

Appendix J

Rainbow River System PHABSIM Modeling Methods and Results

Section 1

**Rainbow River System PHABSIM Modeling Methods:
Habitat Suitability Curves Used in PHABSIM Modeling**

Section 2

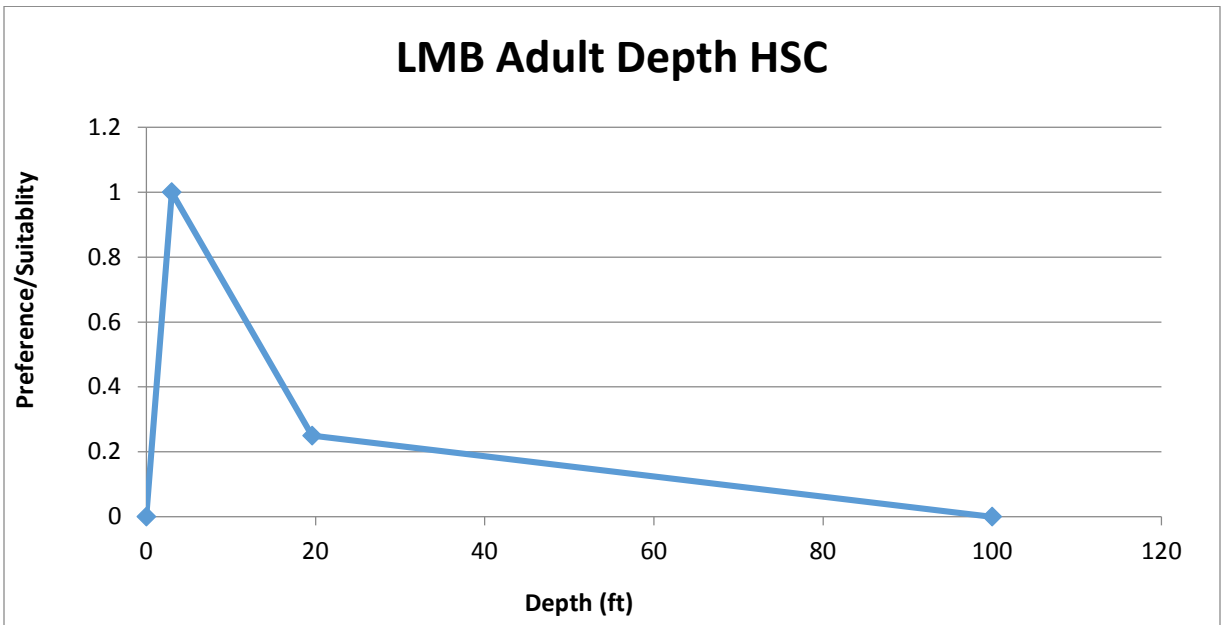
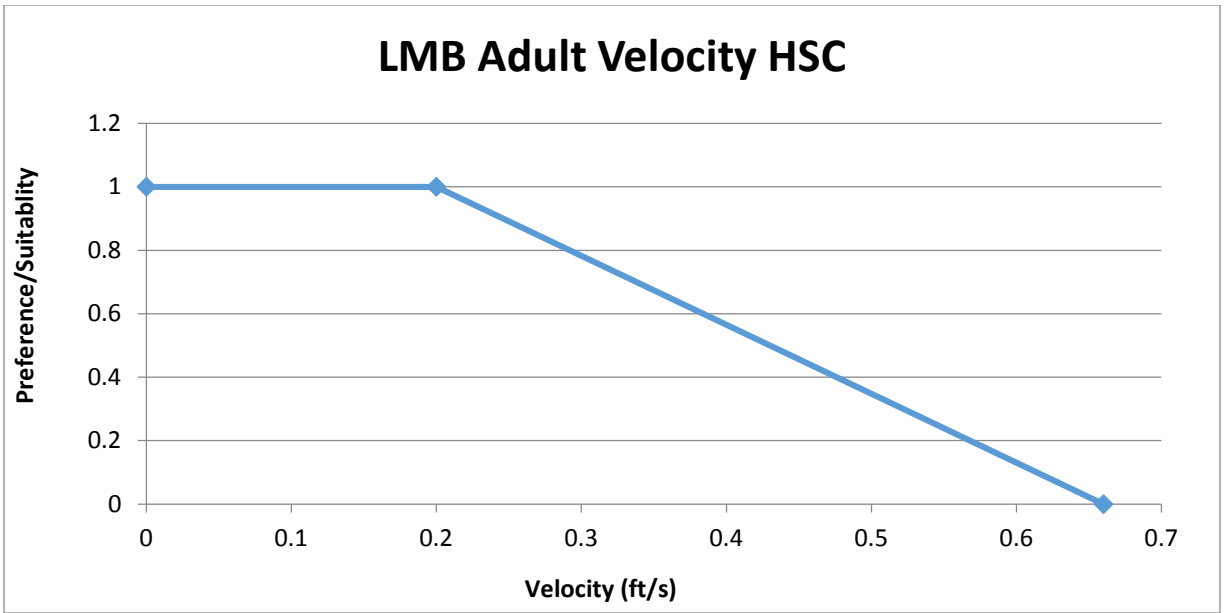
**Rainbow River System PHABSIM Modeling Results:
Weighted Usable Area vs. Discharge Plots for PHABSIM Sites**

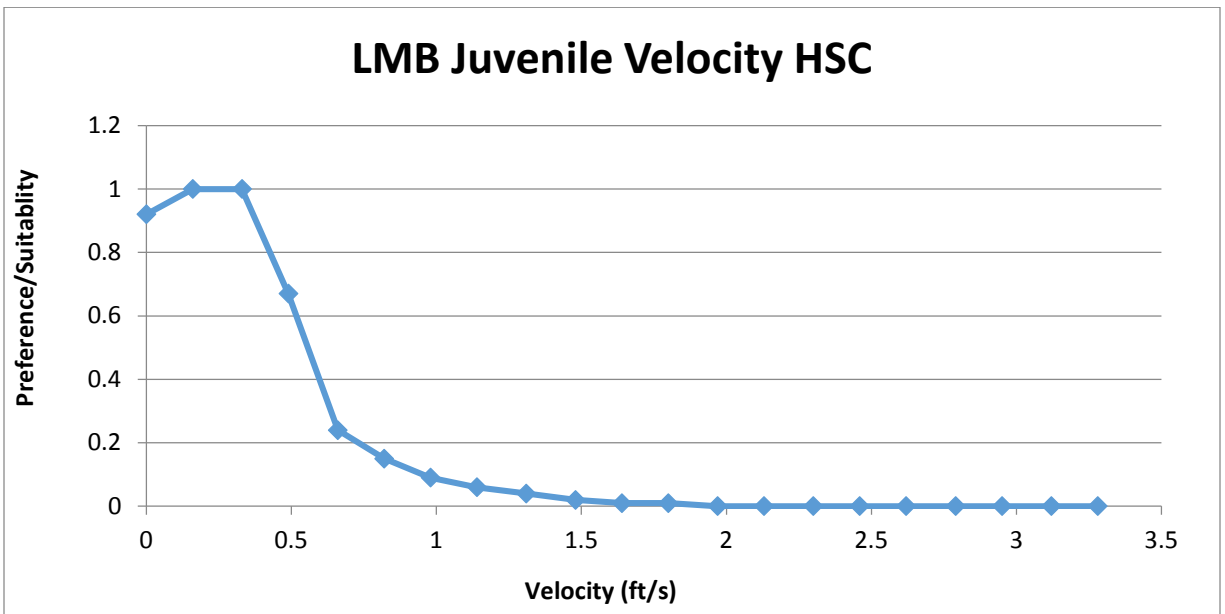
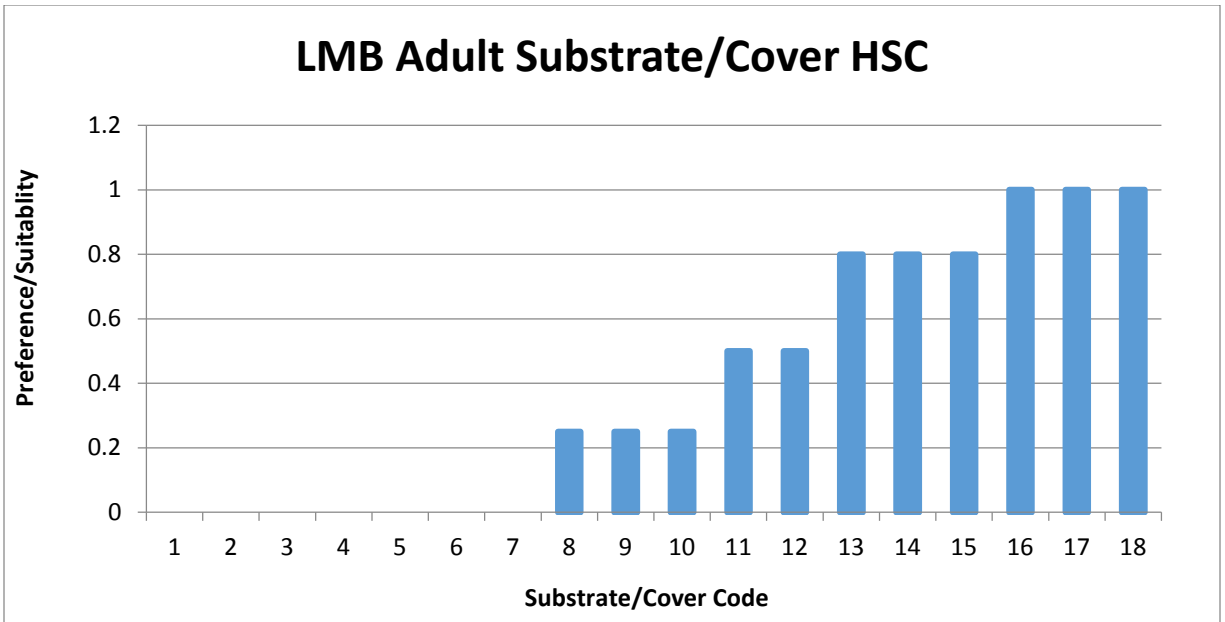
Section 3

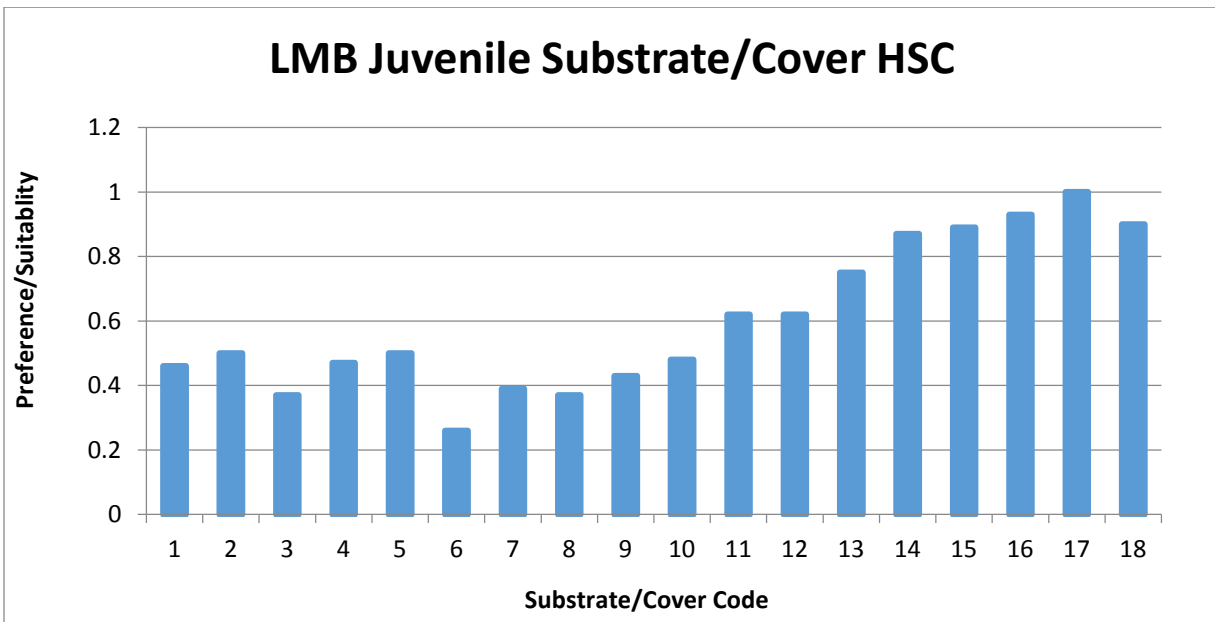
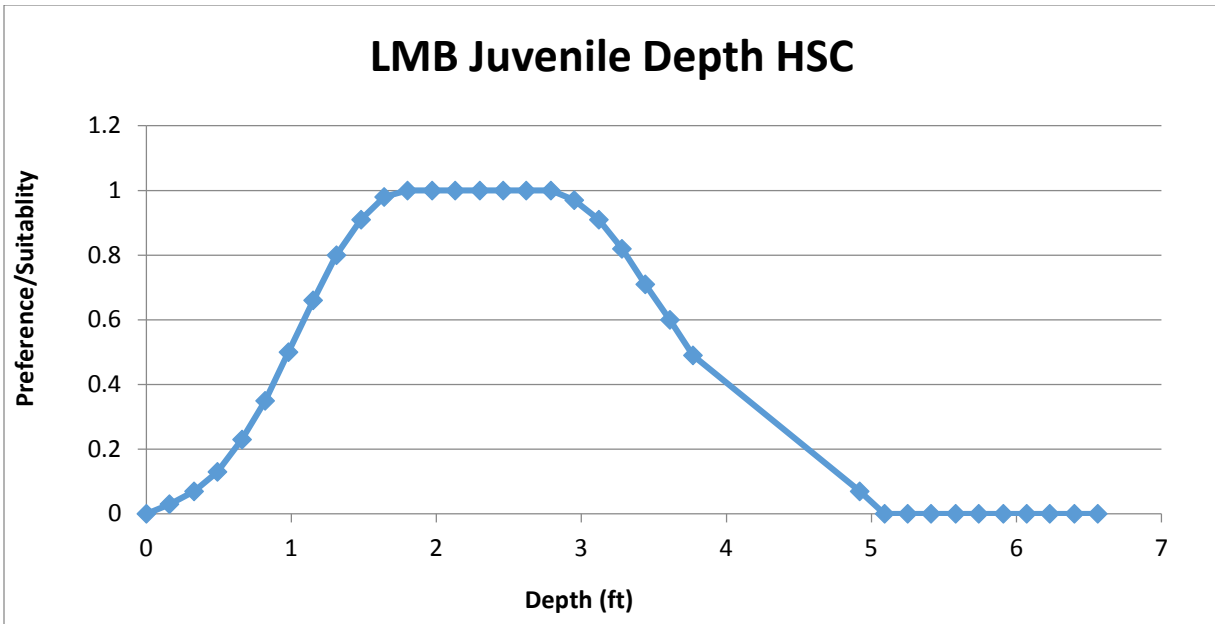
**Rainbow River System PHABSIM Modeling Results:
Habitat Gain/Loss vs. 5, 10, 15, and 20% Flow Reduction Plots for
PHABSIM Sites**

Section 1

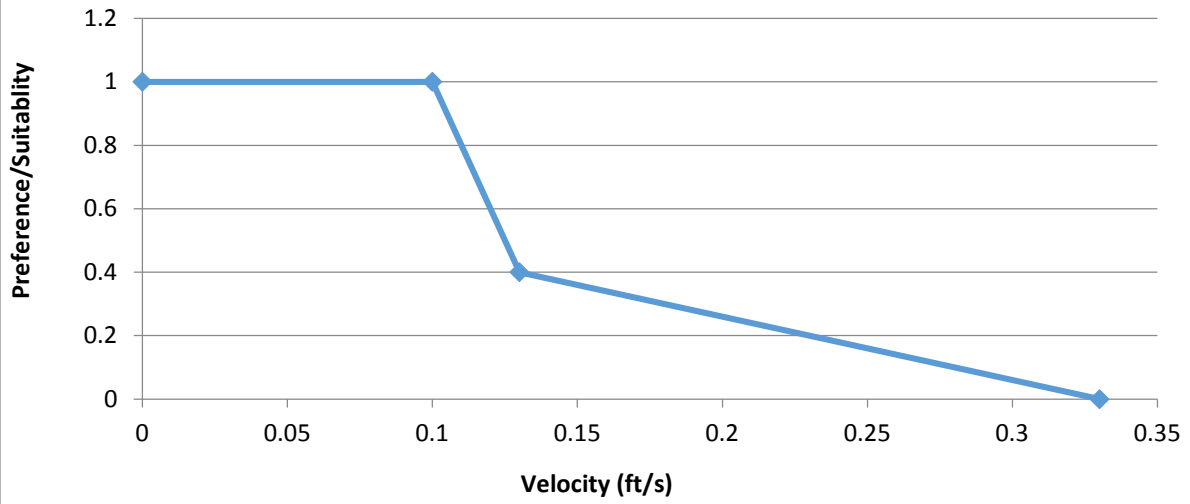
Rainbow River System PHABSIM Modeling Methods: Habitat Suitability Curves Used in PHABSIM Modeling



