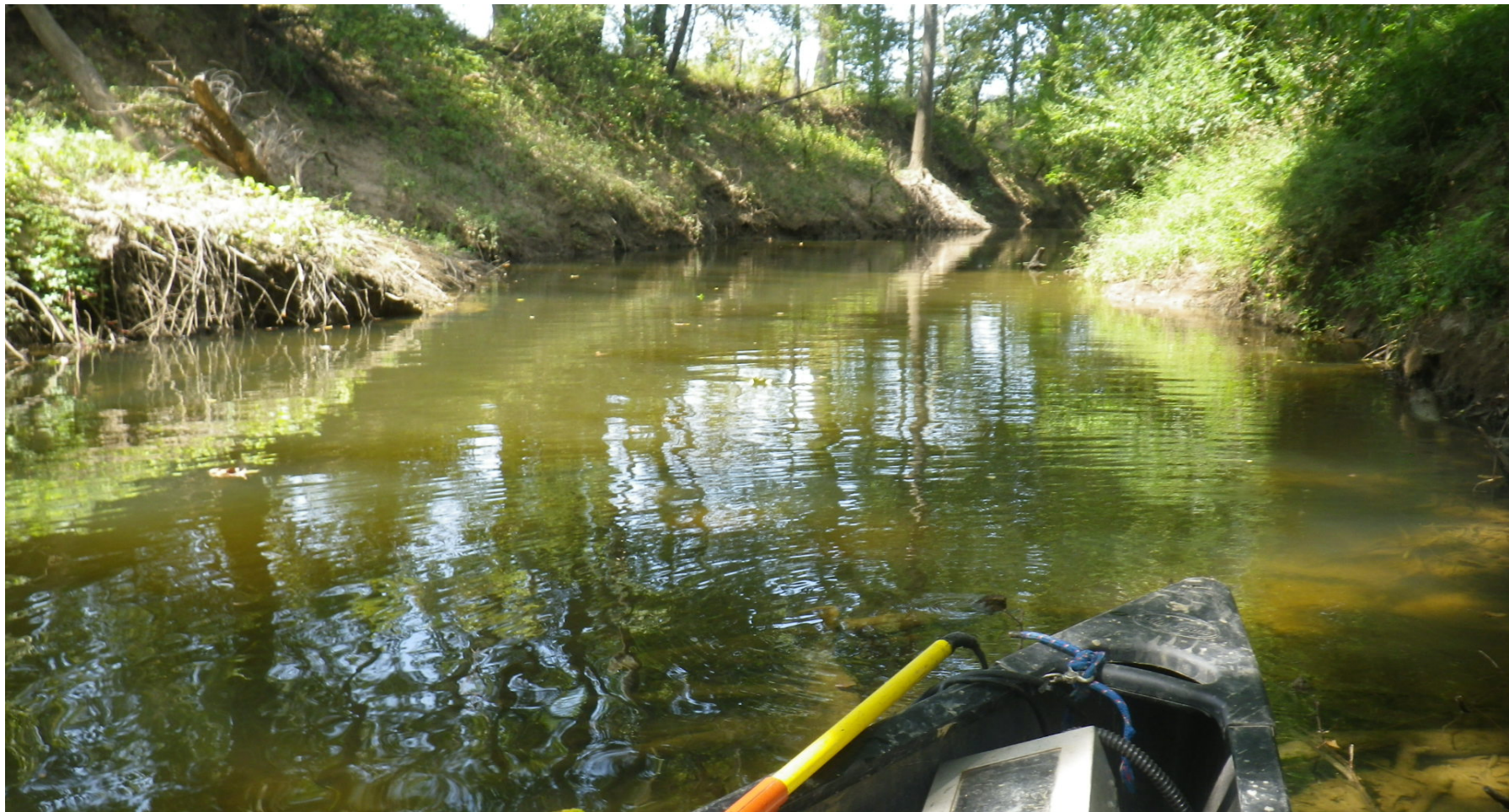
- Jim Creek, OKPB01-081
- GPS point-Near a bridge crossing
- 5/21/2007-First Site
- Tributary to Little River near Tecumseh, OK
- Richness- 14,11(RV) in 2007, 11 in 2015
- Number of Intolerant Species-3, 1, 1



East Central Texas Plains

- Island Bayou, OKSS-1420
- 9/13/2017
- Remote area southeast of Durant, OK
- Landowner permission is a must
- Cottonmouth City
- Drainage area-86.03 sq. miles(SO 2)
- Richness-16
- Number of Intolerant Species-5