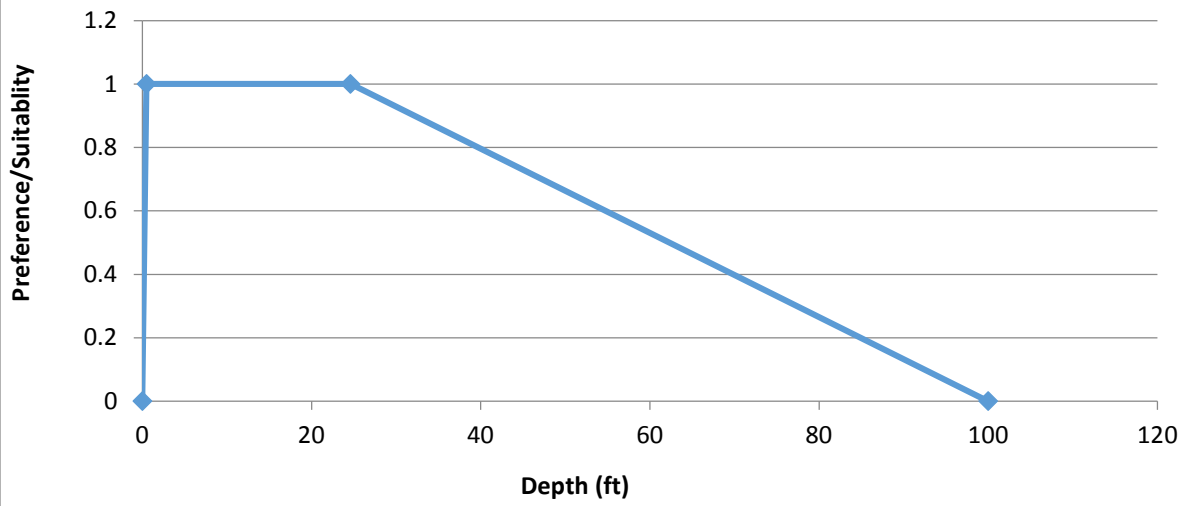




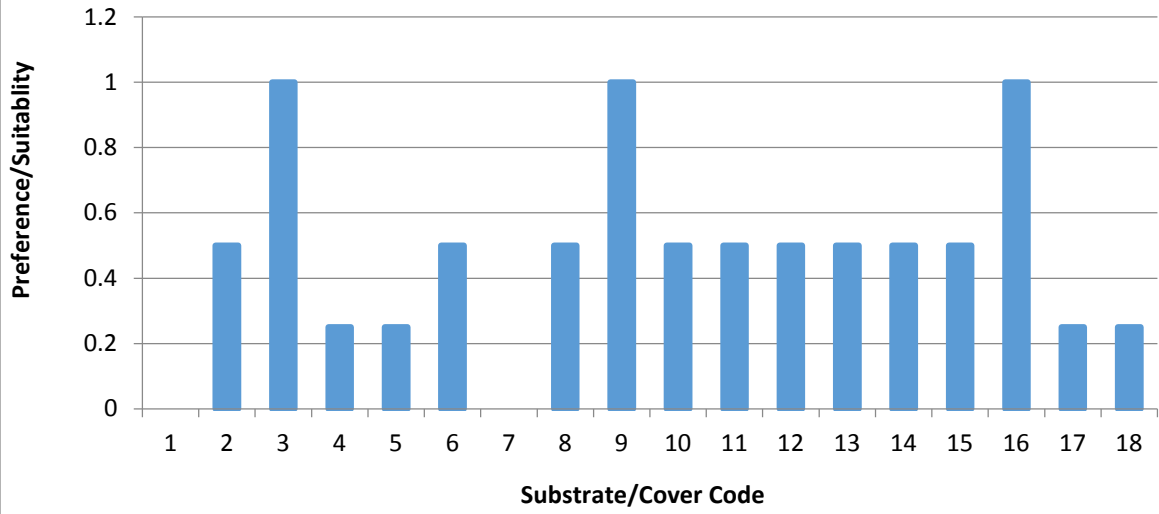
LMB Spawning Velocity HSC



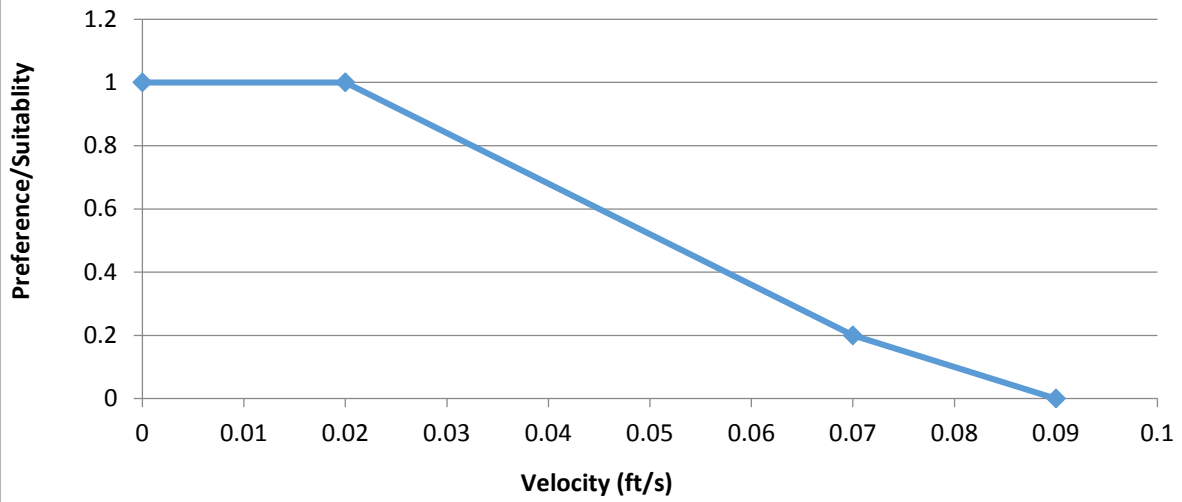
LMB Spawning Depth HSC



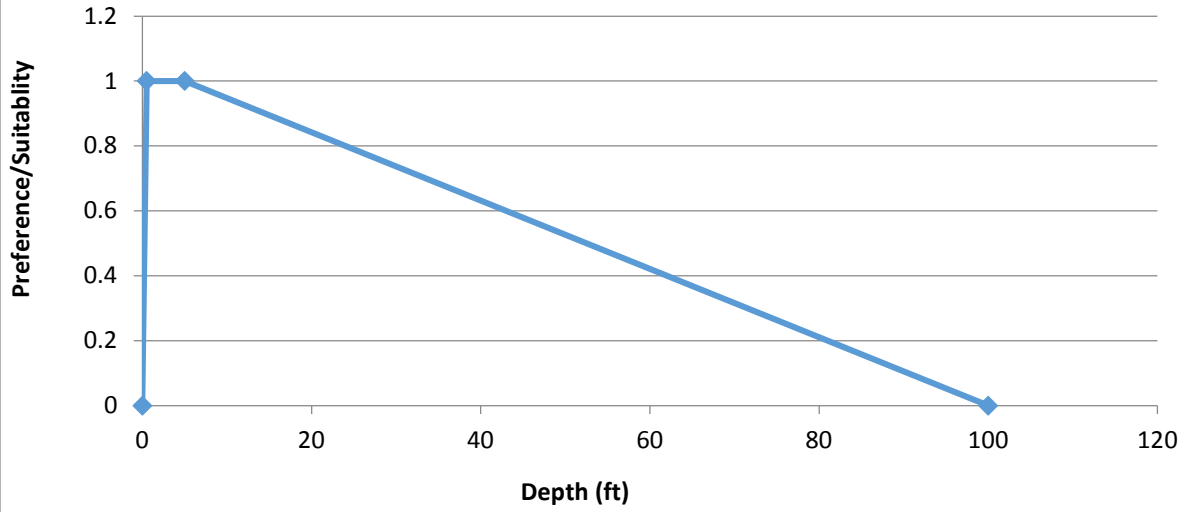
LMB Spawning Substrate/Cover HSC



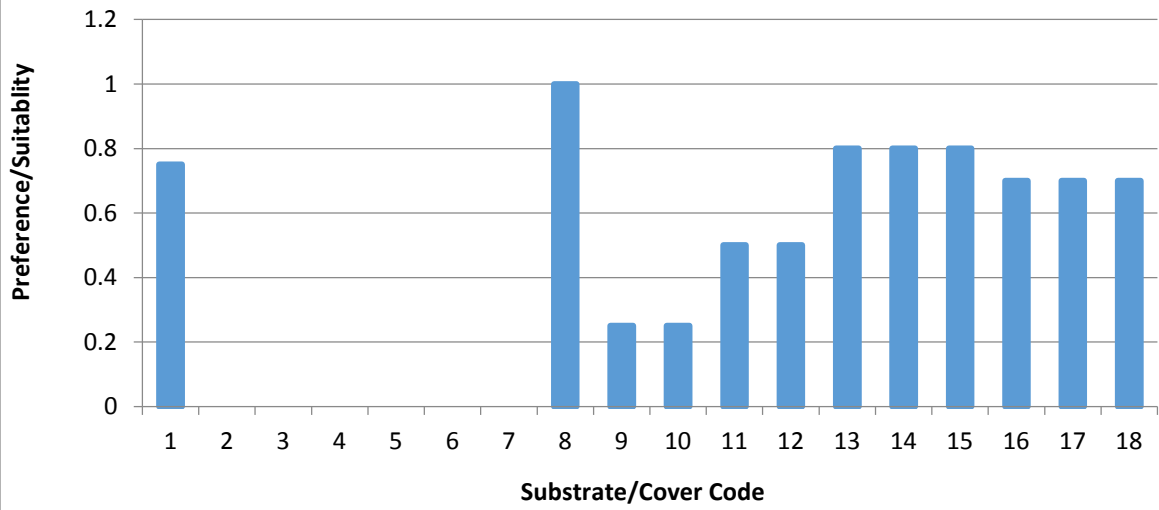
LMB Fry Velocity HSC



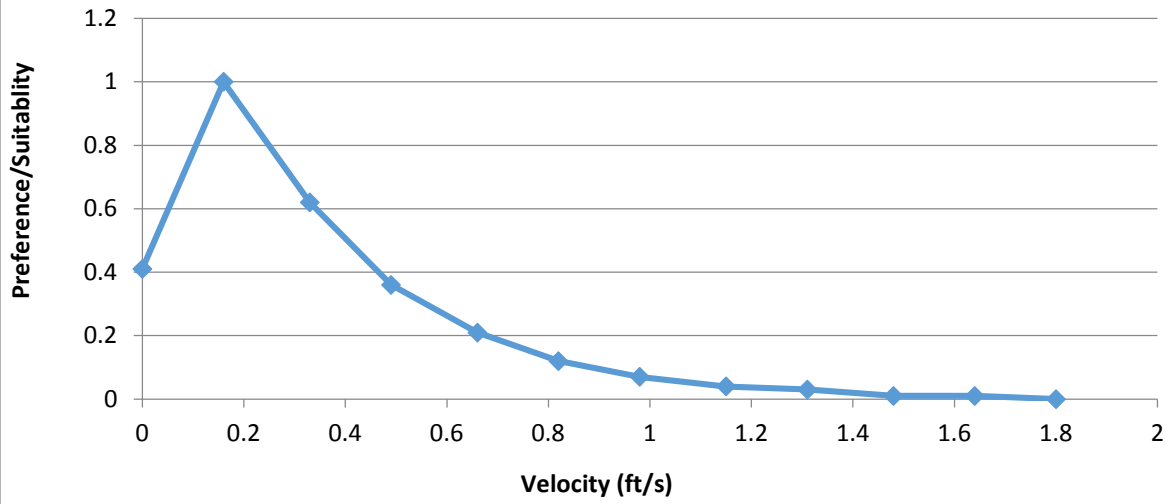
LMB Fry Depth HSC



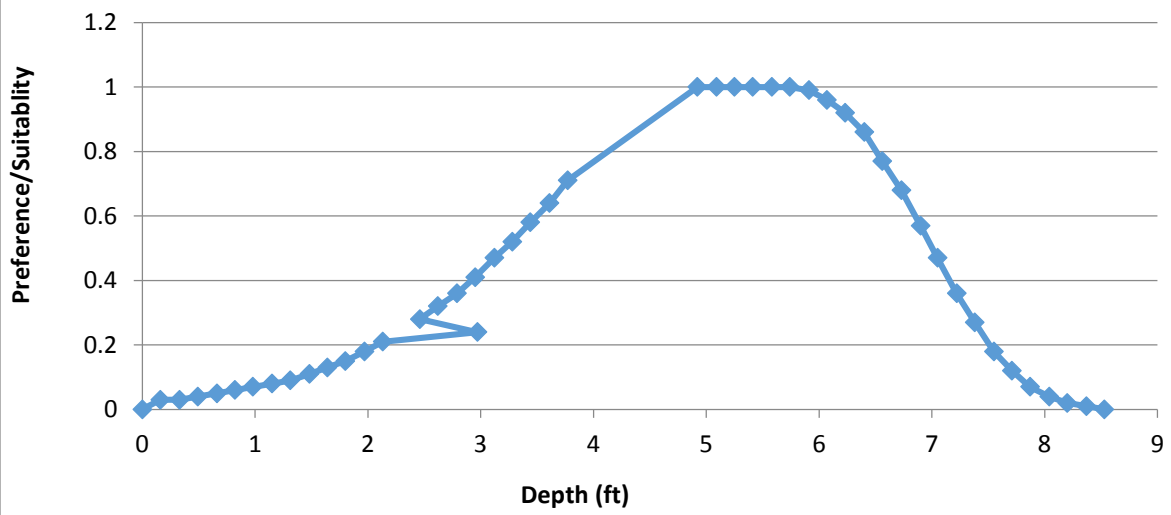
LMB Fry Substrate/Cover HSC



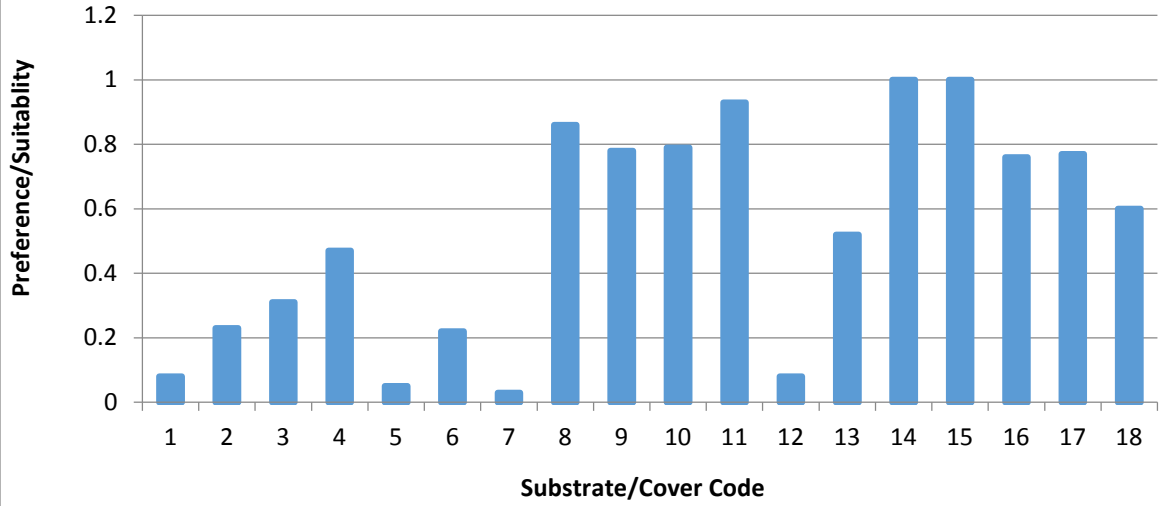
Bluegill Adult Velocity HSC



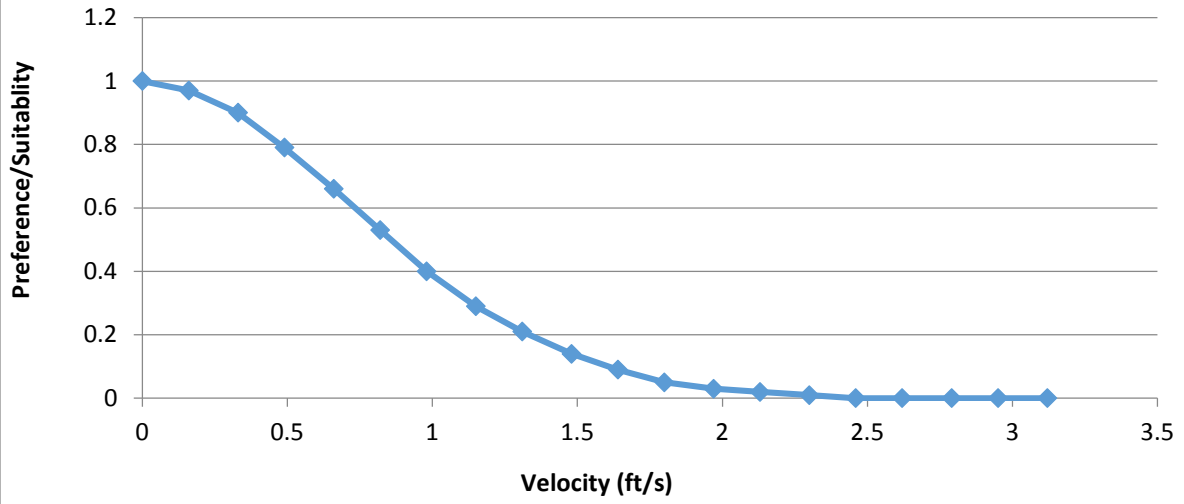
Bluegill Adult Depth HSC

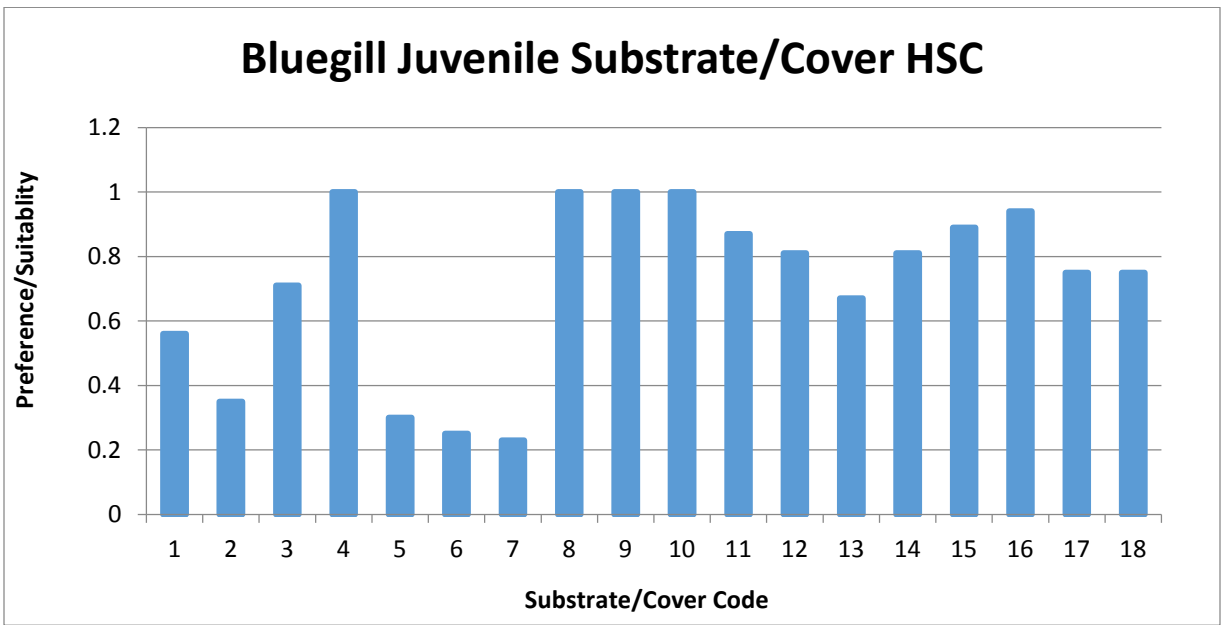
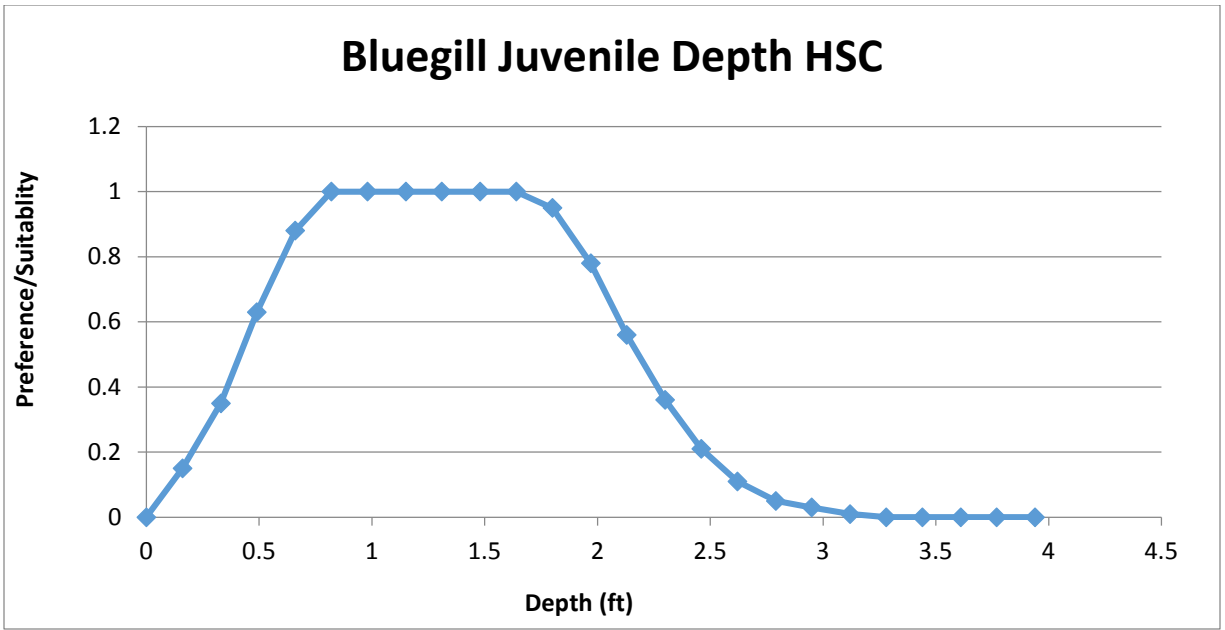


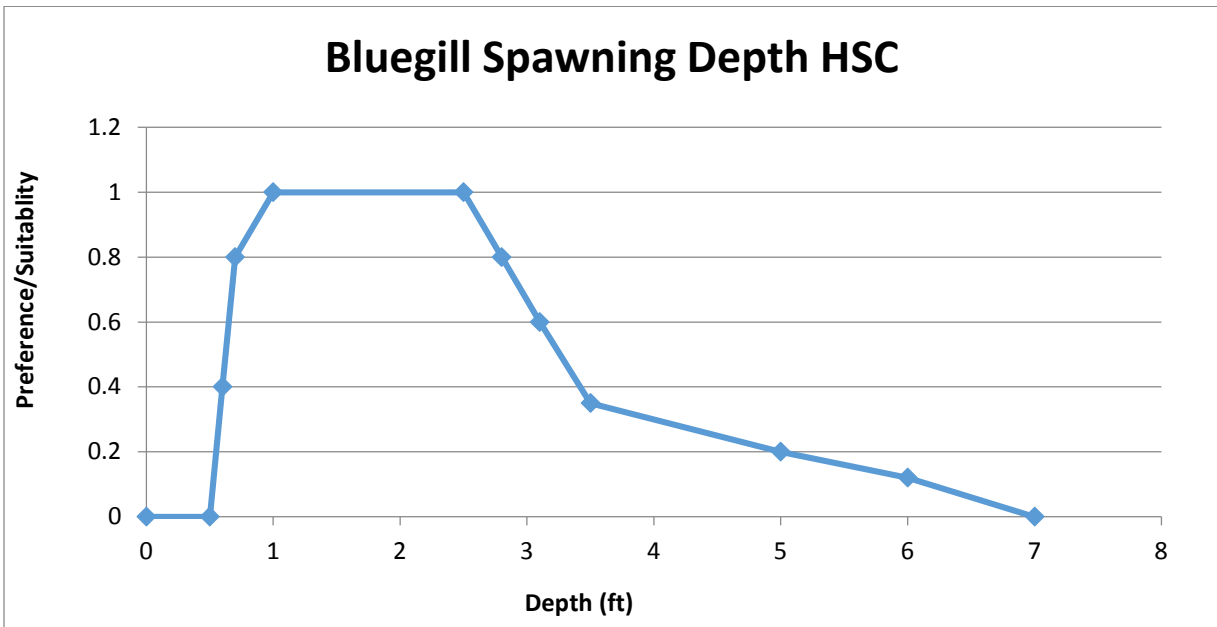
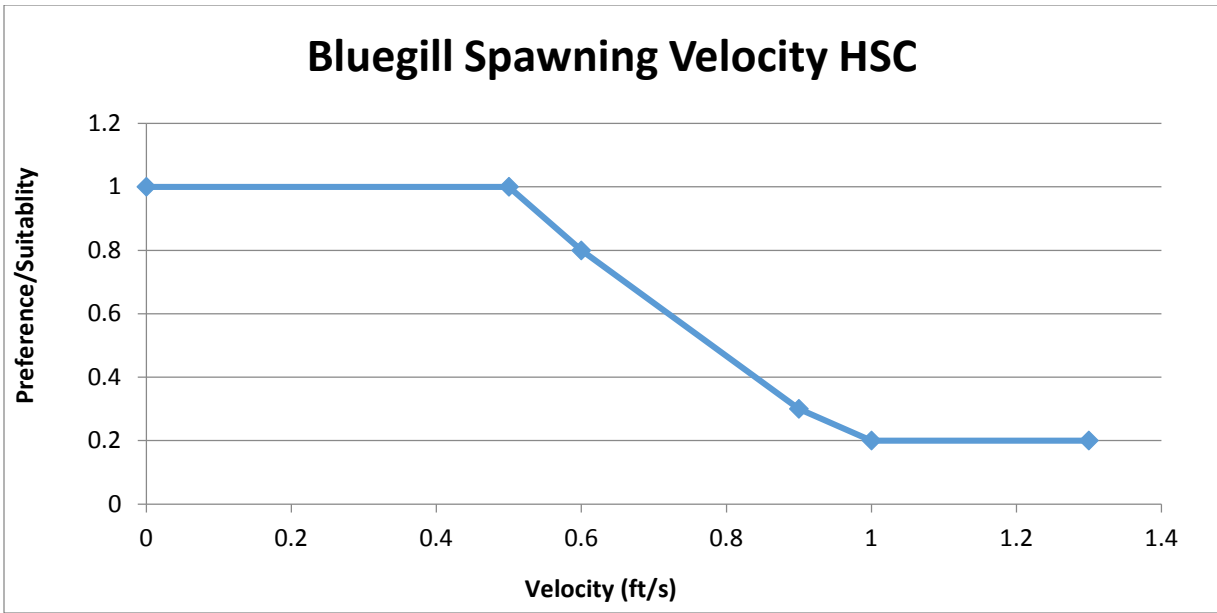
Bluegill Adult Substrate/Cover HSC



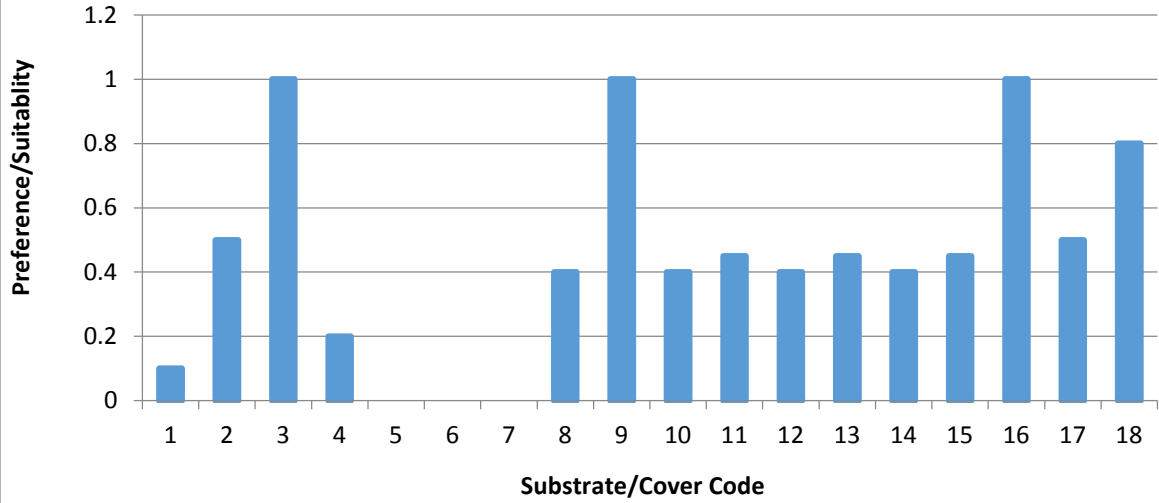
Bluegill Juvenile Velocity HSC



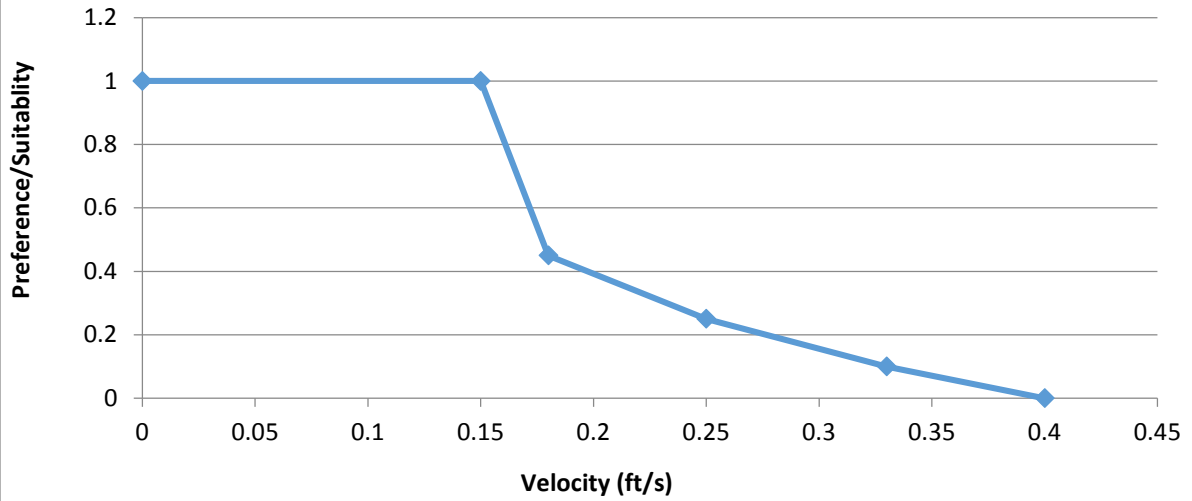


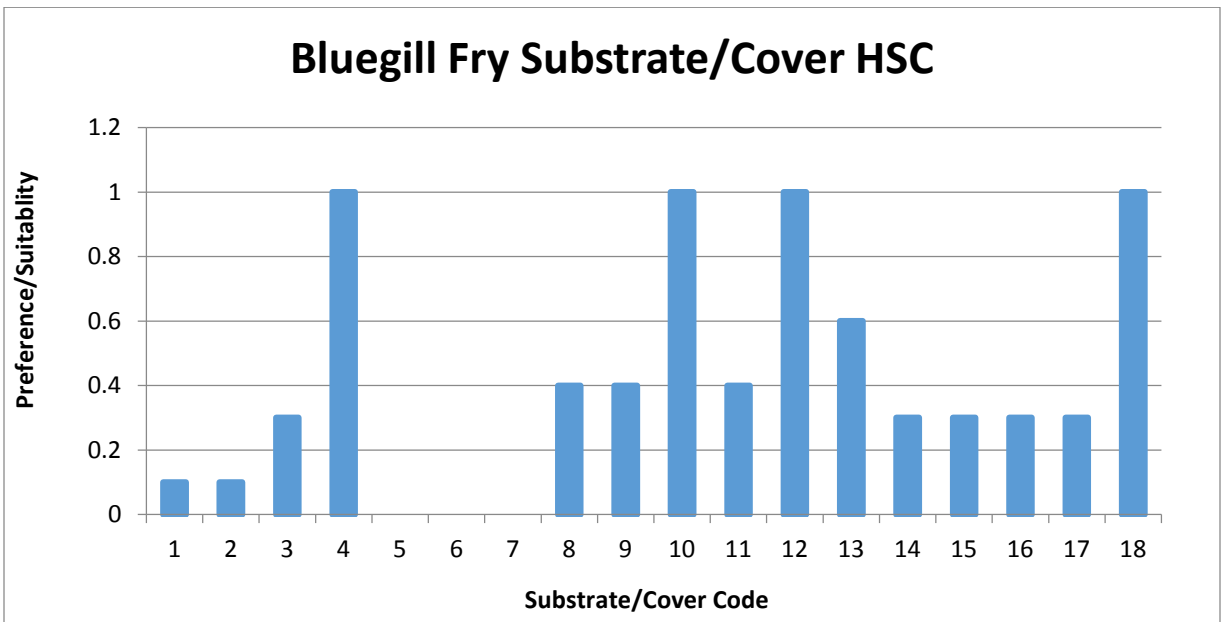
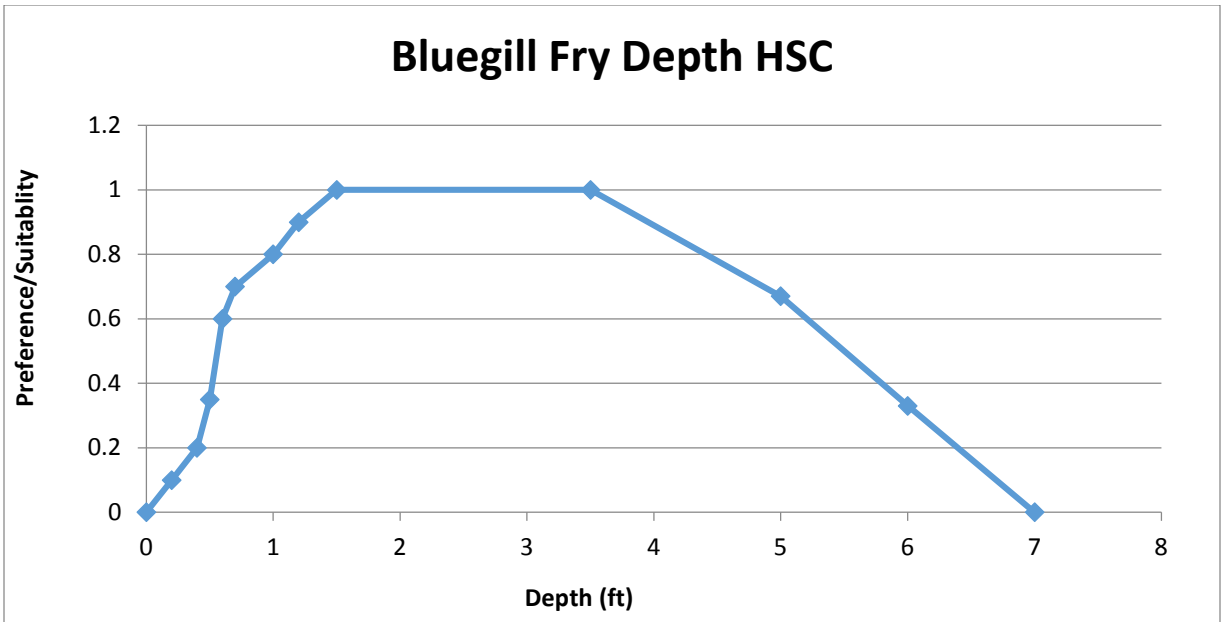


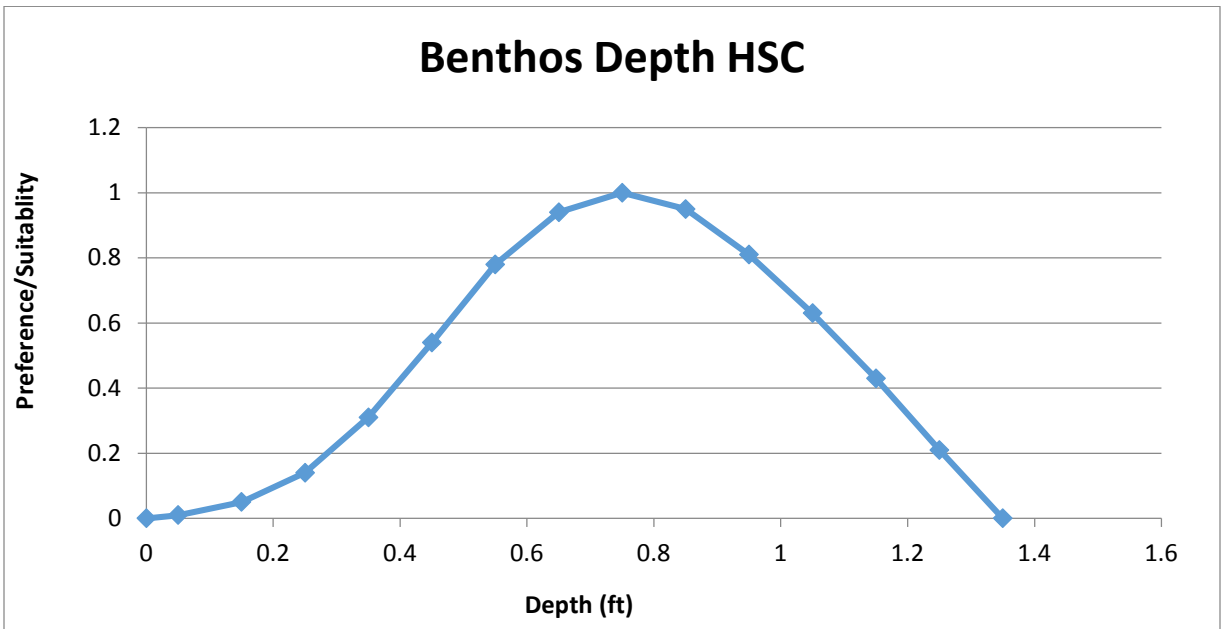
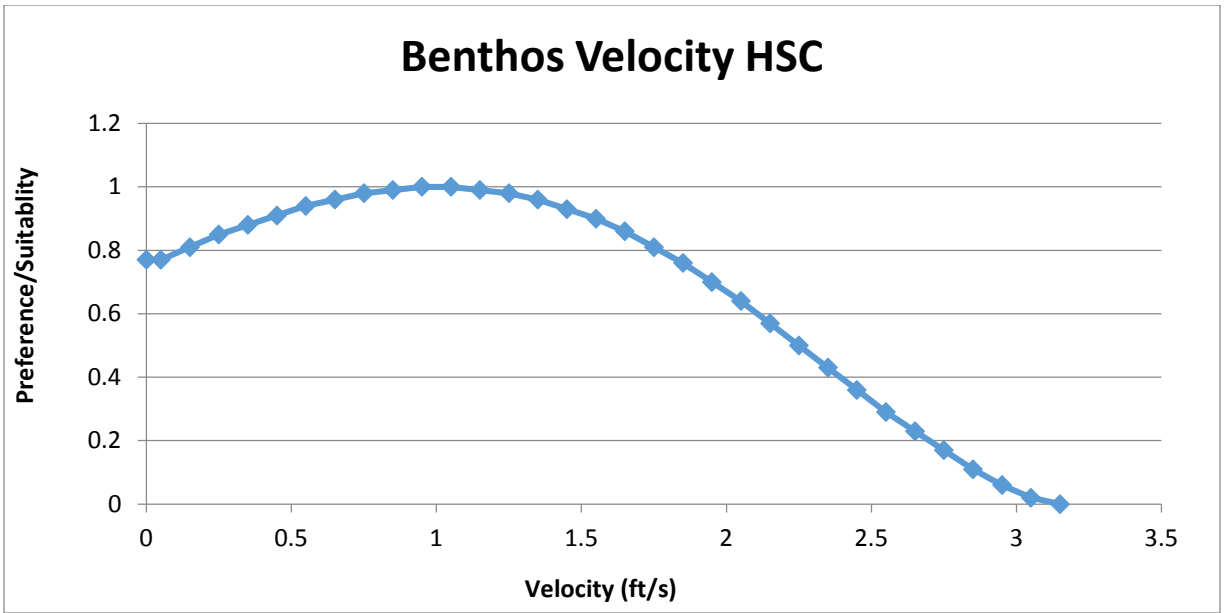
Bluegill Spawning Substrate/Cover HSC



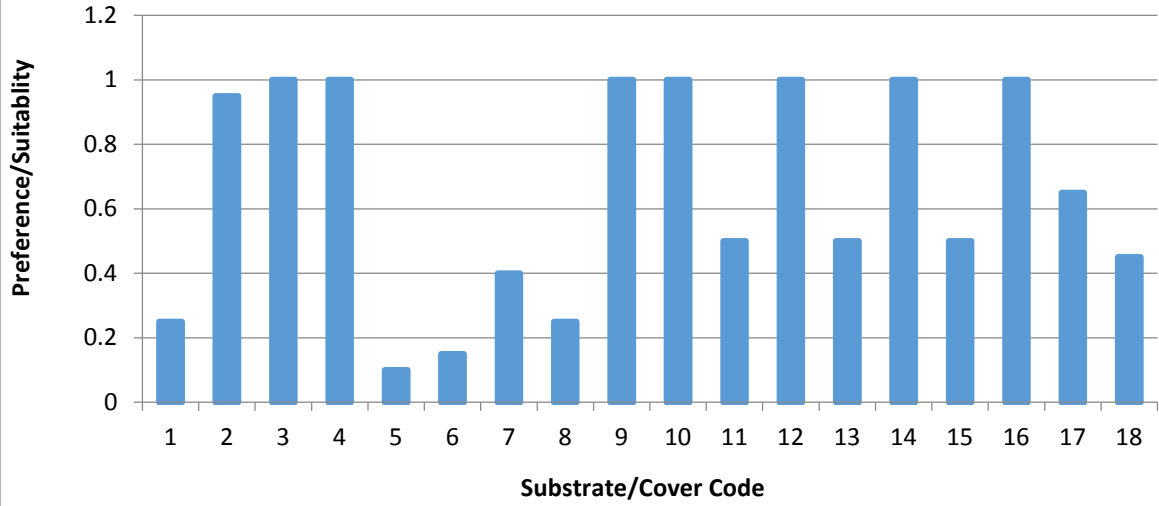
Bluegill Fry Velocity HSC



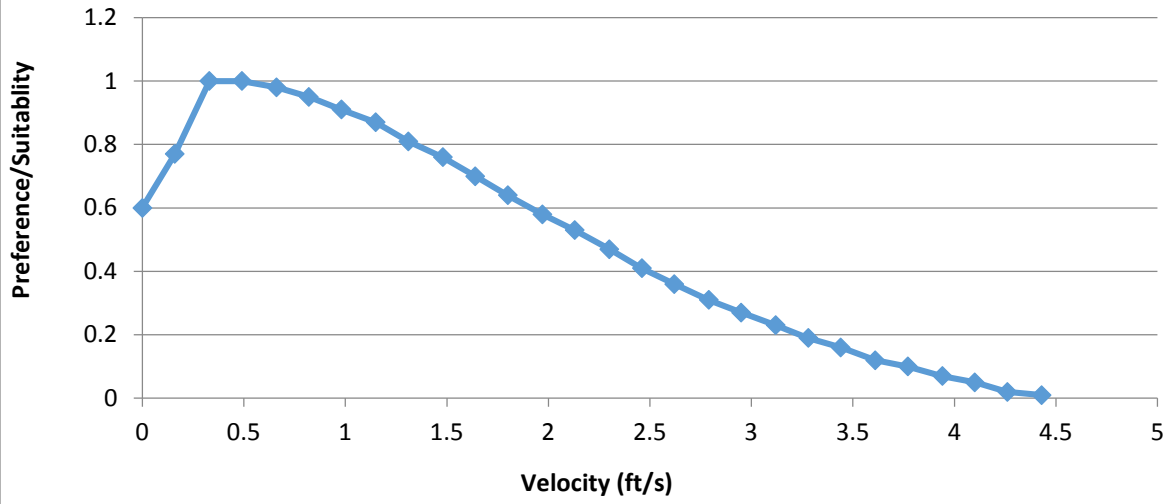


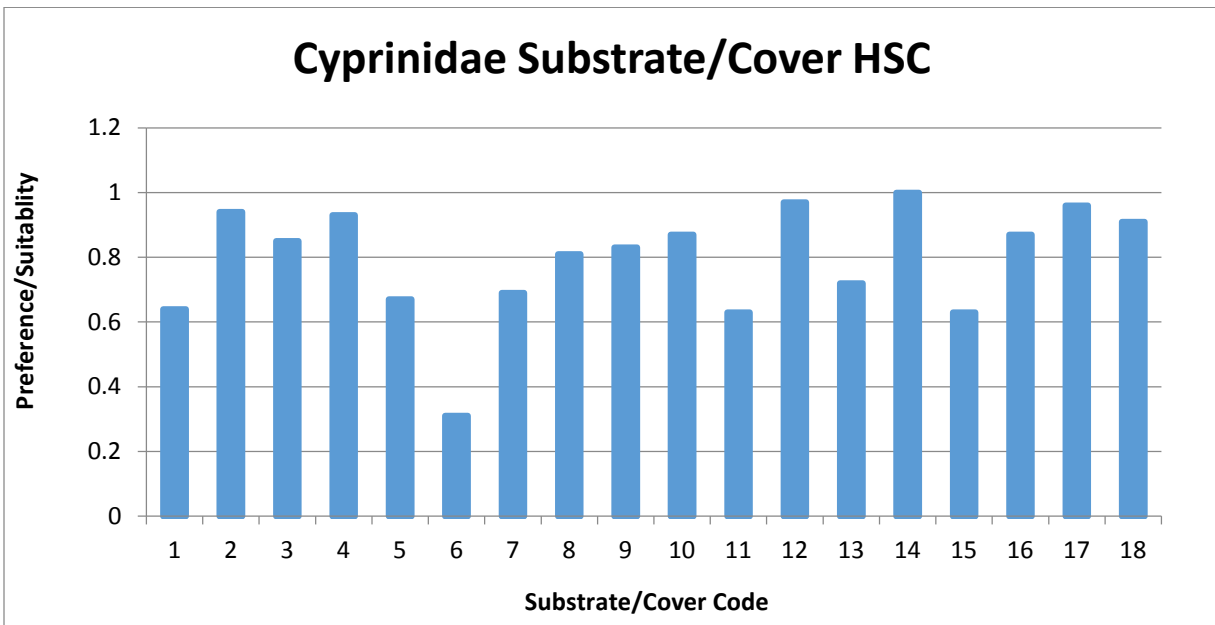
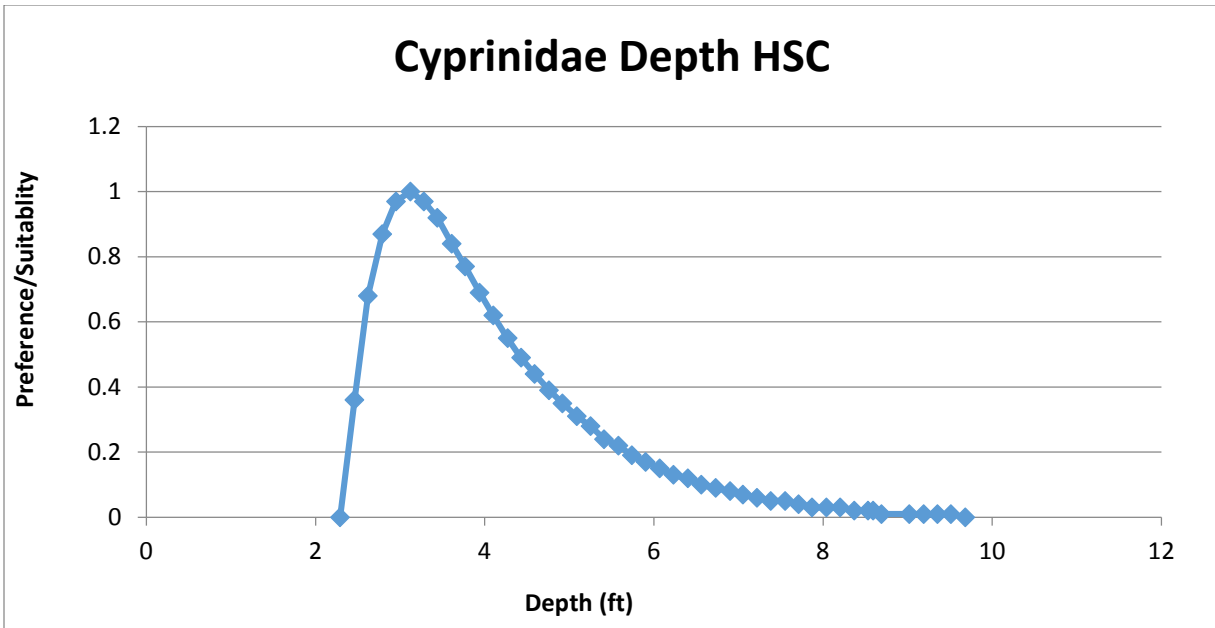


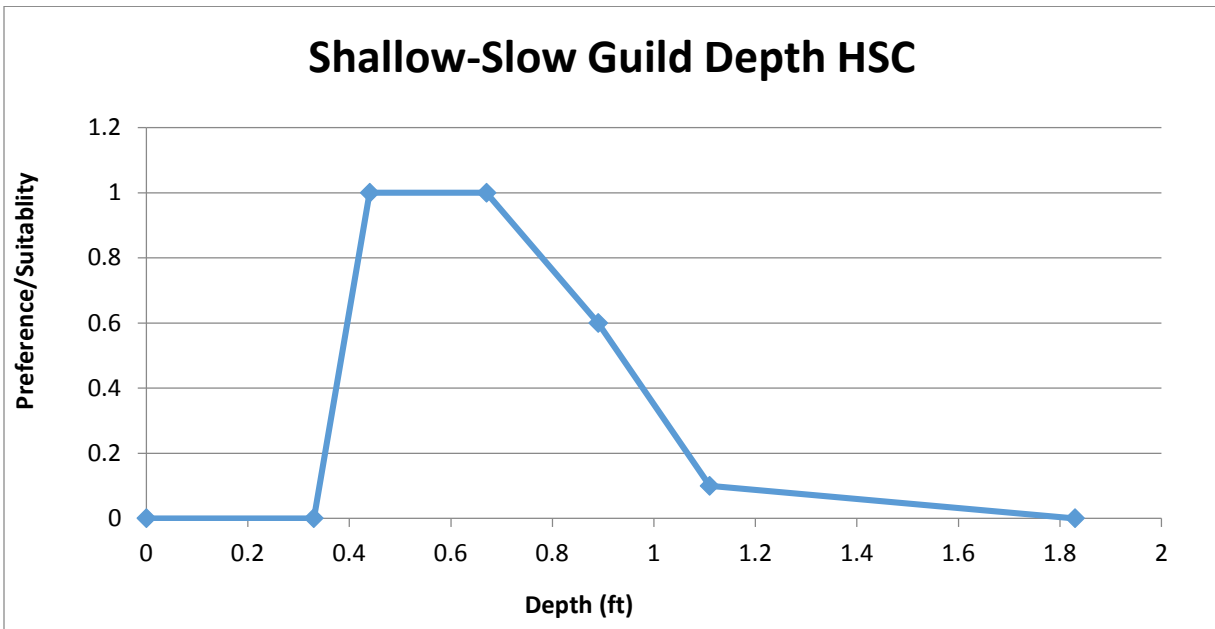
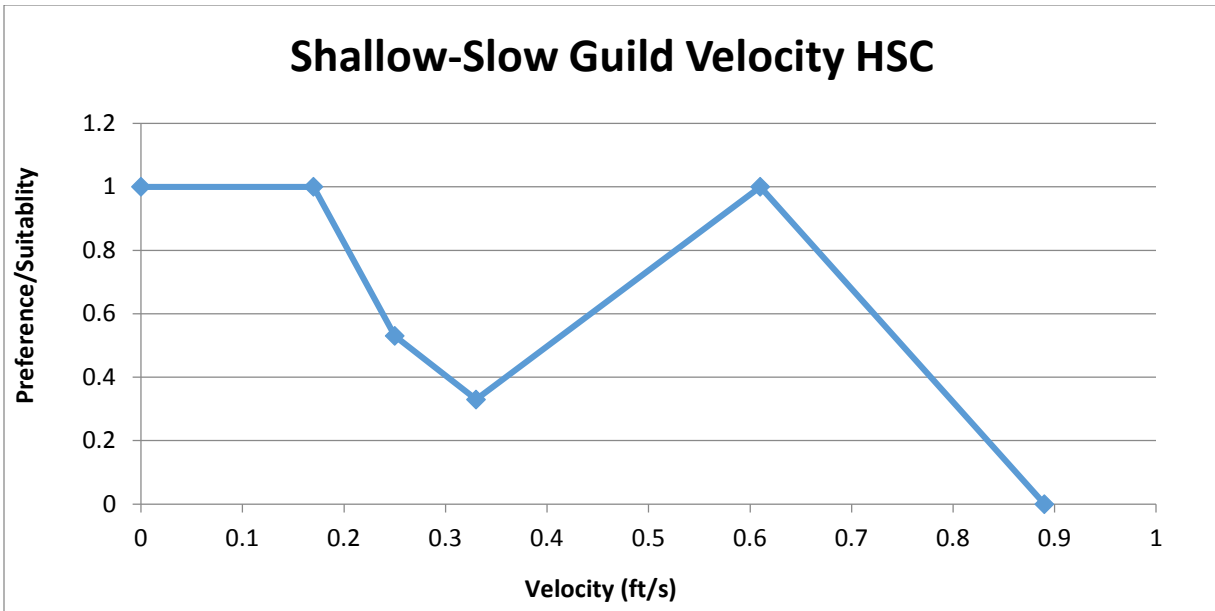
Benthos Substrate/Cover HSC