ISLAND BAYOU



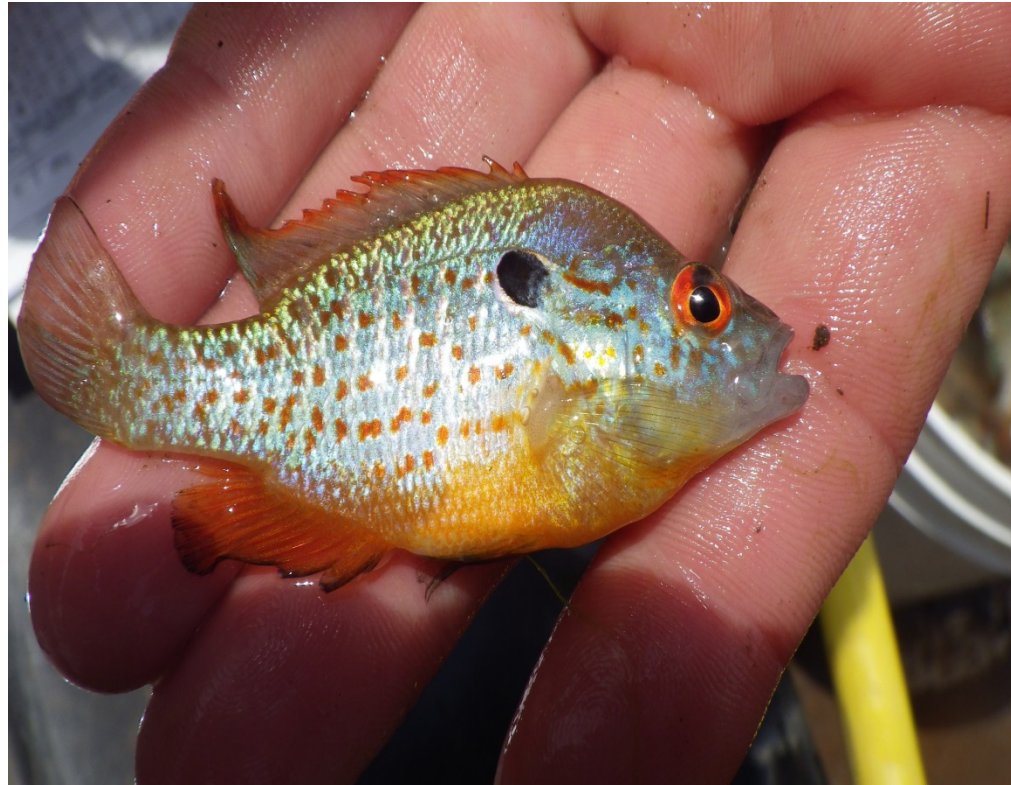
Flint Hills

- Dry Creek, OKSS-1415
- Sampled in 2014
- North of the Tallgrass Prairie Preserve
- Contact TGPP employees for entry
- Bison country
- Wildfires-concern
- Richness-19
- Number of Intolerant Species-8
- Drainage area-2.98 miles(SO 1)

FLINT HILLS



Tallgrass Prairie Preserve



Orangespotted sunfish

High Plains

- 0 sites sampled during 6 year period
- Data Gap??
- Panhandle- not a lot of streams sites that have water year round for sampling

OUACHITA MOUNTAINS



Big Eagle
Creek

Tributary to
Mountain Fork
River

Richness=22
Intolerant=15

8 Leopard
Darters

Watch your step!



07/16/2013 11:42

Ozark Highlands

- Illinois River @ Tahlequah, Hwy 62 bridge
- Scenic River
- Consistently 45 species-2009 and 2016
- Chestnut Lampreys-parasitic
- Greenside Darters-1 of 6 species of perch family
- Smallmouth bass-sport fish
- Number of Intolerant Species-29(2009), 28(2016)



South Central Plains

- North Caney Creek, FW08OK242
- McCurtain County-Southeast of Idabel, OK
- June 16, 2010
- 2nd Order Stream
- Richness- 18
- Number of Intolerant Species- 9
- Ouch!
- Collected 2 rare species



Southwestern Tablelands

- Elm Fork of the Red River @ Carl(N. Harmon county)
- Natural salt deposits-18 counties in NW and SW OKLA
- Very High Specific Conductivity
- BUMP Dataset: May 2006-present
- Highest- 235,299 MicroSiemens/Cm, Mean-72,553
- Sea water-~50,000
- Richness-1(2013), 2(2018)
- Number of Intolerant Species- 1(2013), 1(2018)
- 360 Red River Pupfish(2013), Plains Killifish(2018)

ELM FORK OF THE RED RIVER @ CARL



Salinity has a drastic affect on species richness.

Harsh environment.
Shallow water.
Extreme temperature variations. Not many trees for shade.

2013 Habitat Assessment
Data- Max depth 0.21 meters, Average Densiometer reading was 2.2% for canopy cover, highest was 17% at 1 Transect.

What Did We Get Out Of This?

- Biodiversity Patterns-Stream order, Ecoregions, Water Quality, Habitat(depth, riffle-run-pool structure)
- Data Gaps-Identify, Explain
- Targeted sampling in future?
- Stepped away from typical assessments and IBI scores
- Discovered what else fish data can be used for-entertainment purposes, tell a story

Thank You!

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