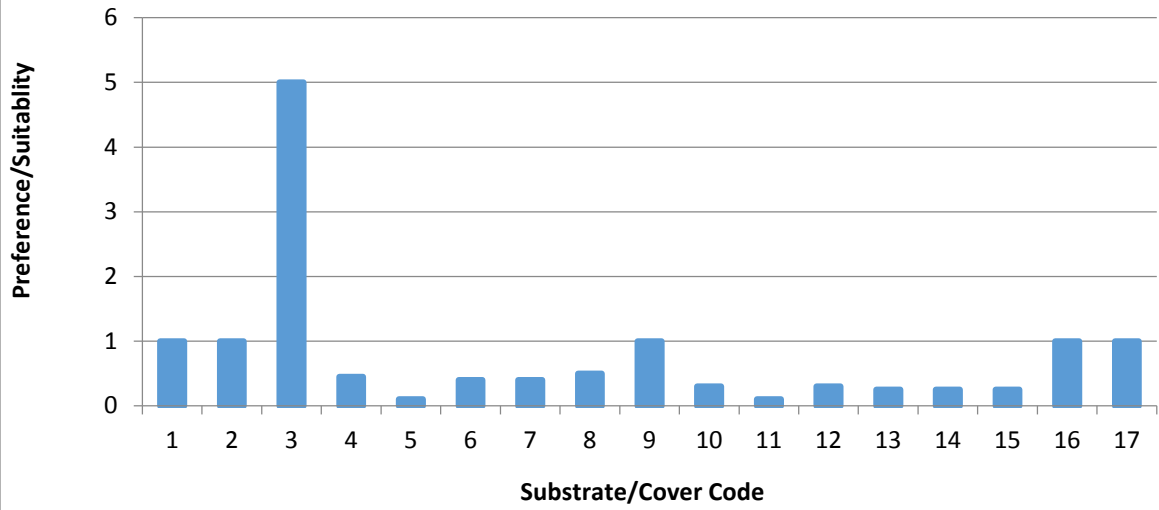
Cyprinidae Velocity HSC



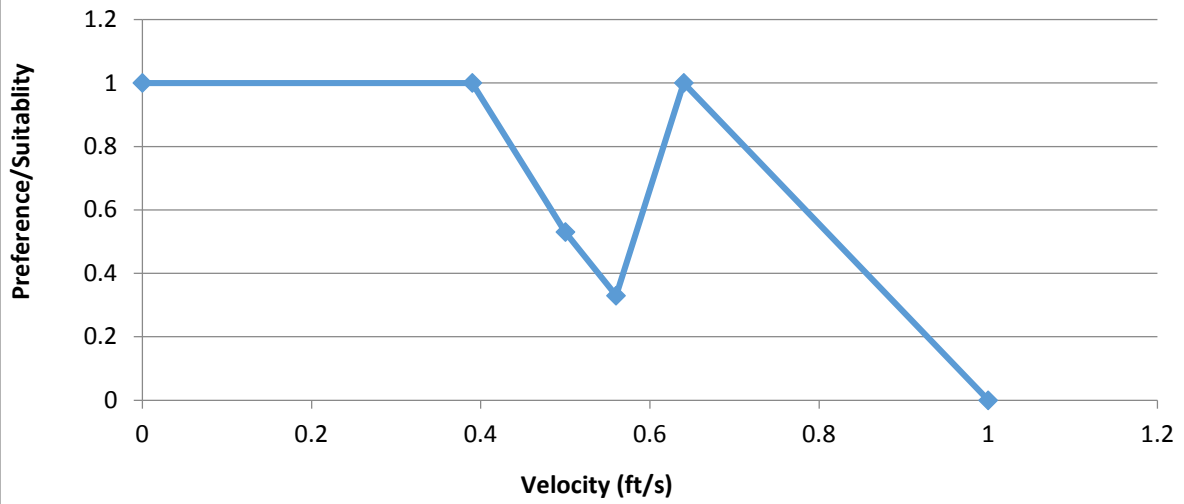


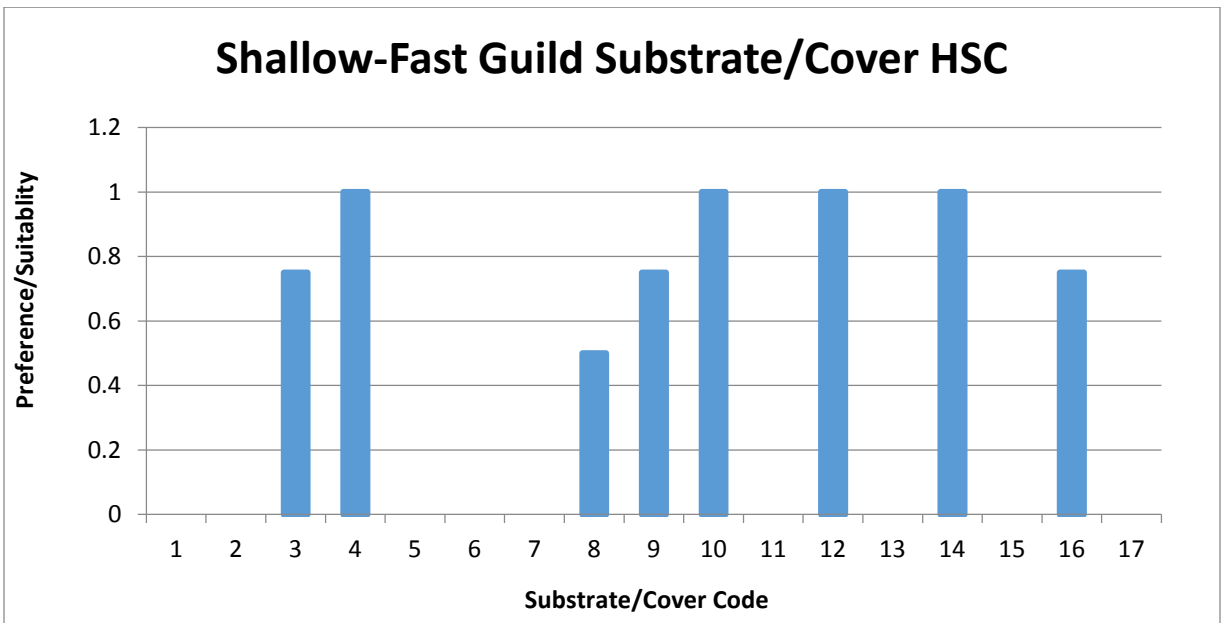
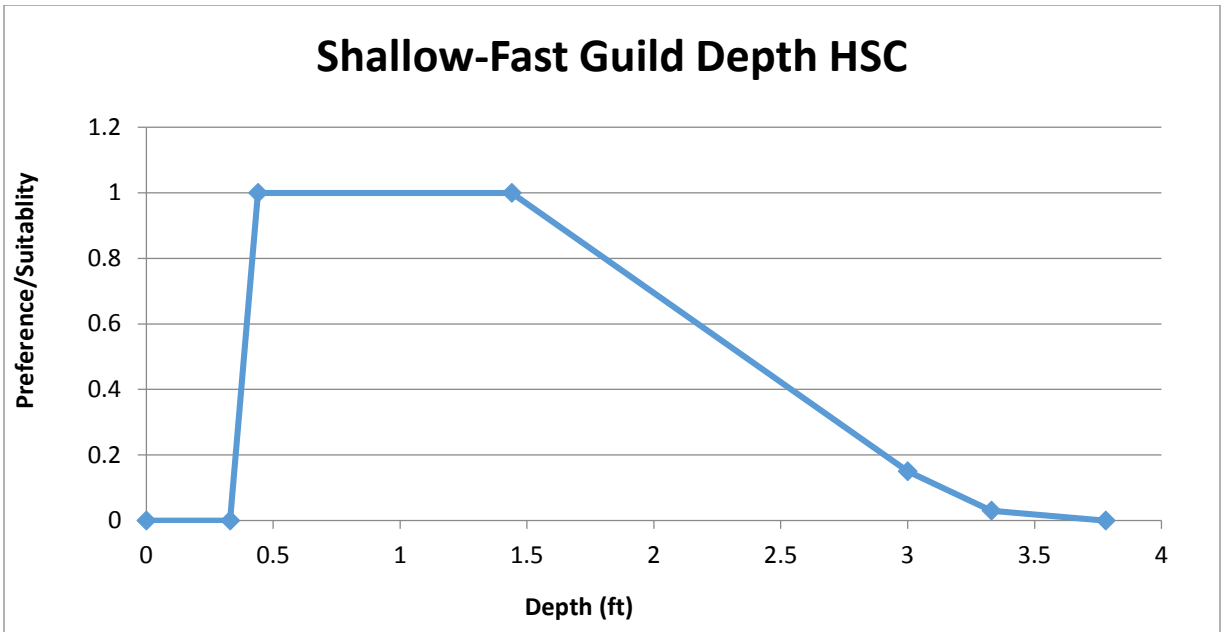


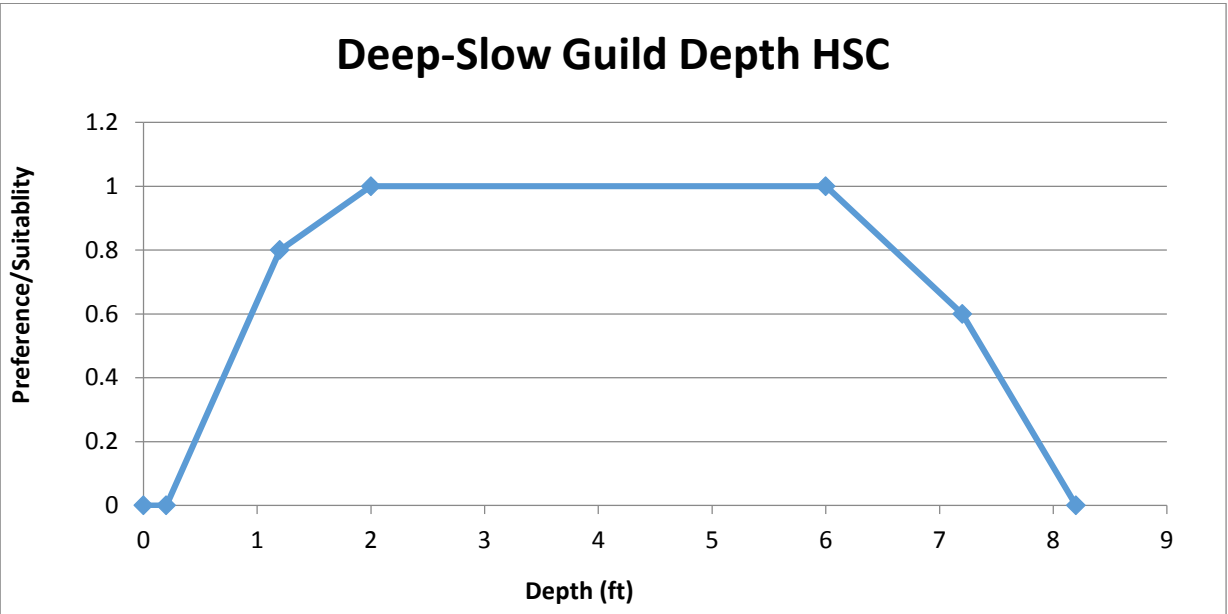
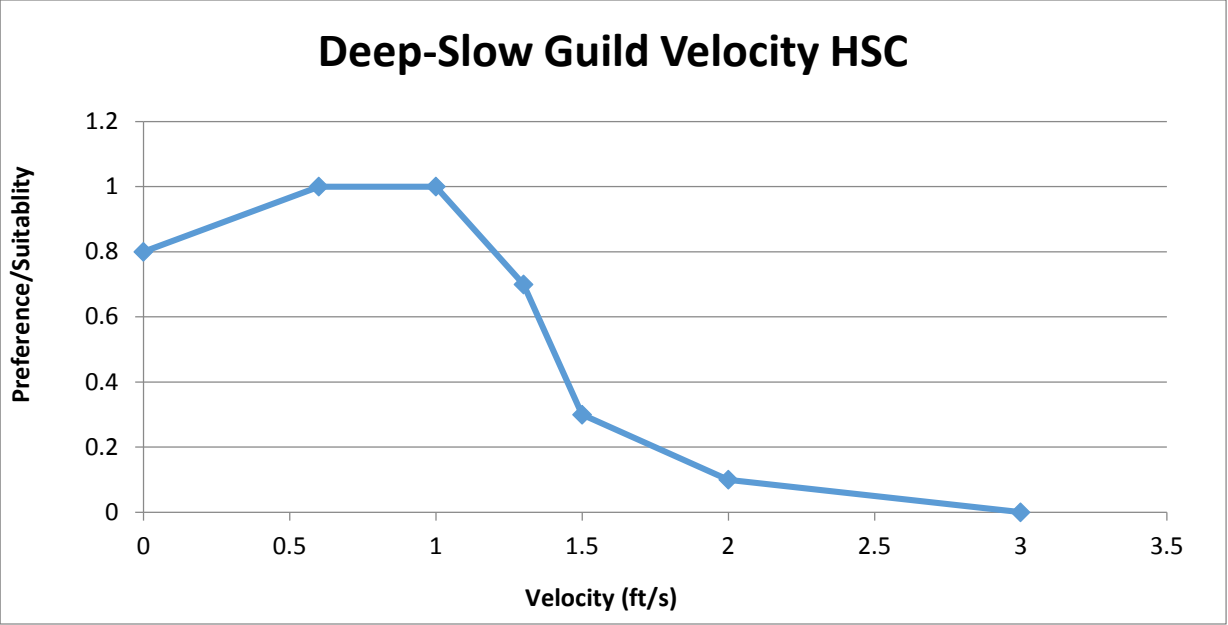
Shallow-Slow Guild Substrate/Cover HSC



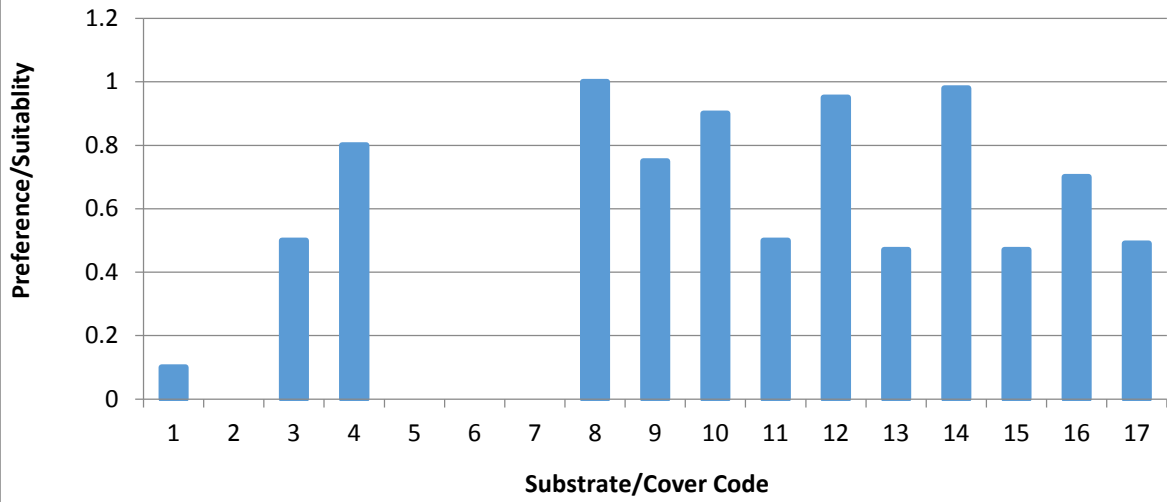
Shallow-Fast Guild Velocity HSC



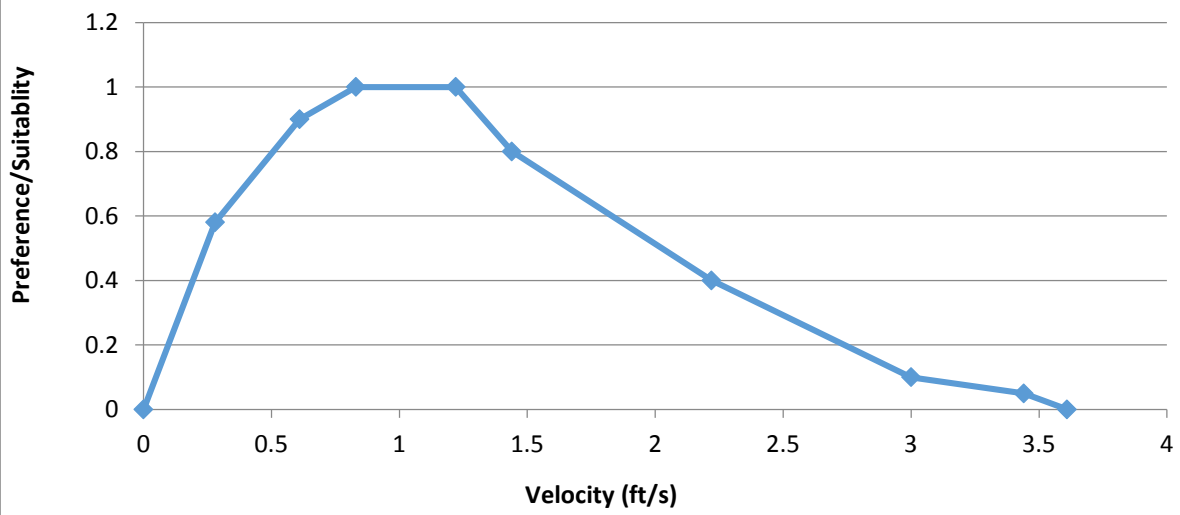


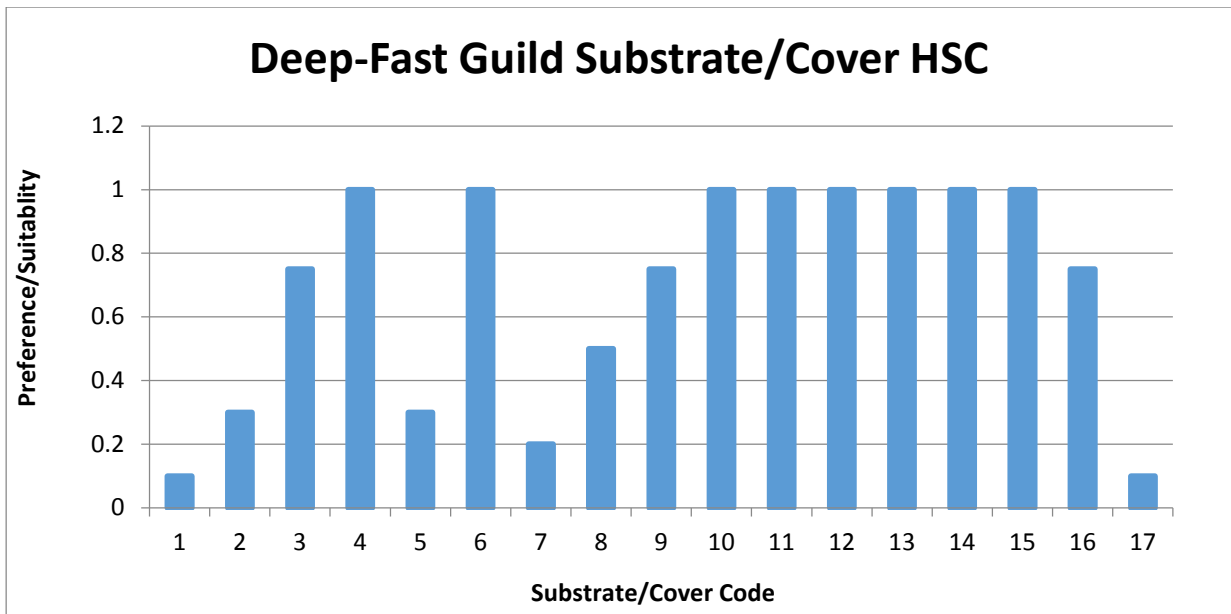
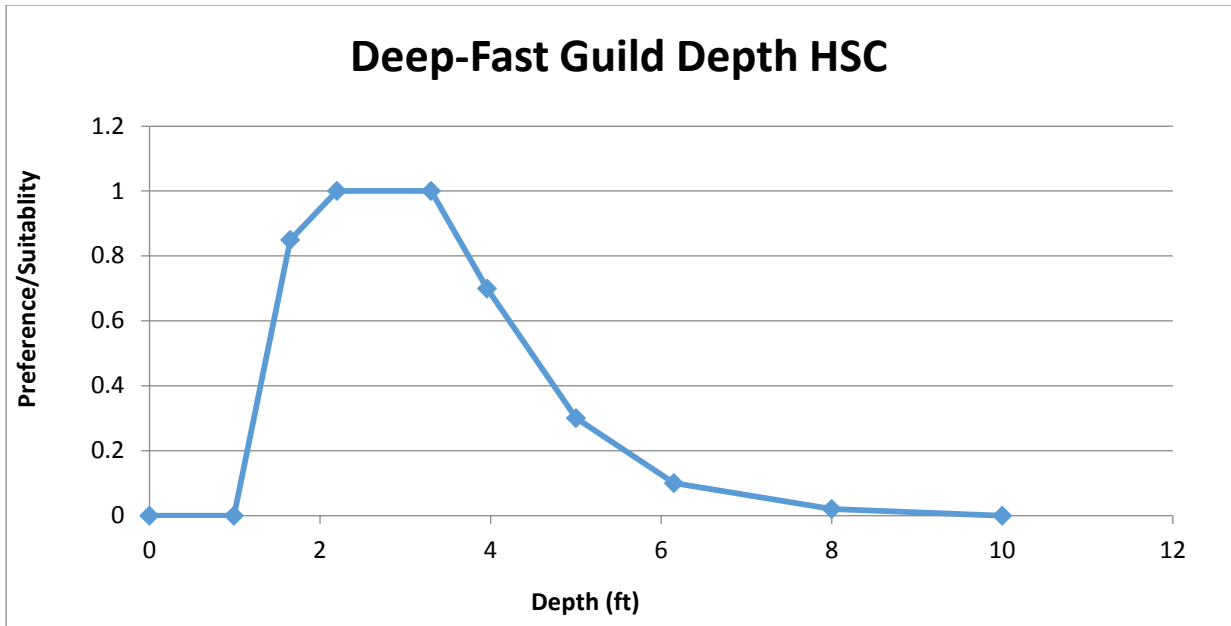


Deep-Slow Guild Substrate/Cover HSC

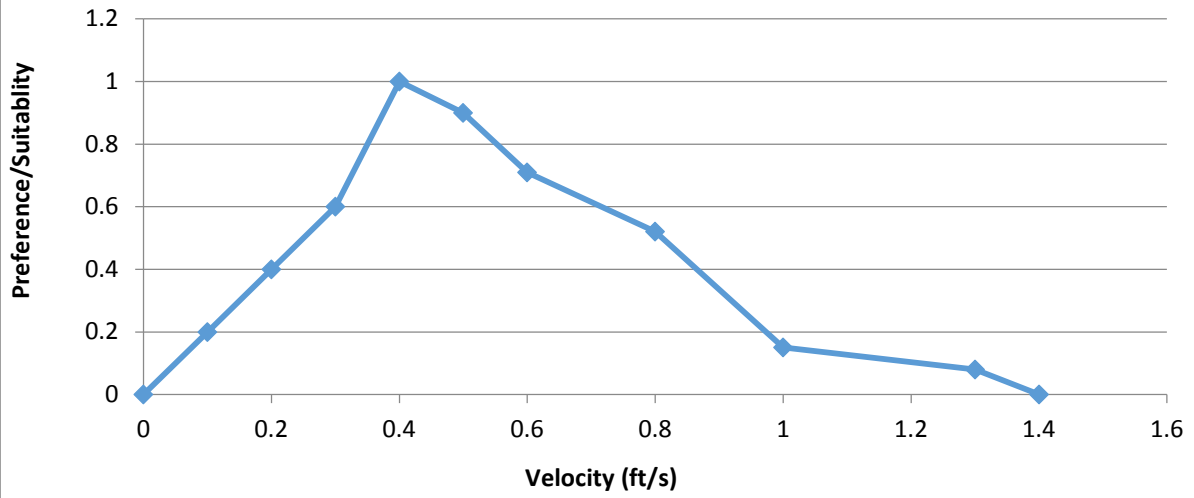


Deep-Fast Guild Velocity HSC

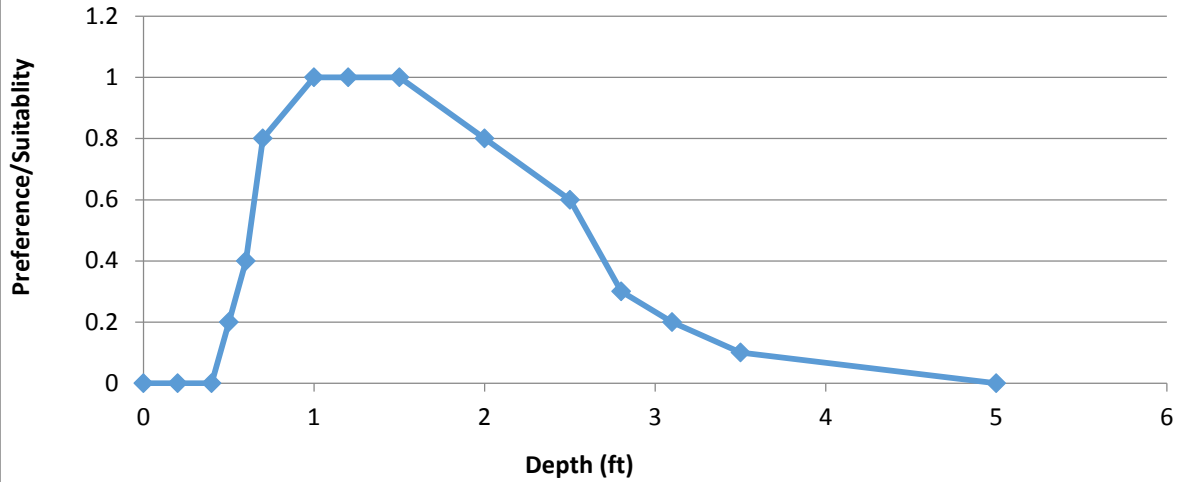




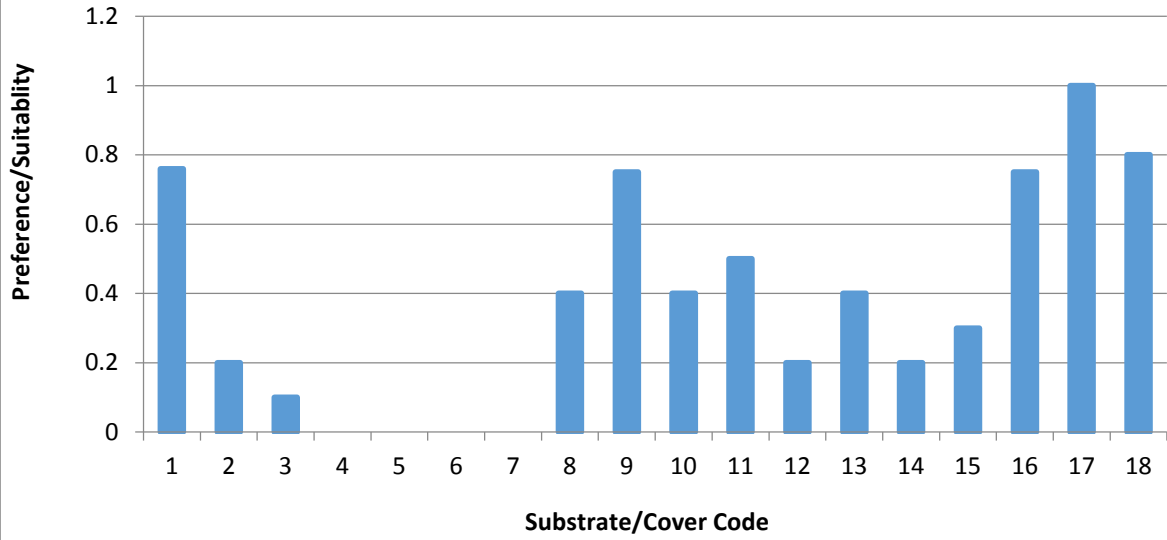
Spotted Sunfish Spawning Velocity HSC



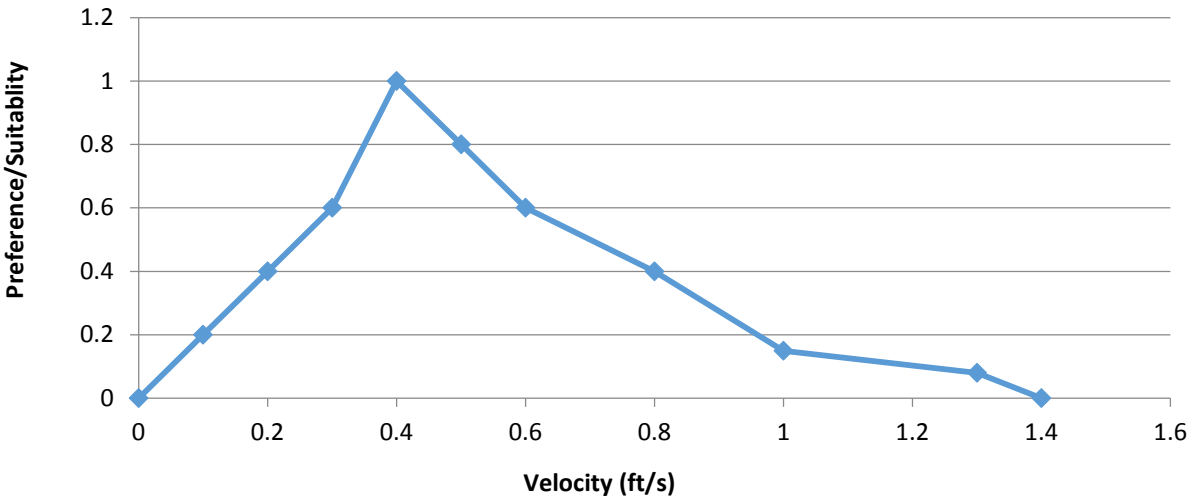
Spotted Sunfish Spawning Depth HSC

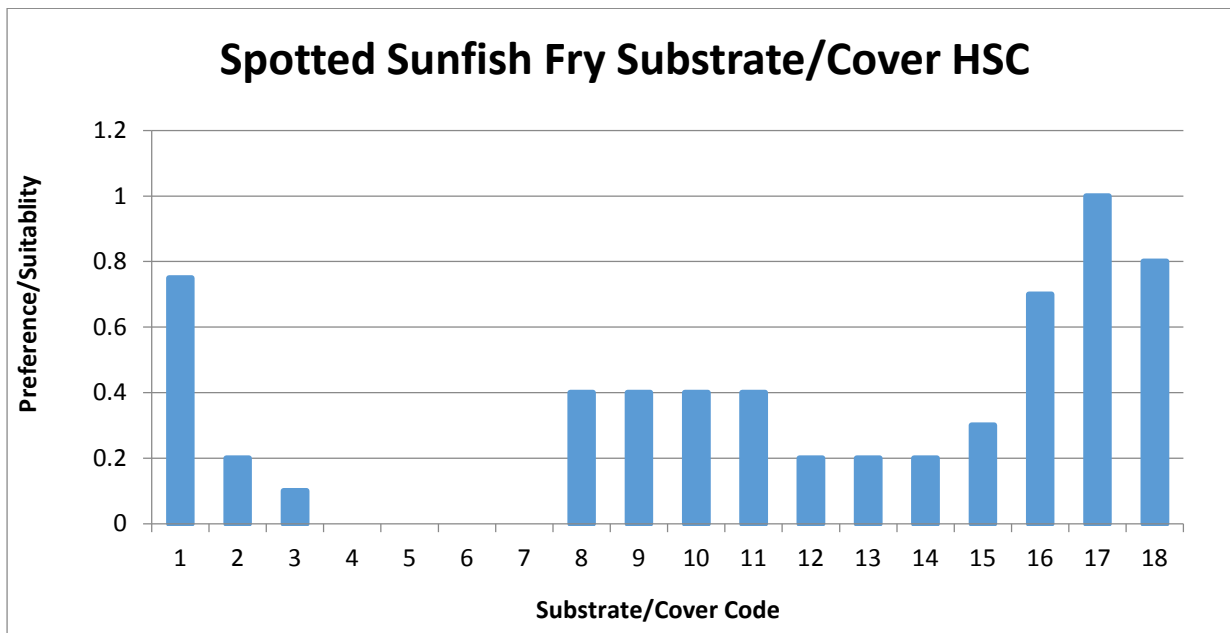
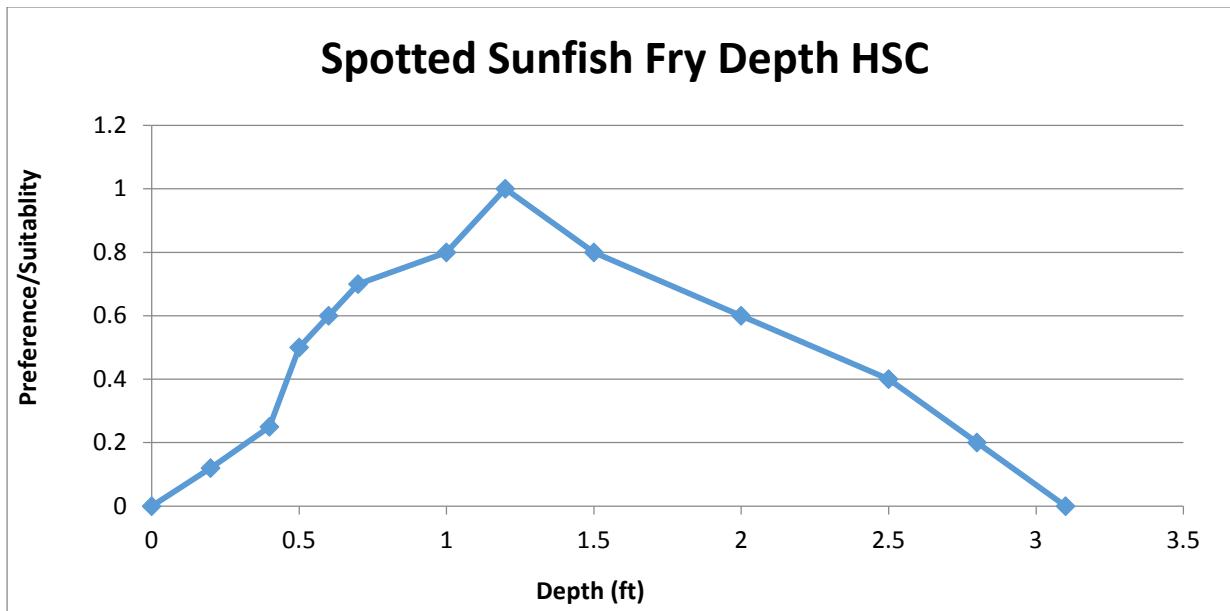


Spotted Sunfish Spawning Substrate/Cover HSC

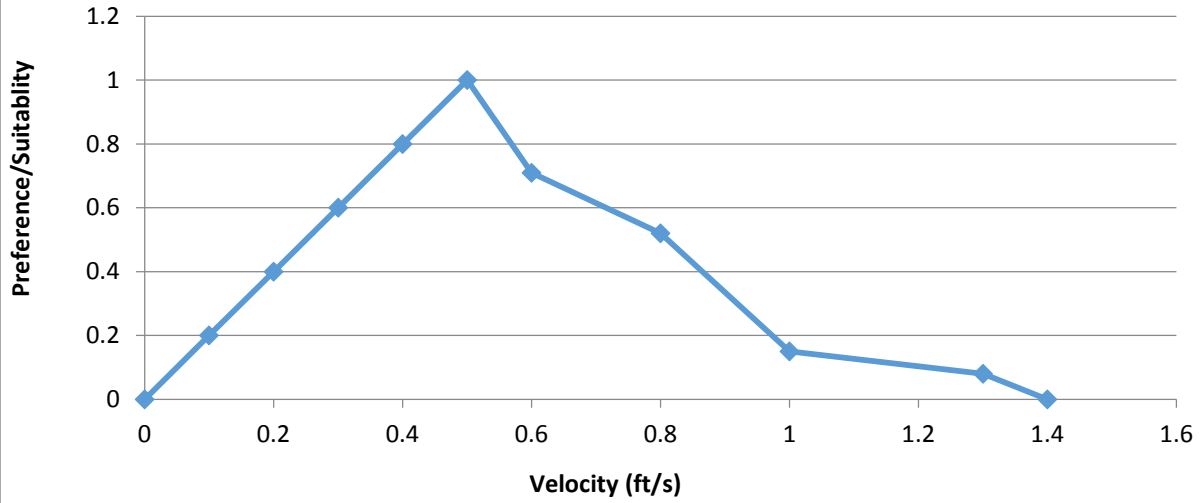


Spotted Sunfish Fry Velocity HSC

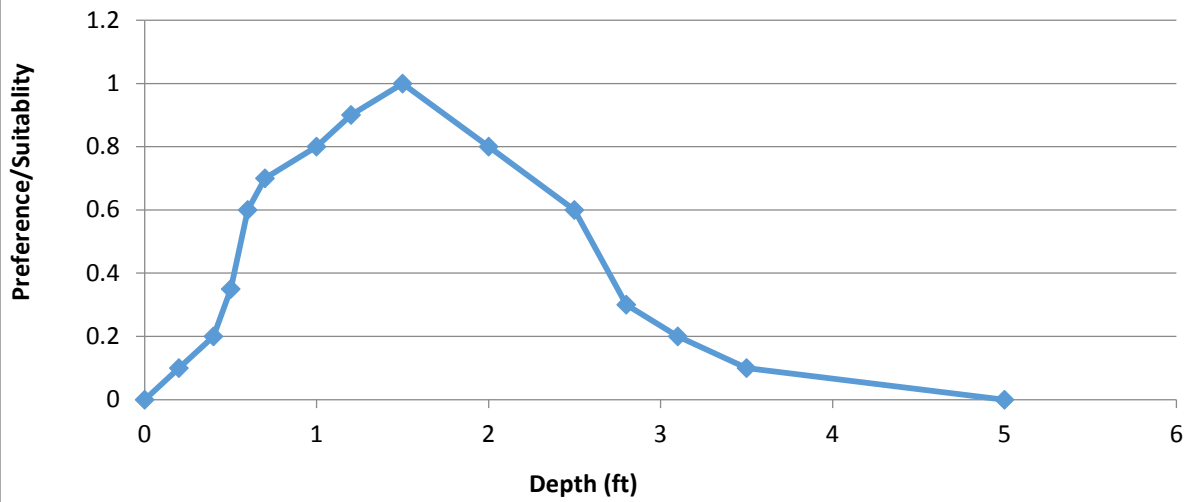




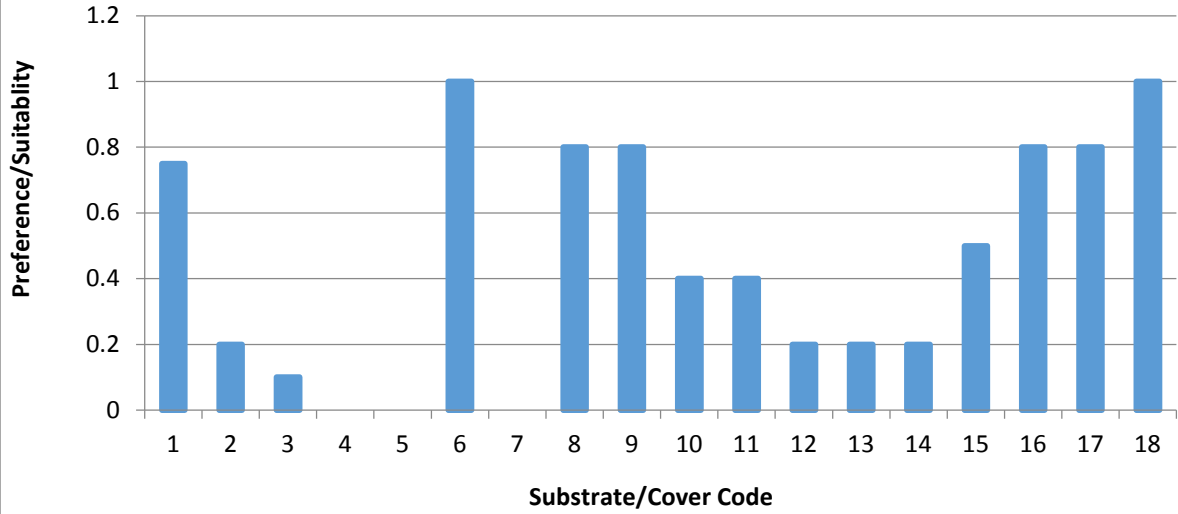
Spotted Sunfish Juvenile Velocity HSC



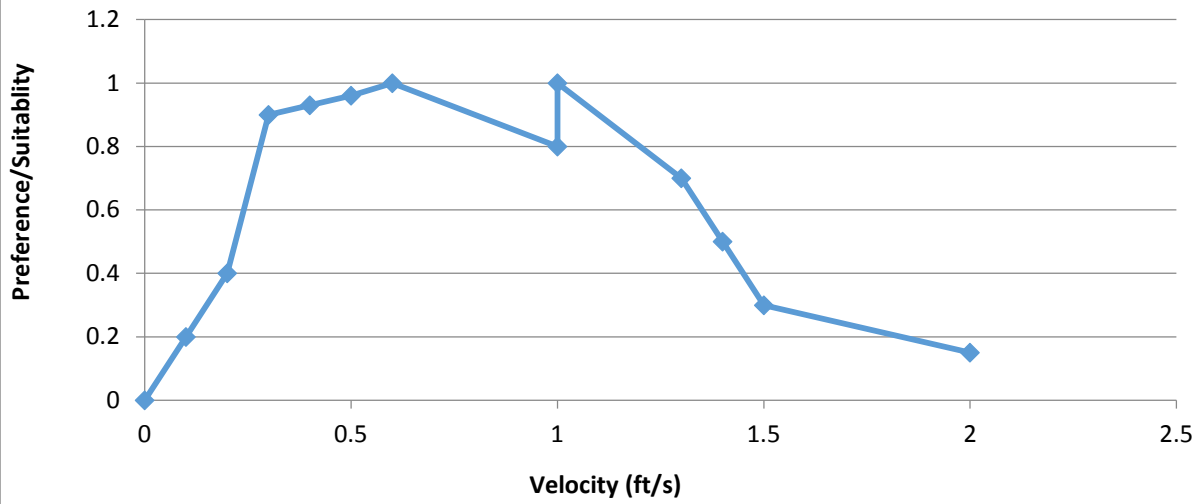
Spotted Sunfish Juvenile Depth HSC



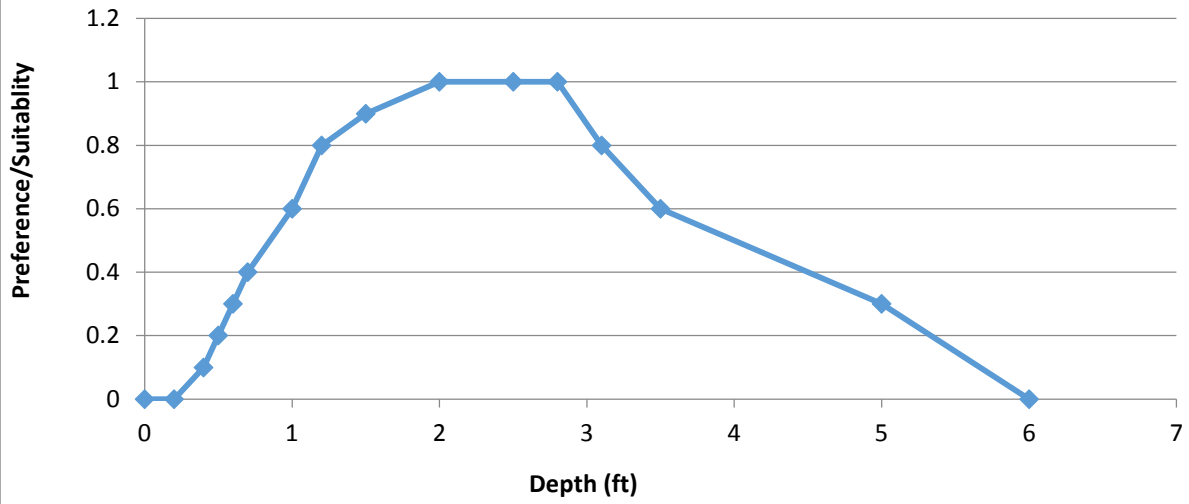
Spotted Sunfish Juvenile Substrate/Cover HSC



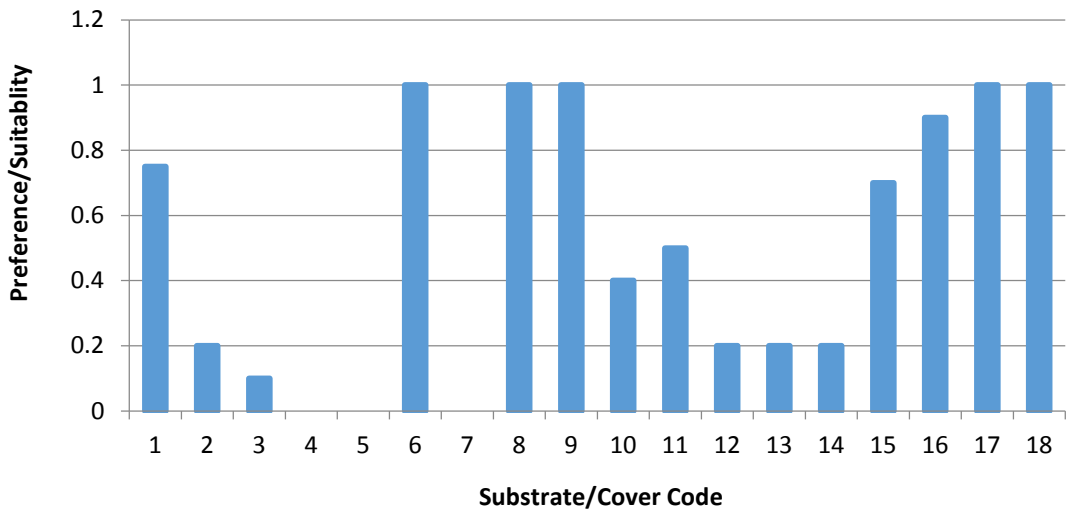
Spotted Sunfish Adult Velocity HSC



Spotted Sunfish Adult Depth HSC



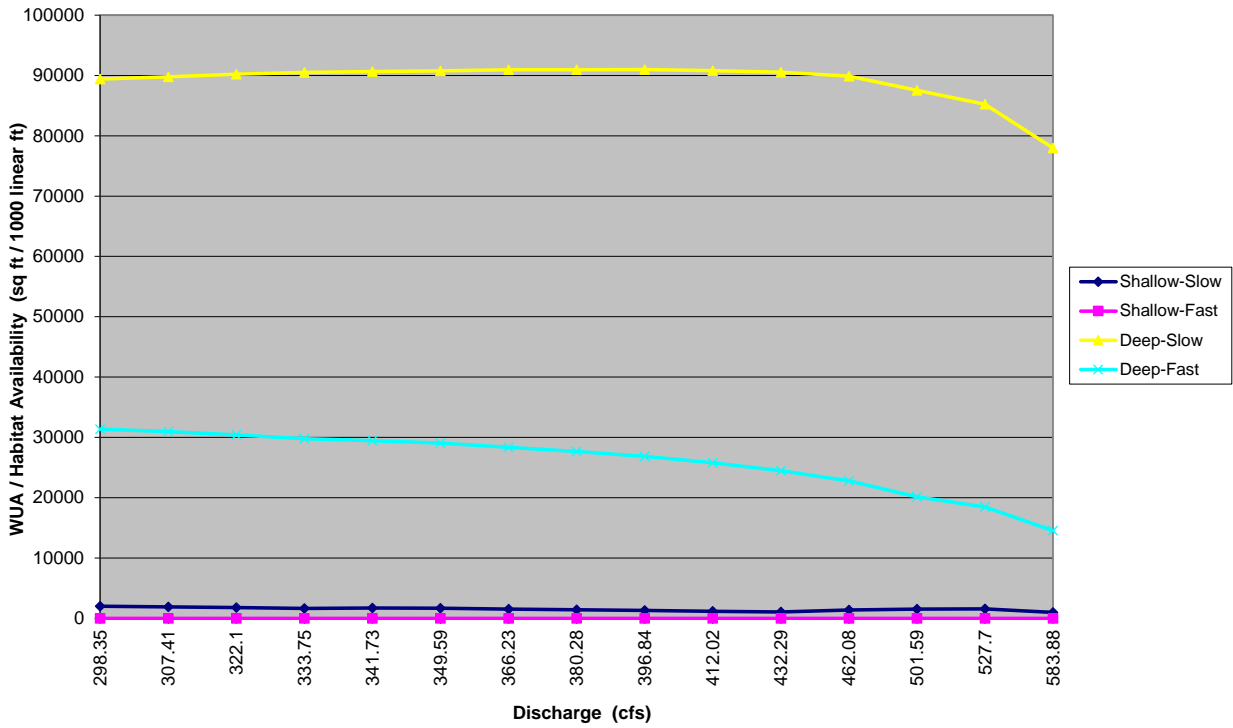
Spotted Sunfish Adult Substrate/Cover HSC



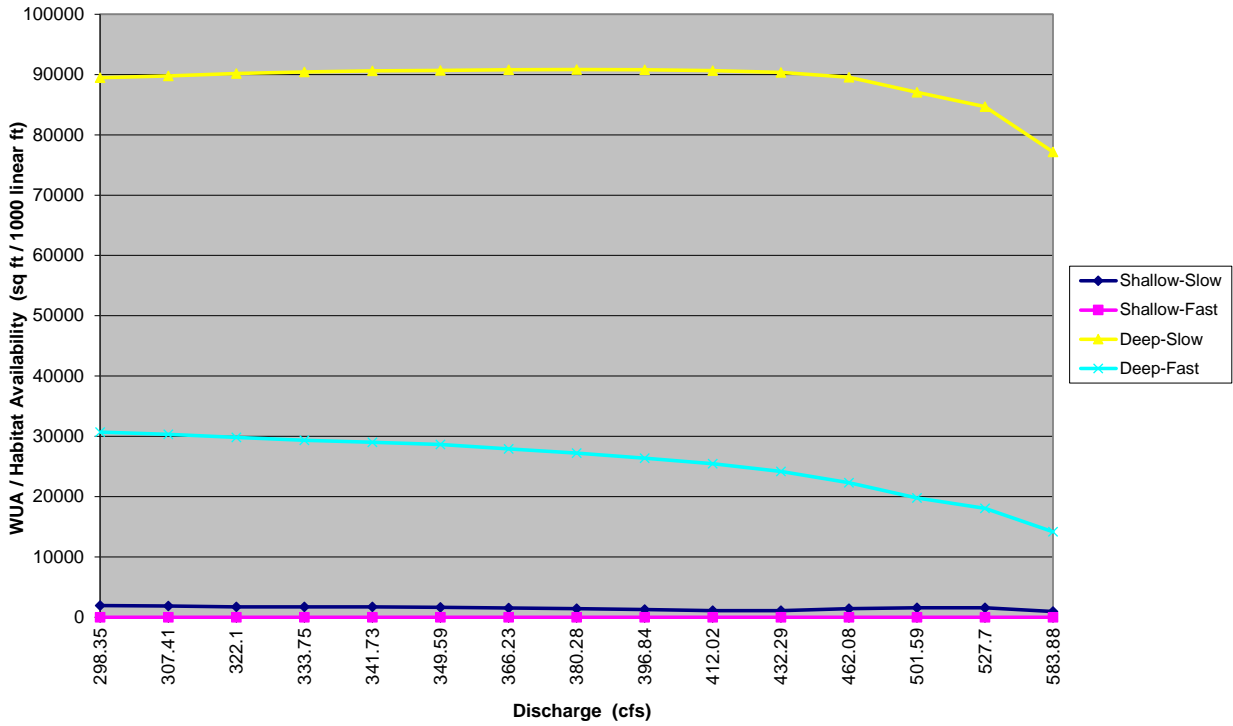
Section 2

Rainbow River System PHABSIM Modeling Results: Weighted Usable Area vs. Discharge Plots for PHABSIM 1

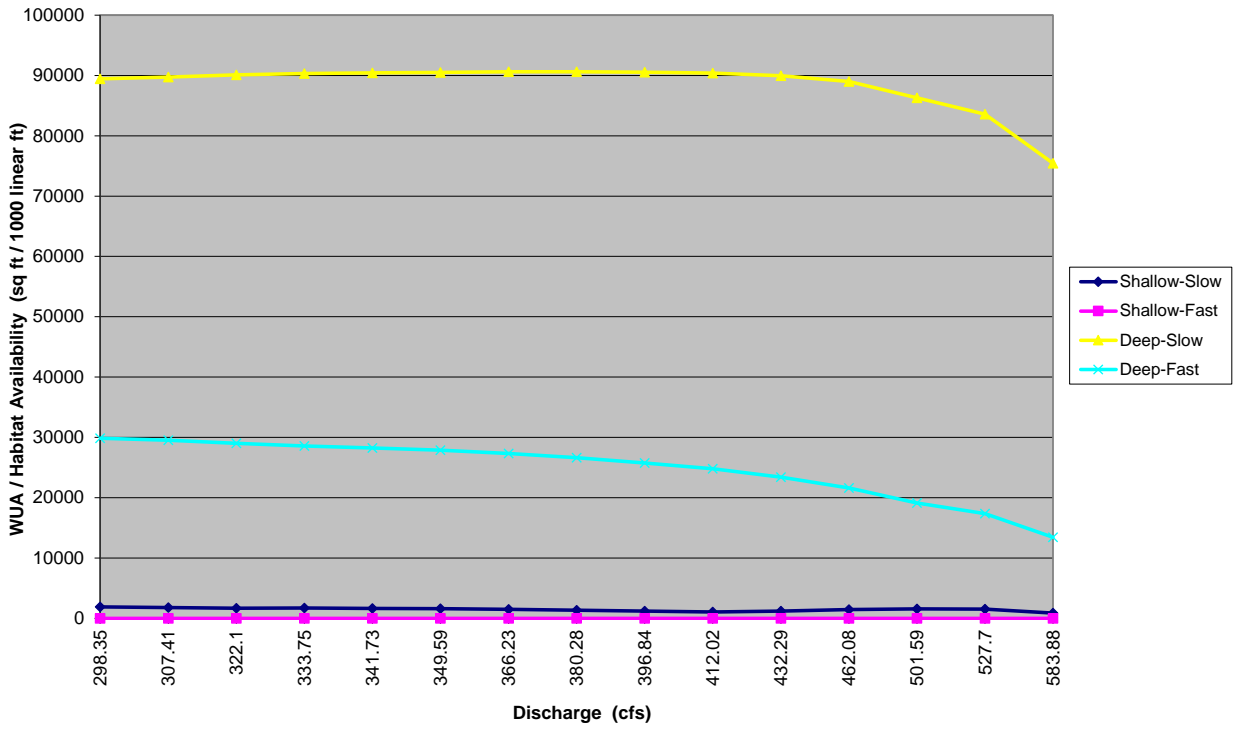
**Rainbow River - PHABSIM1
Low Back Water (25%)
Fish Habitat Guilds**



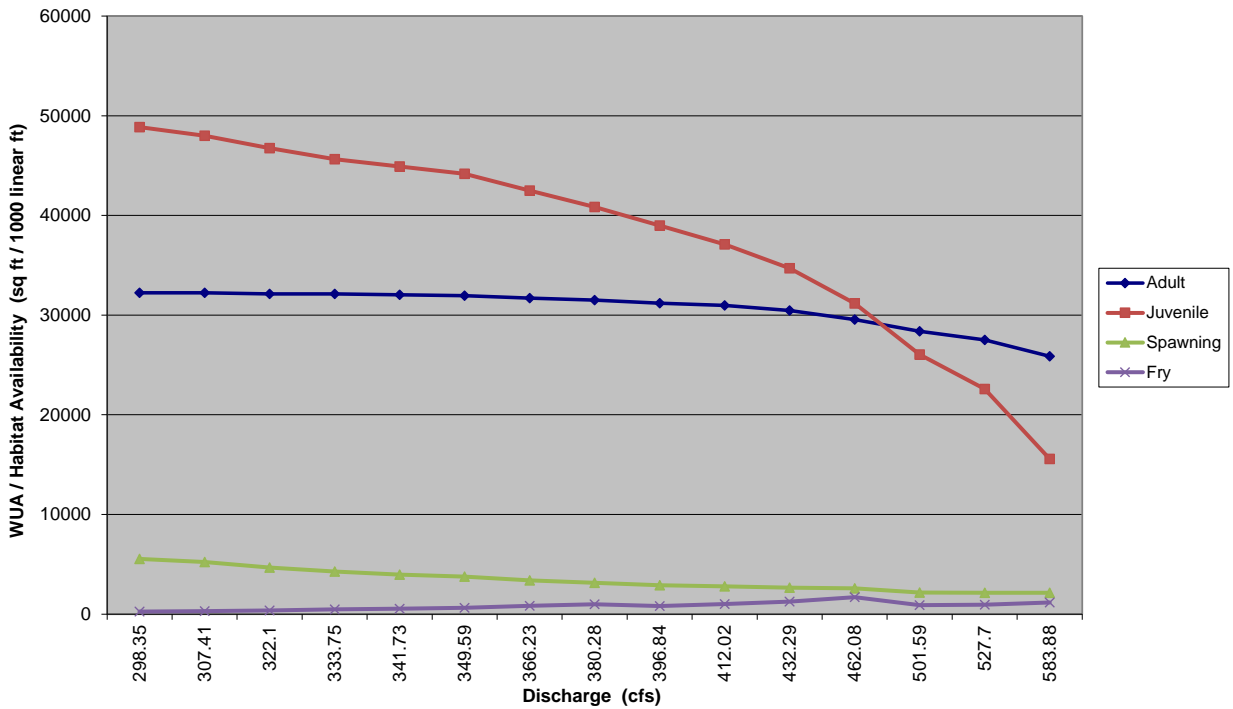
**Rainbow River - PHABSIM1
Medium Back Water (50%)
Fish Habitat Guilds**



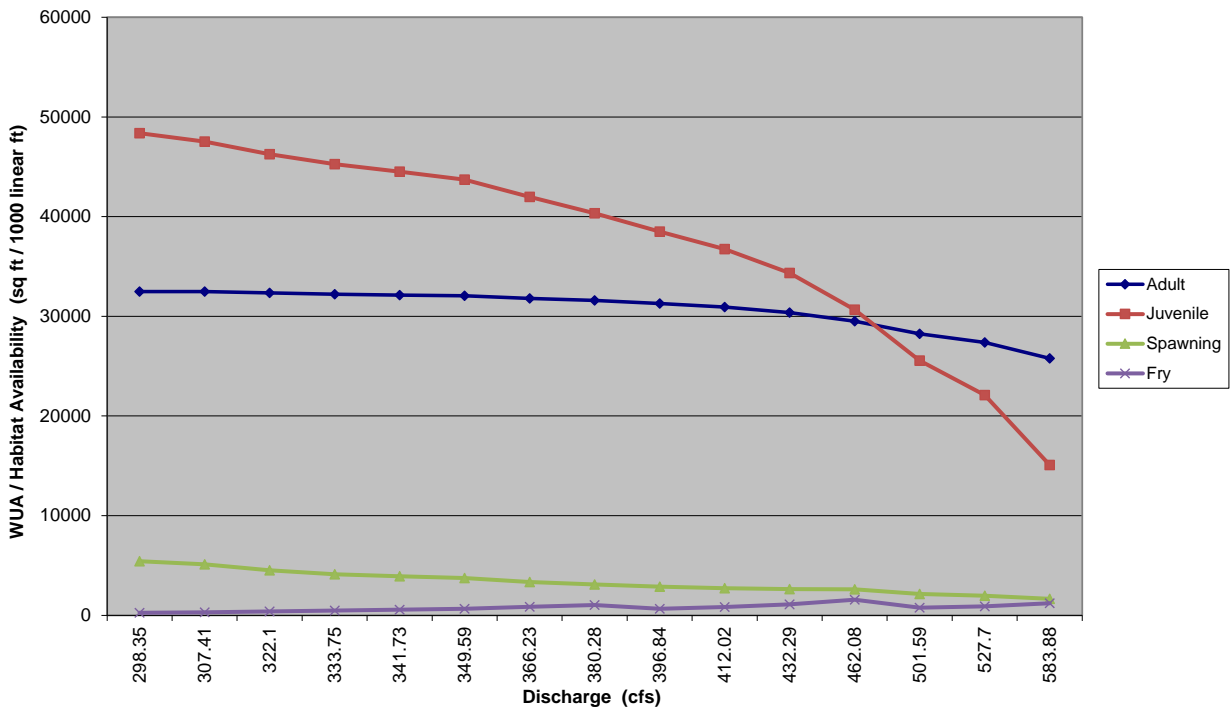
**Rainbow River - PHABSIM1
High Back Water (75%)
Fish Habitat Guilds**



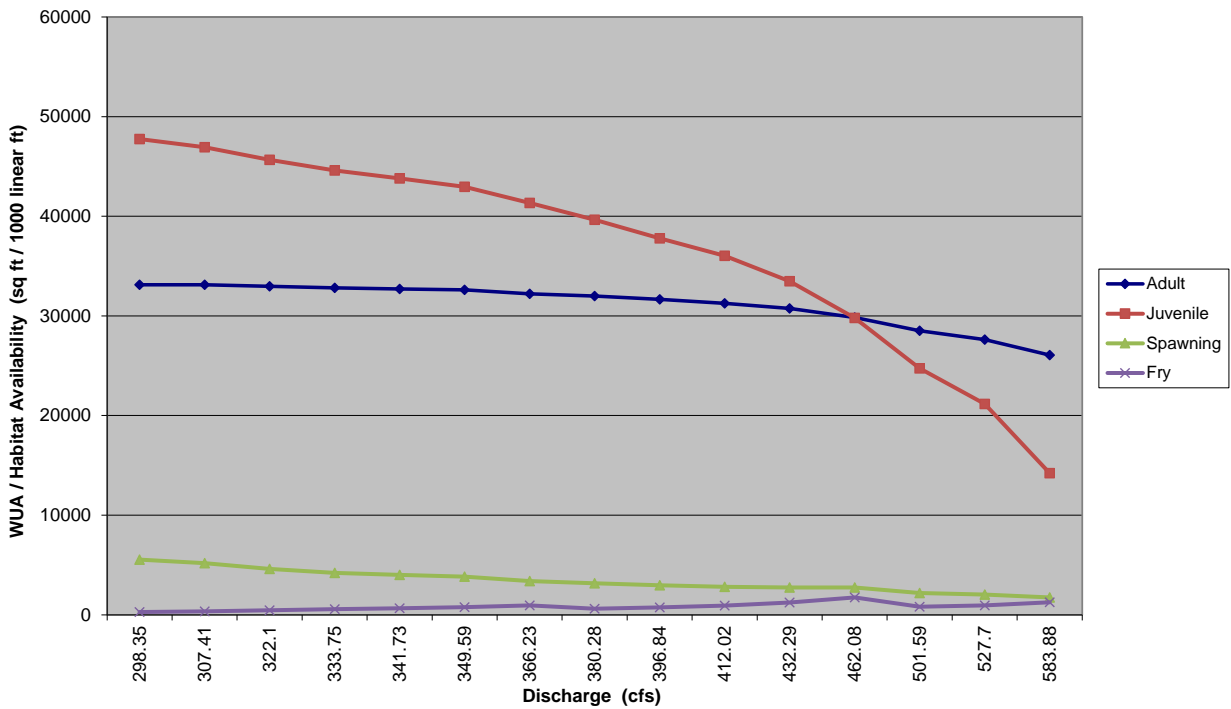
**Rainbow River - PHABSIM1
Low Back Water (25%)
Largemouth Bass**



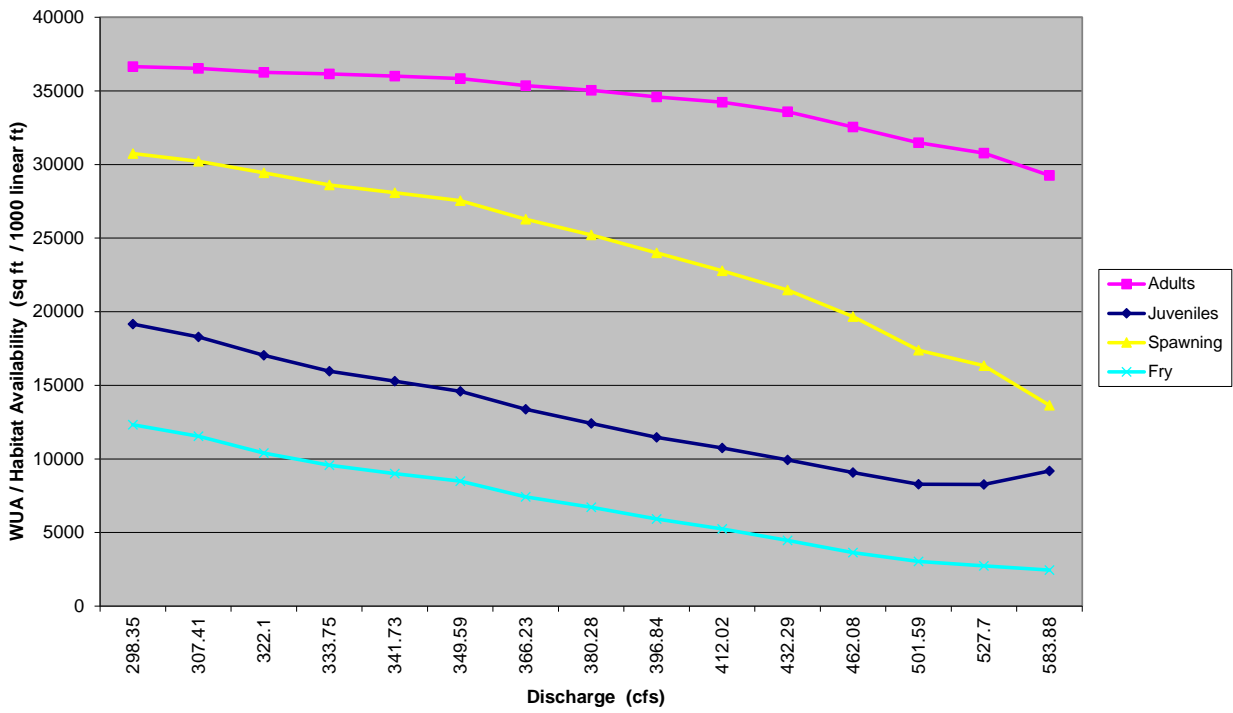
**Rainbow River - PHABSIM1
Medium Back Water (50%)
Largemouth Bass**



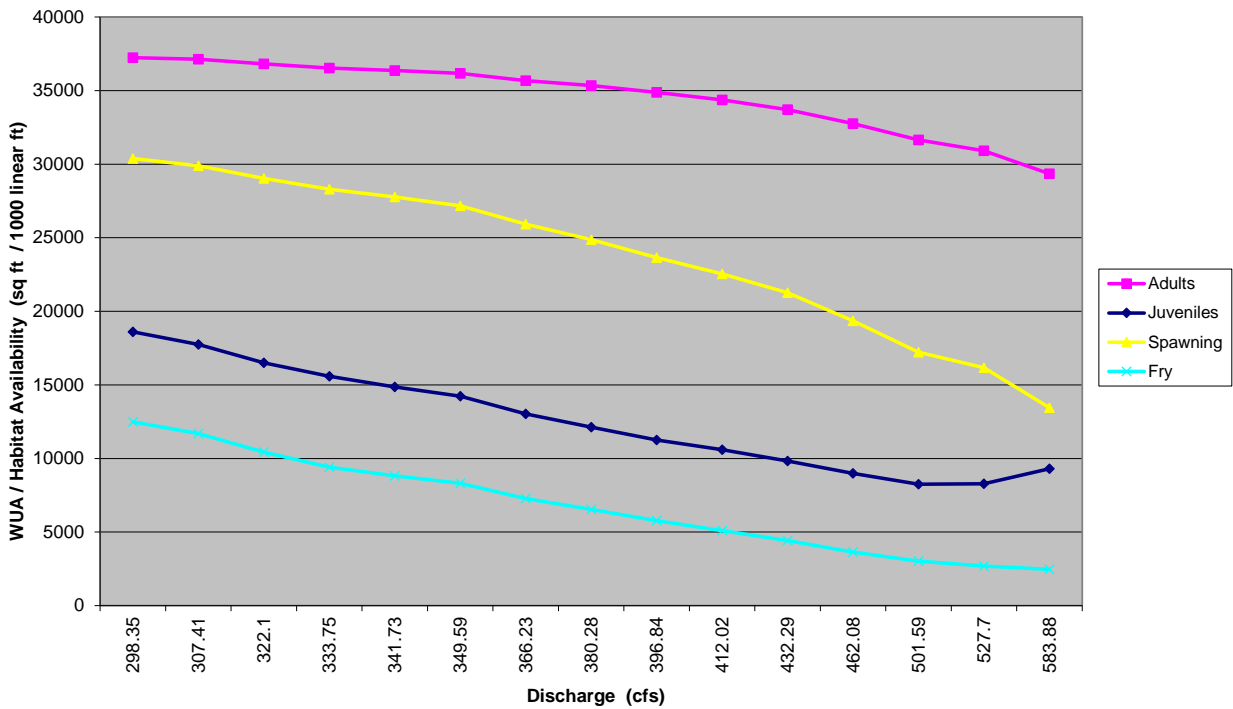
**Rainbow River - PHABSIM1
High Back Water (75%)
Largemouth Bass**



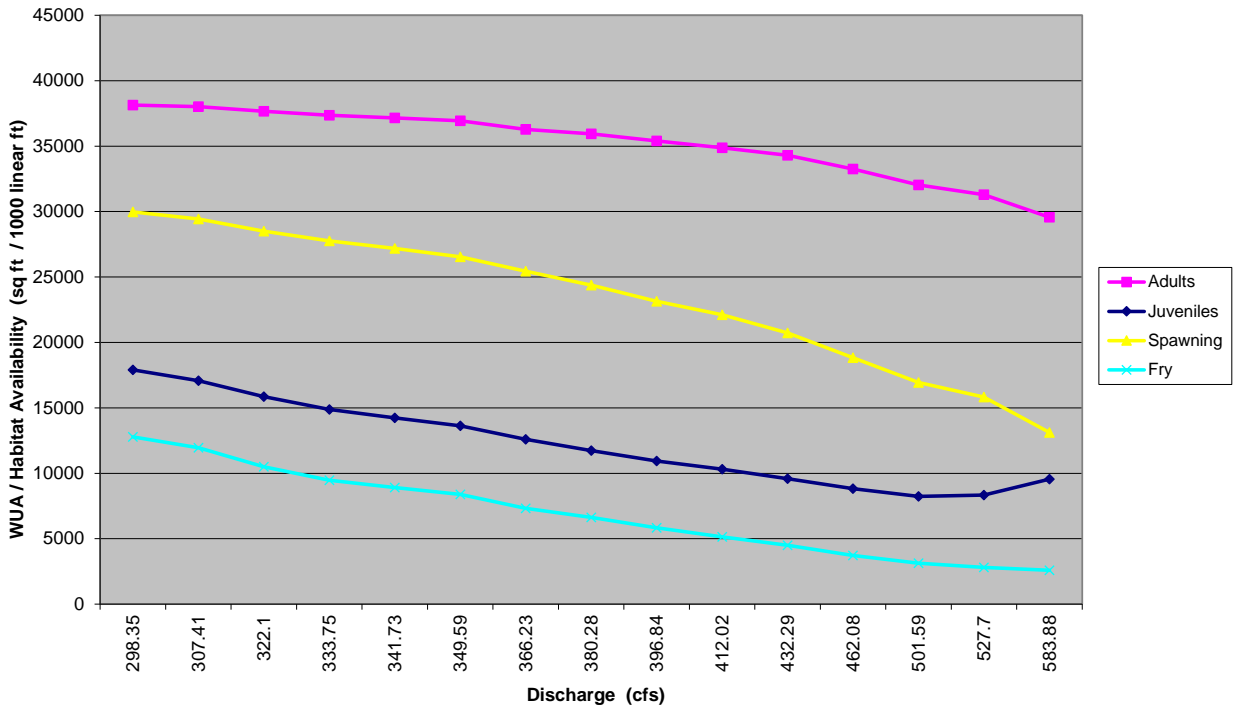
**Rainbow River - PHABSIM1
Low Back Water (25%)
Bluegill Sunfish**



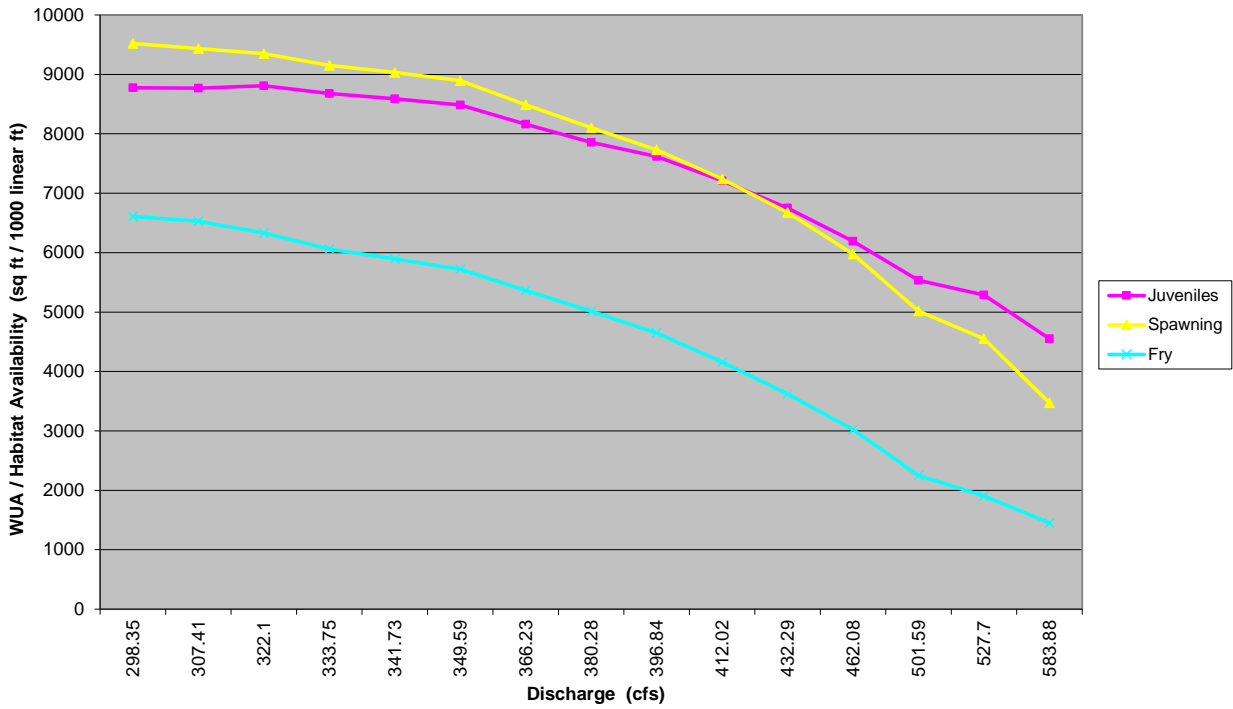
**Rainbow River - PHABSIM1
Medium Backwater (50%)
Bluegill Sunfish**



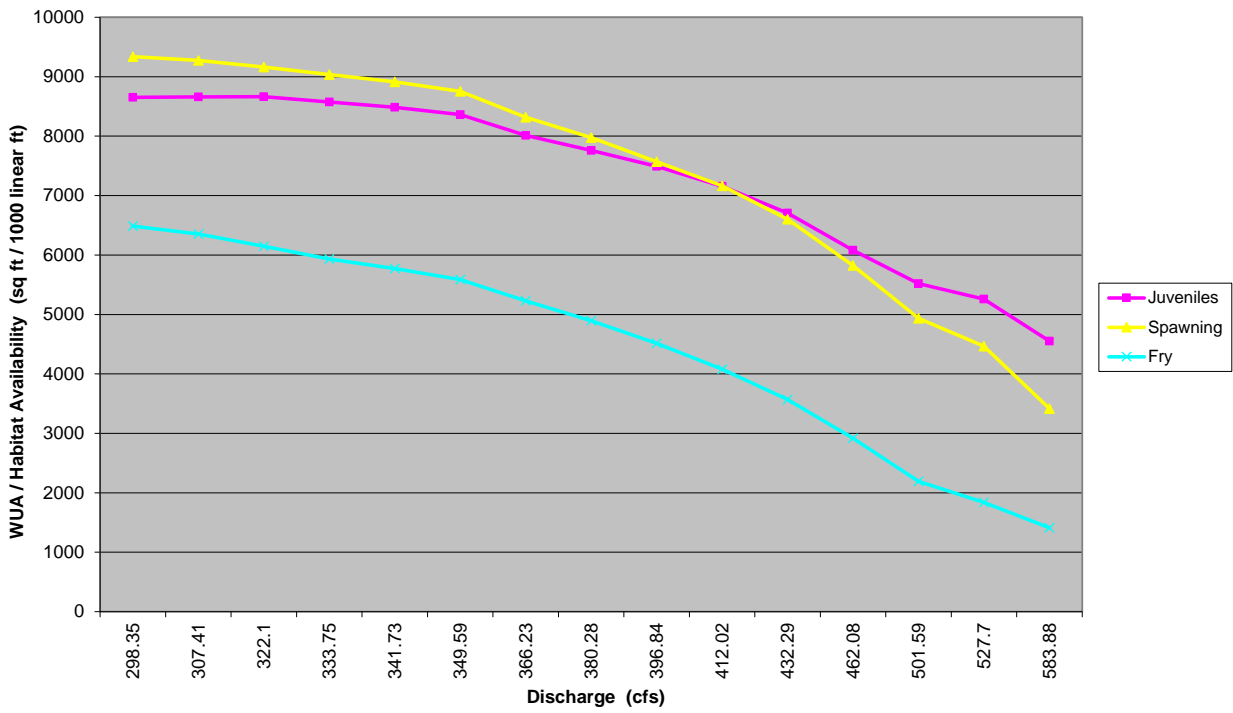
**Rainbow River - PHABSIM1
High Backwater (75%)
Bluegill Sunfish**



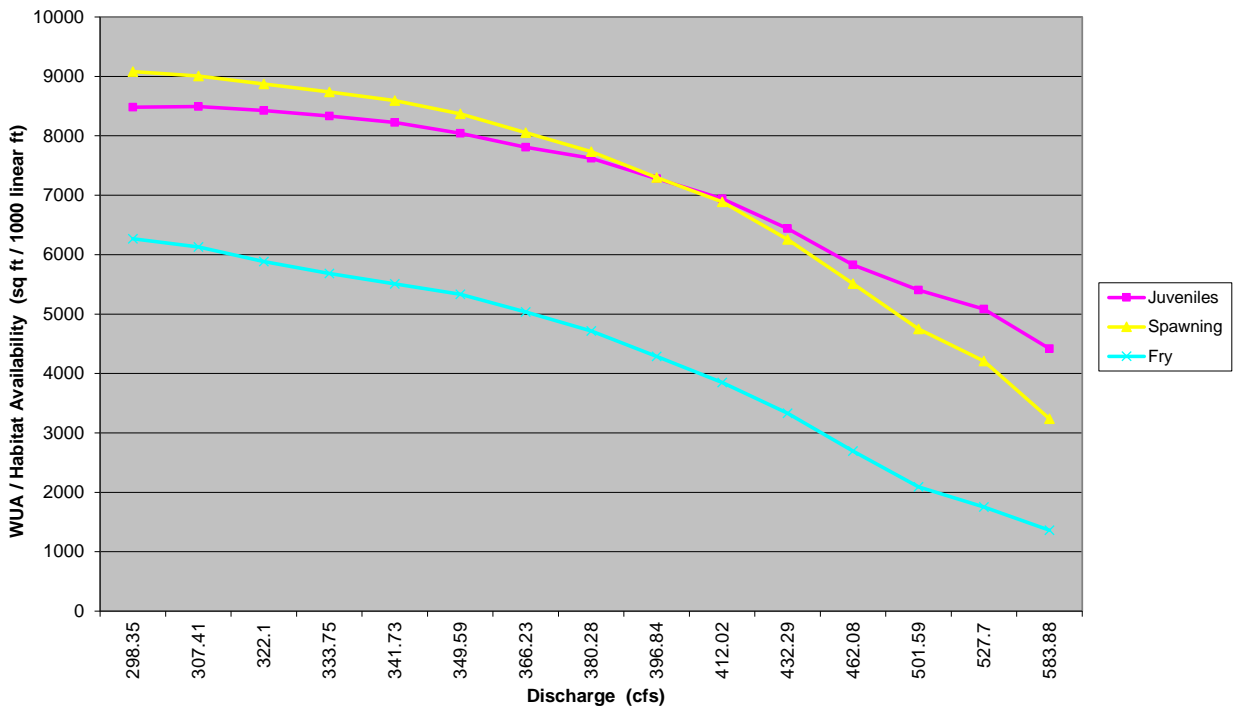
**Rainbow River - PHABSIM1
Low Back Water (25%)
Spotted Sunfish**



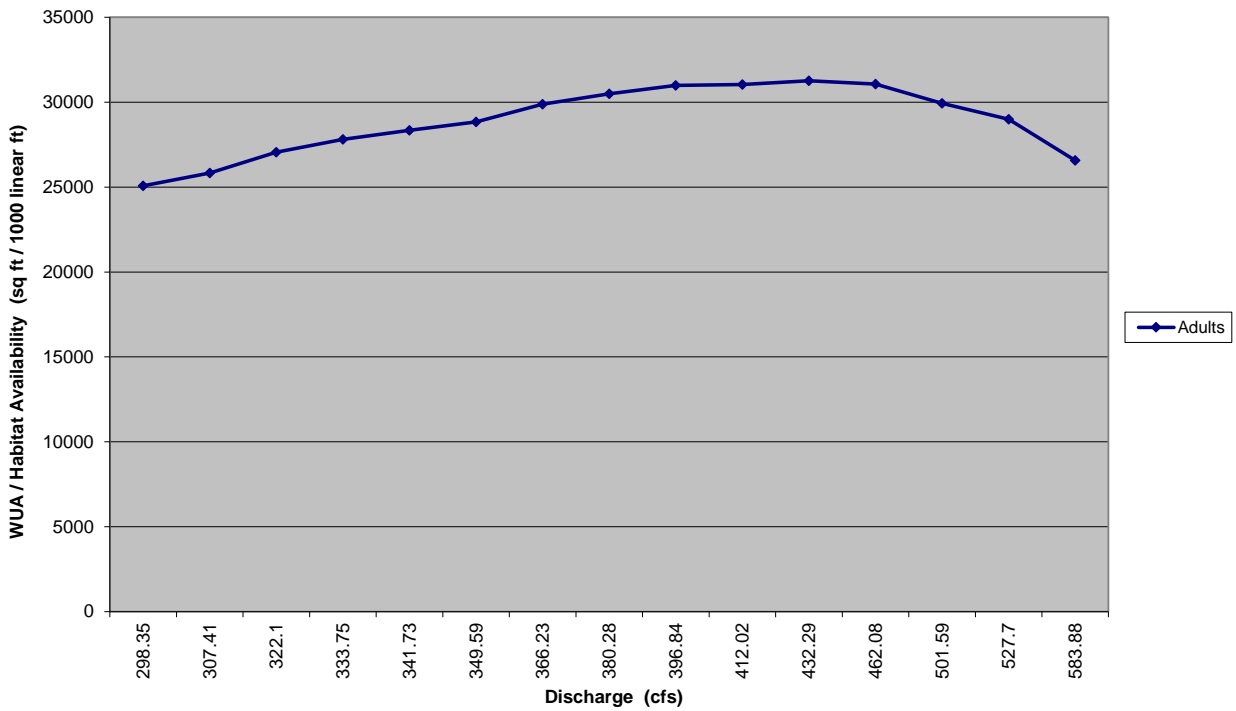
**Rainbow River - PHABSIM1
Medium Back Water (50%)
Spotted Sunfish**



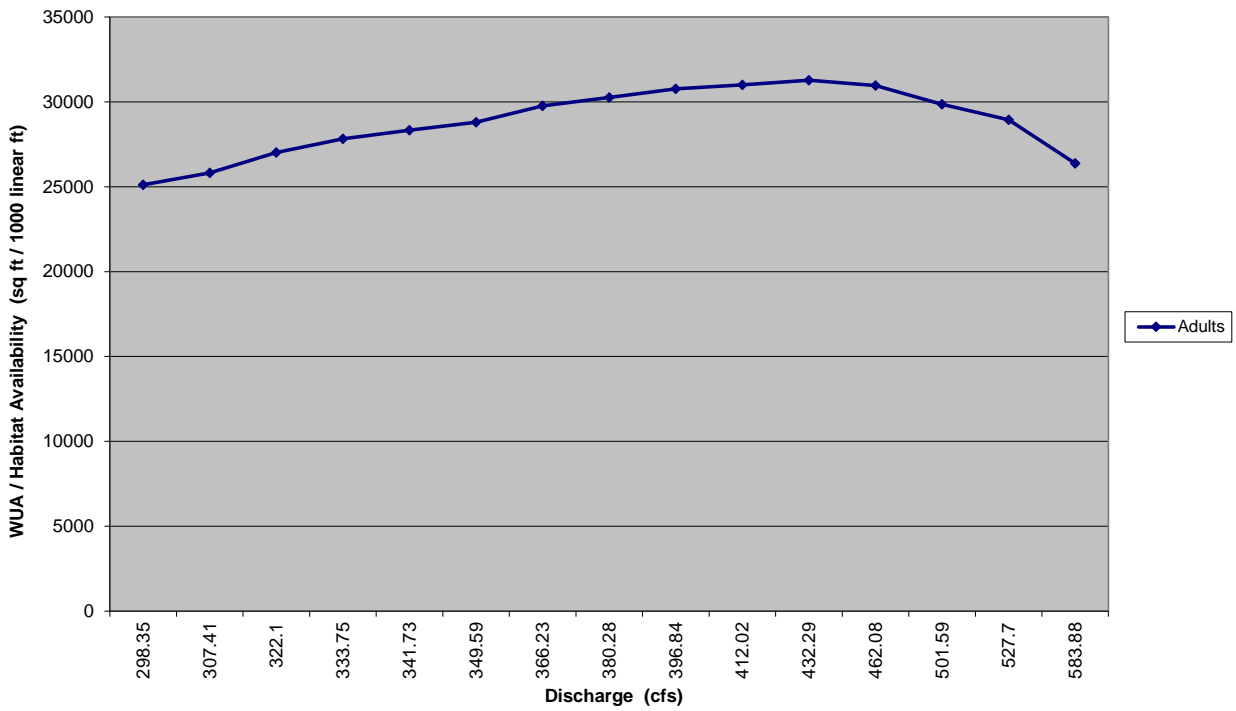
**Rainbow River - PHABSIM1
High Back Water (75%)
Spotted Sunfish**



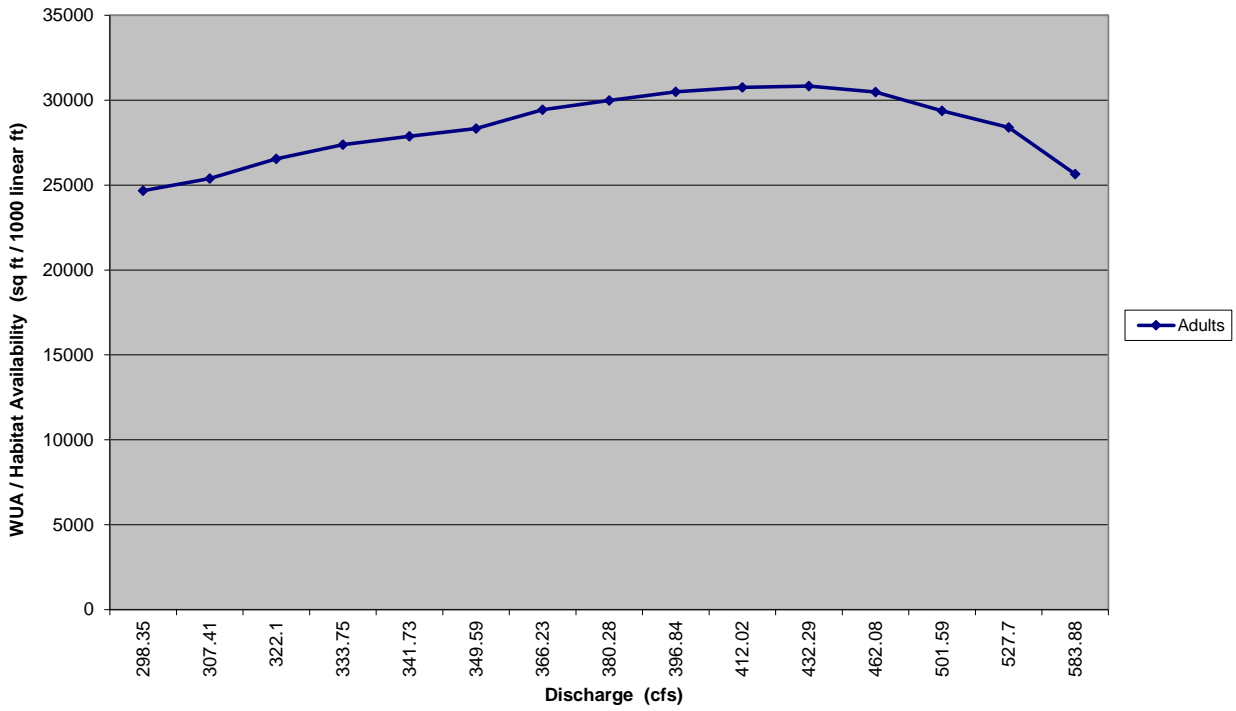
**Rainbow River - PHABSIM1
Low Back Water (25%)
Spotted Sunfish**



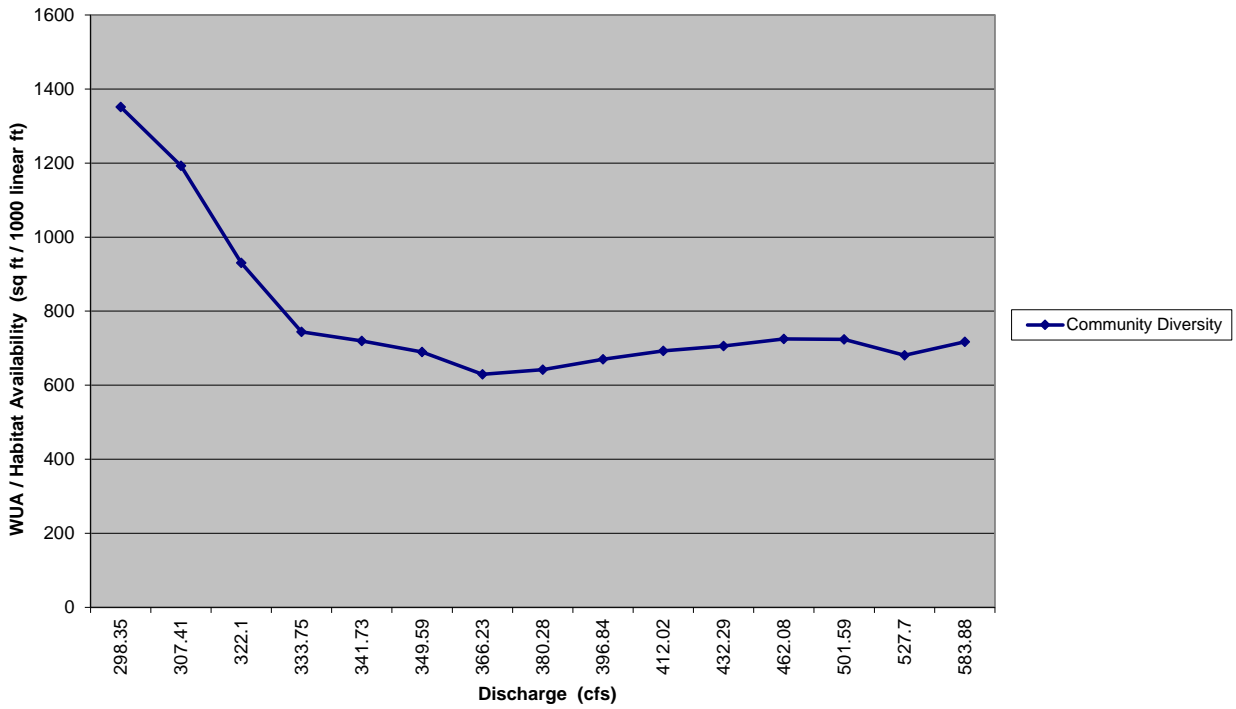
**Rainbow River - PHABSIM1
Medium Back Water (50%)
Spotted Sunfish**



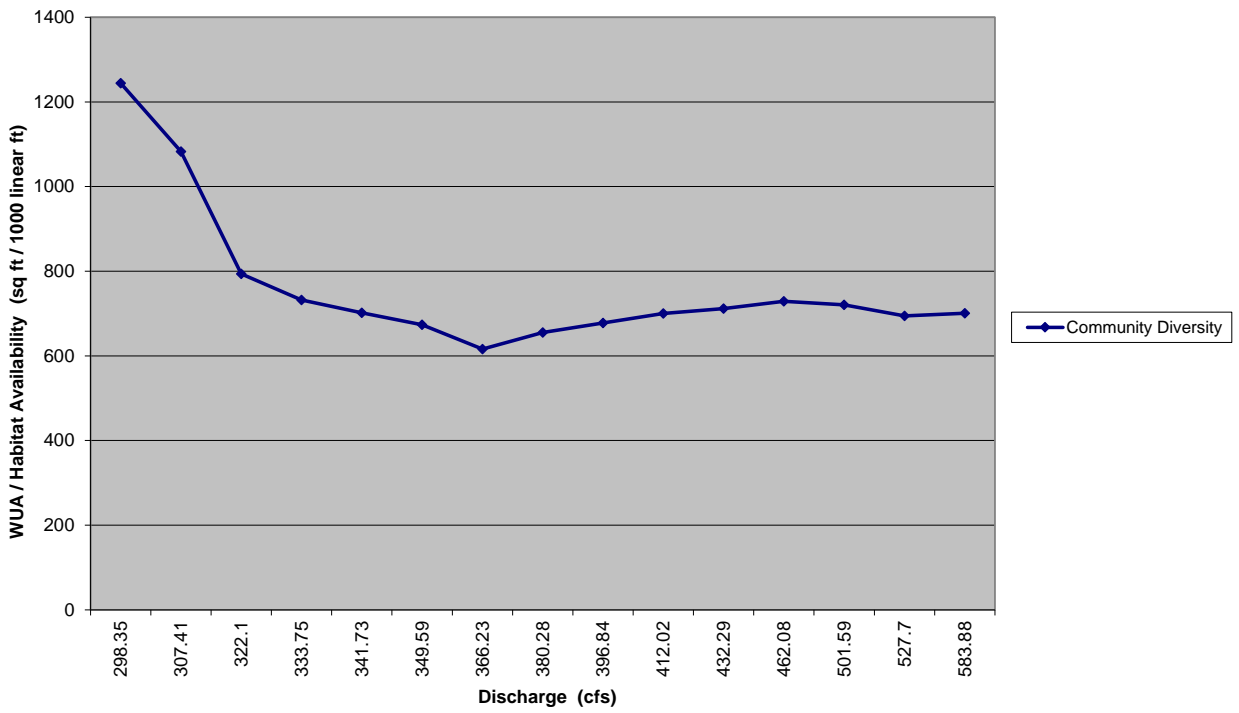
**Rainbow River - PHABSIM1
High Back Water (75%)
Spotted Sunfish**



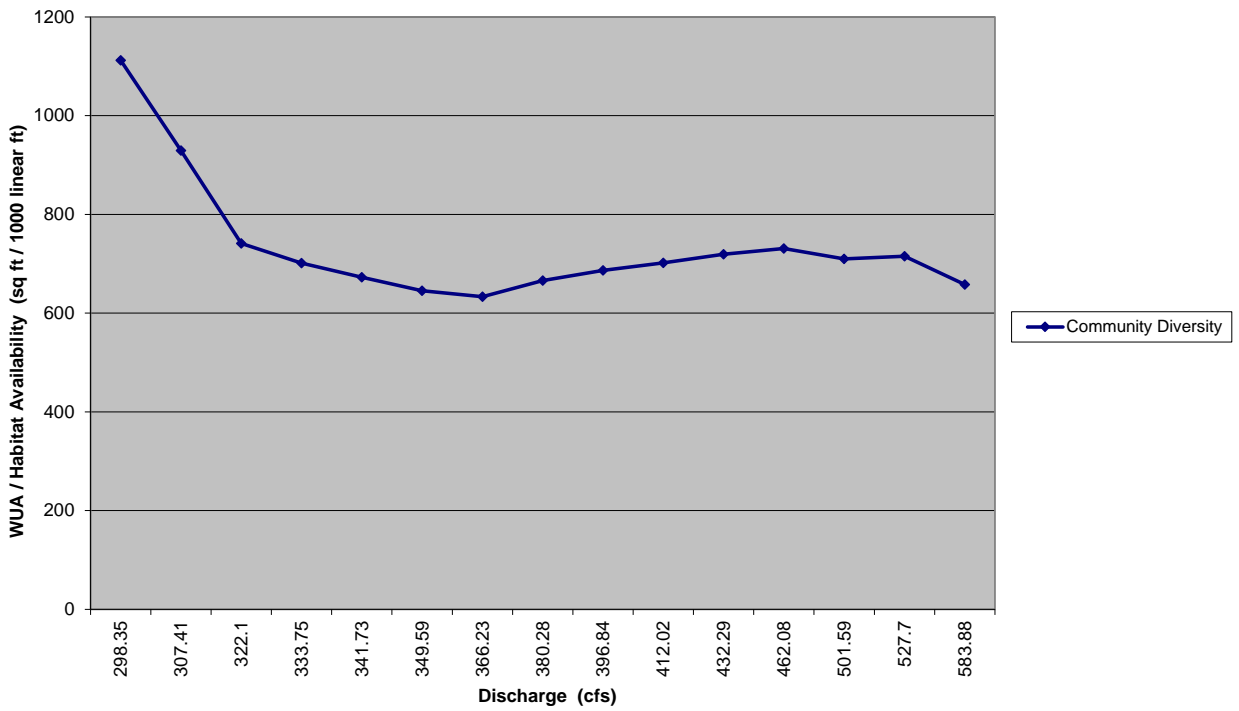
**Rainbow River - PHABSIM1
Low Back Water (25%)
Benthic Macroinvertebrates**



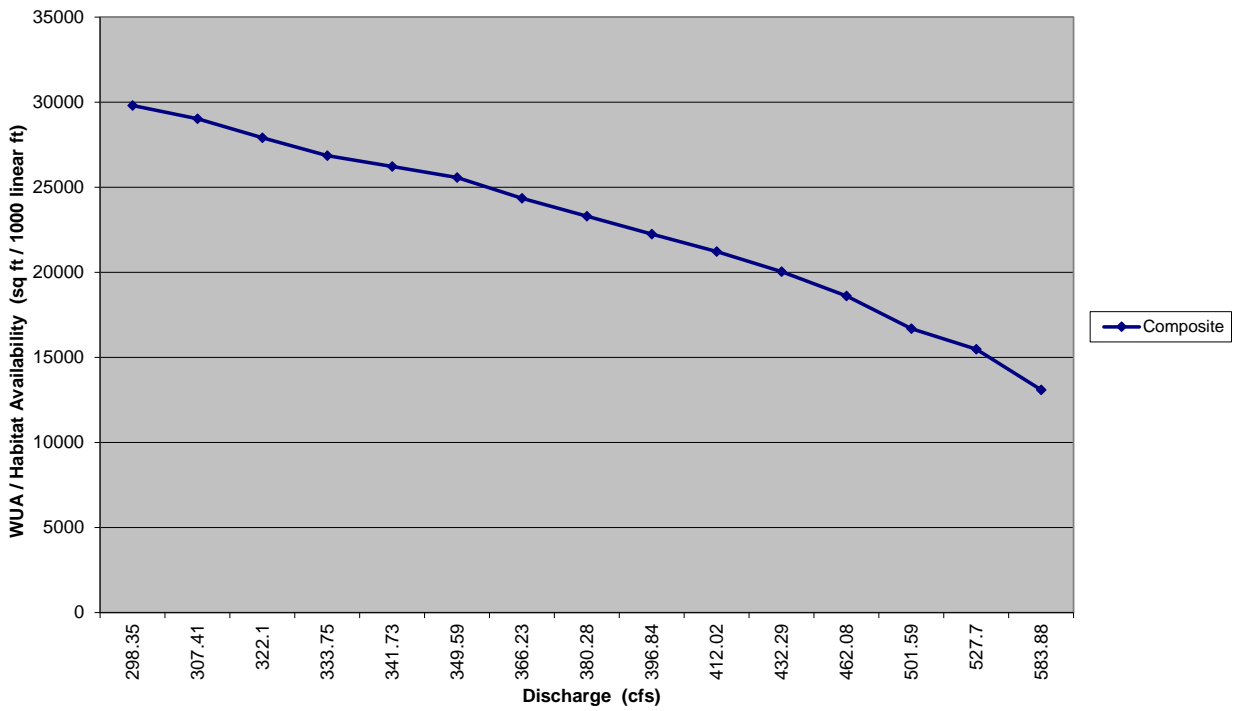
**Rainbow River - PHABSIM1
Medium Back Water (50%)
Benthic Macroinvertebrates**



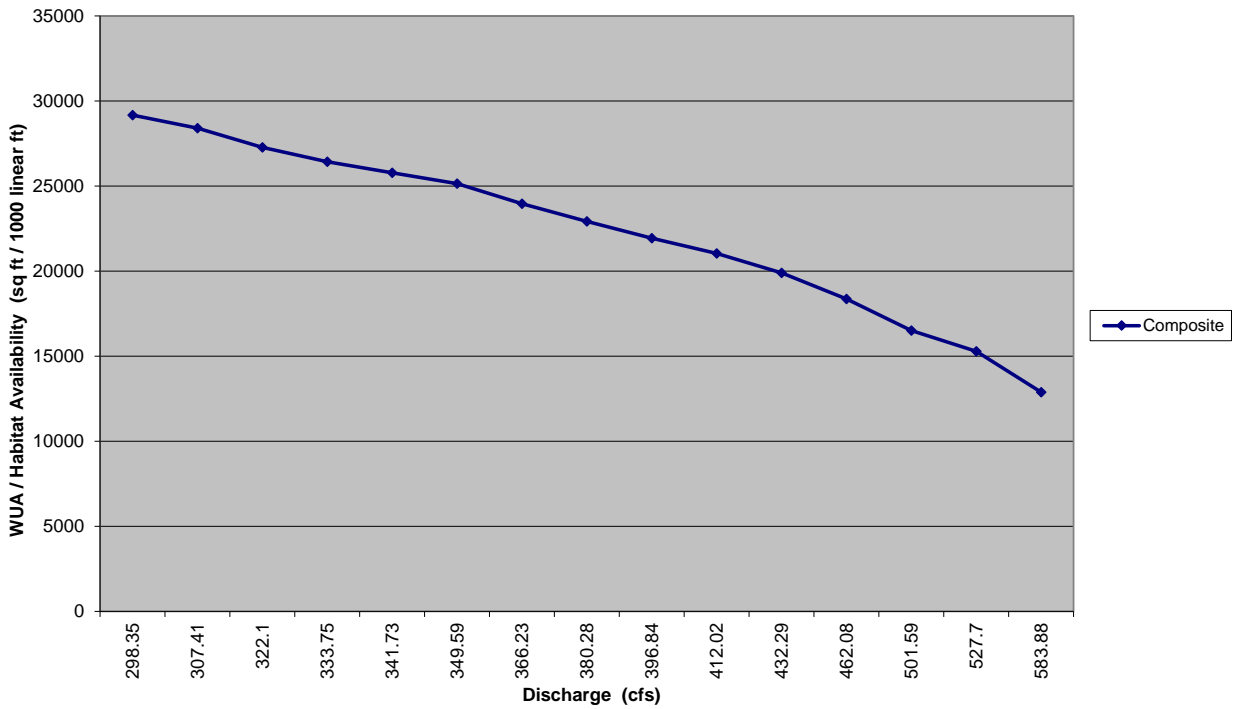
**Rainbow River - PHABSIM1
High Back Water (75%)
Benthic Macroinvertebrates**



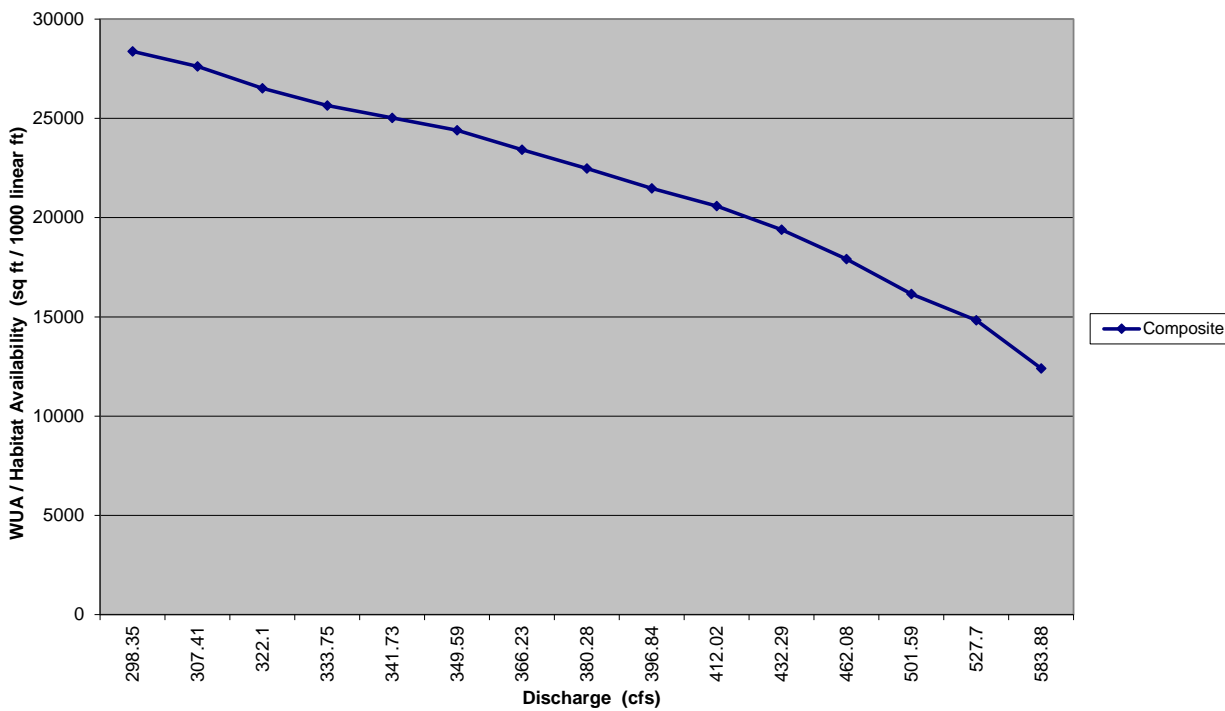
**Rainbow River - PHABSIM1
Low Back Water (25%)
Cyprinidae - Minnows, Chubs, Dace, Shiners**



**Rainbow River - PHABSIM1
Medium Back Water (50%)
Cyprinidae - Minnows, Chubs, Dace, Shiners**



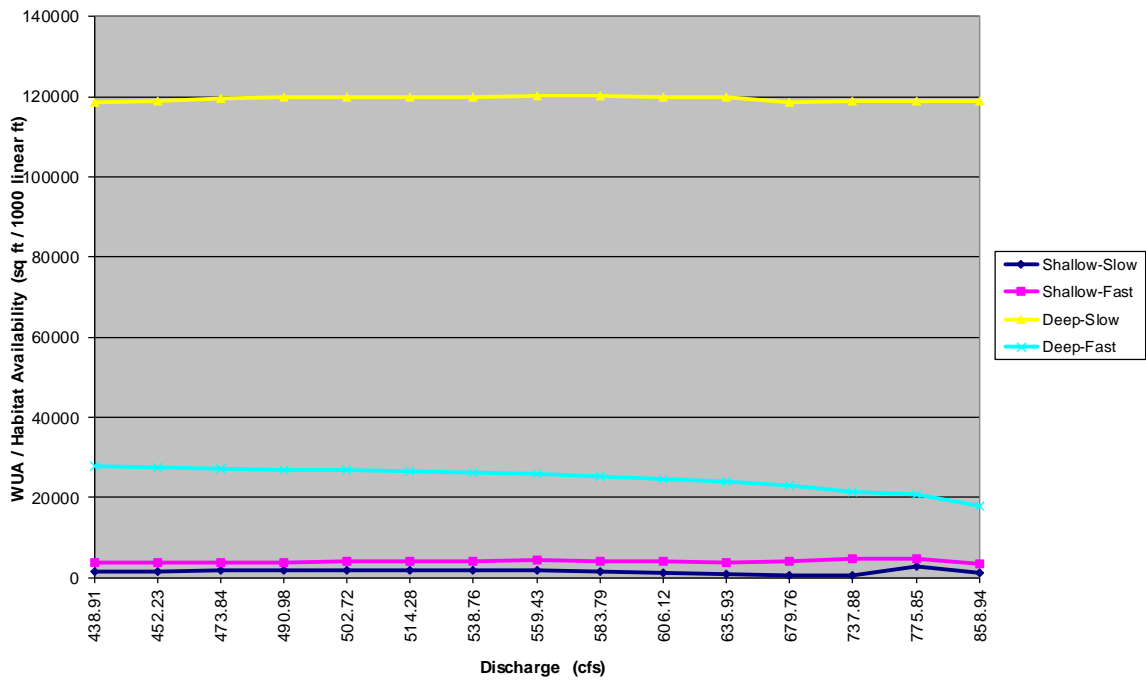
Rainbow River - PHABSIM1
High Back Water (75%)
Cyprinidae - Minnows, Chubs, Dace, Shiners



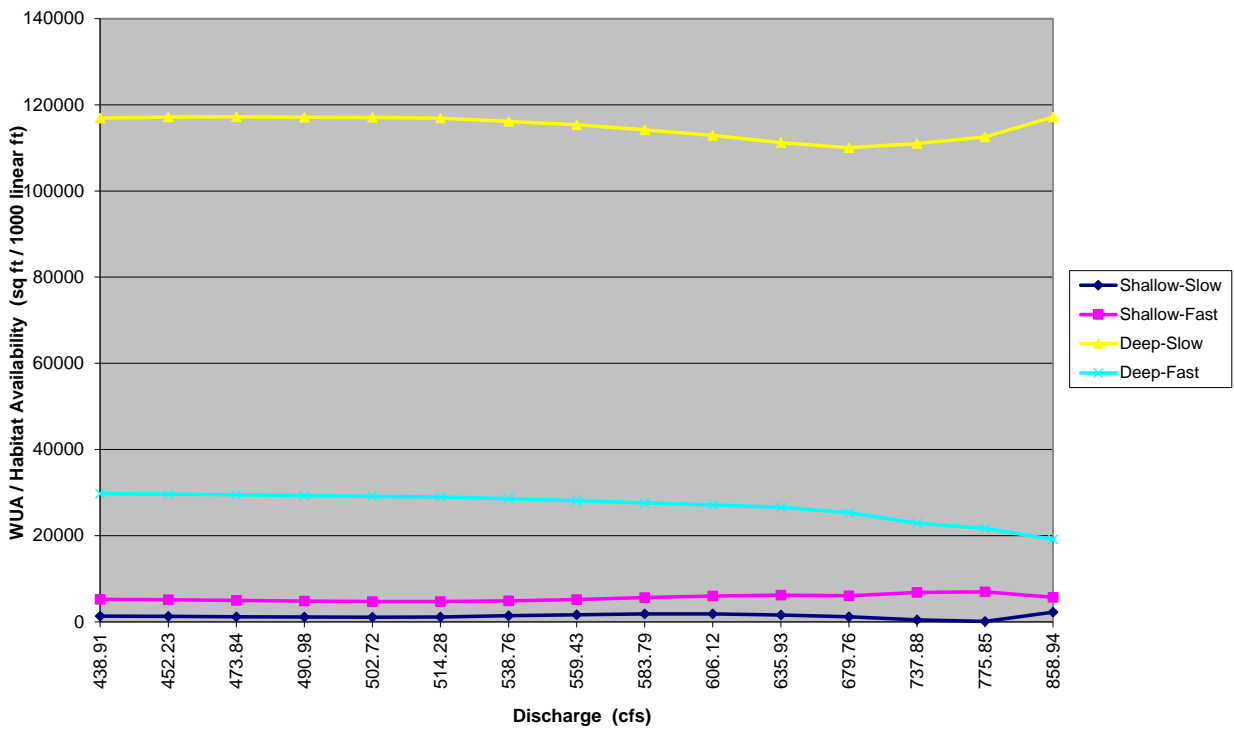
Section 2

Rainbow River System PHABSIM Modeling Results: Weighted Usable Area vs. Discharge Plots for PHABSIM 2

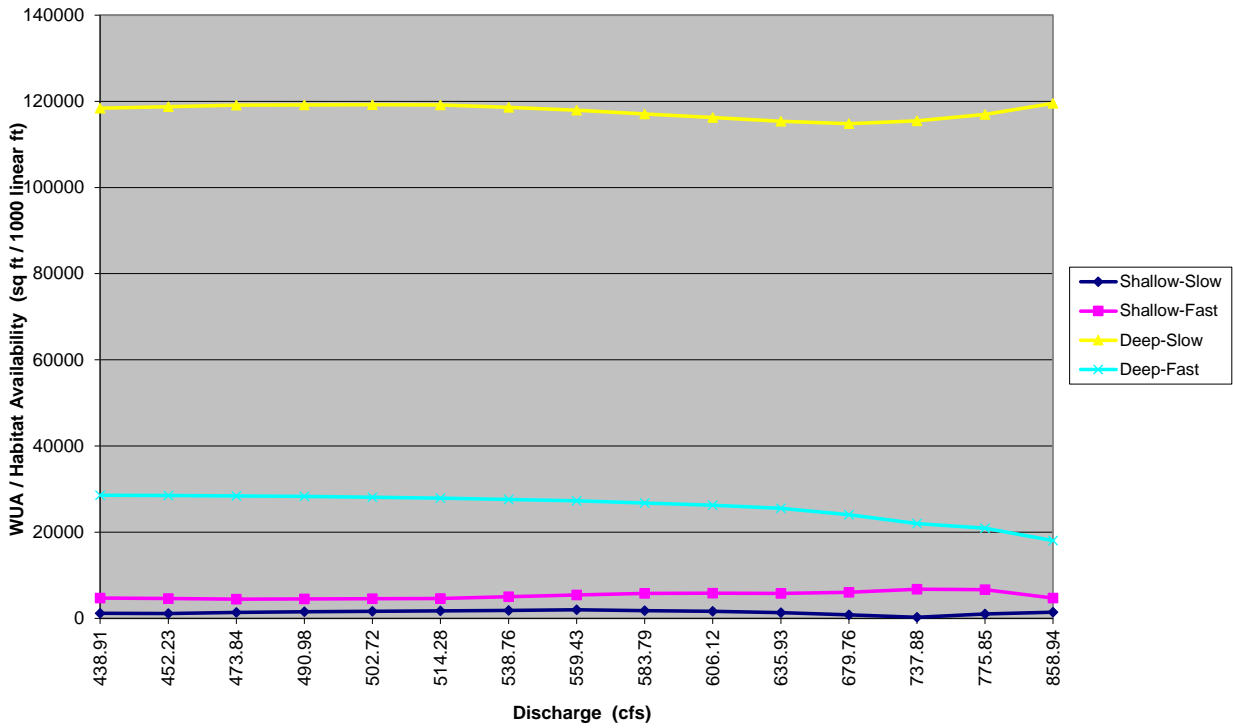
**Rainbow River - PHABSIM2
Low Back Water (25%)
Fish Habitat Guilds**



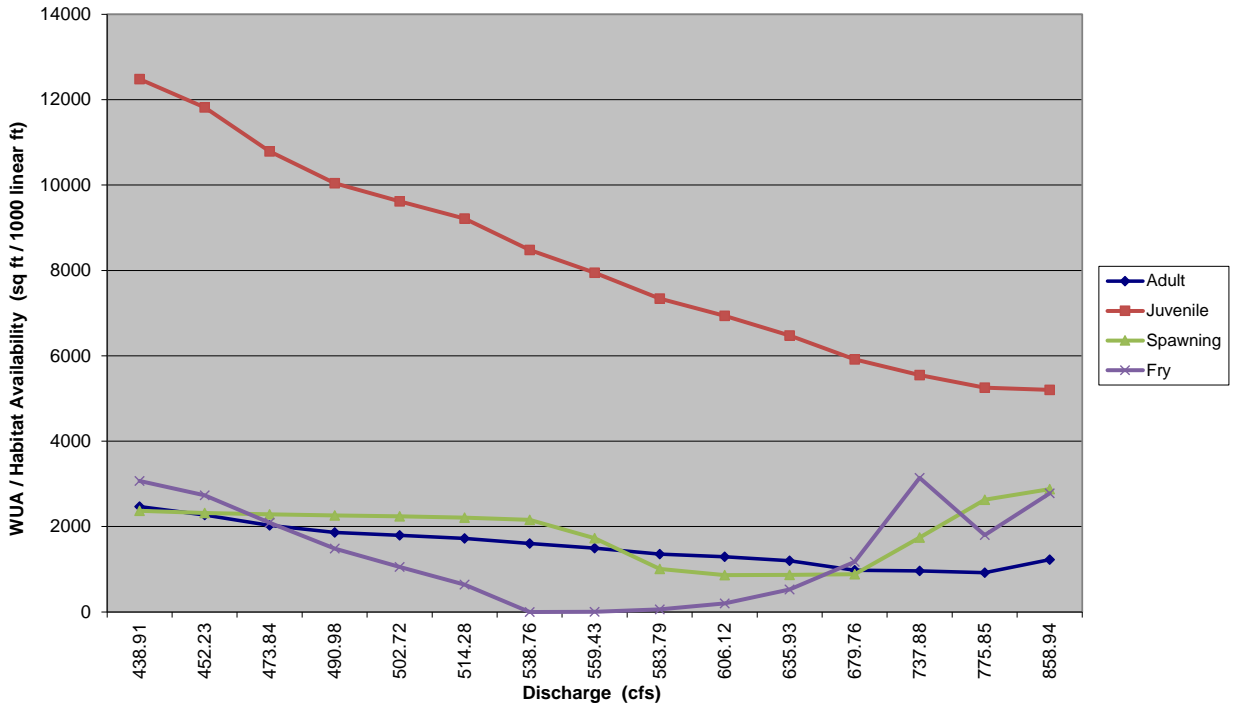
**Rainbow River - PHABSIM2
Medium Back Water (50%)
Fish Habitat Guilds**



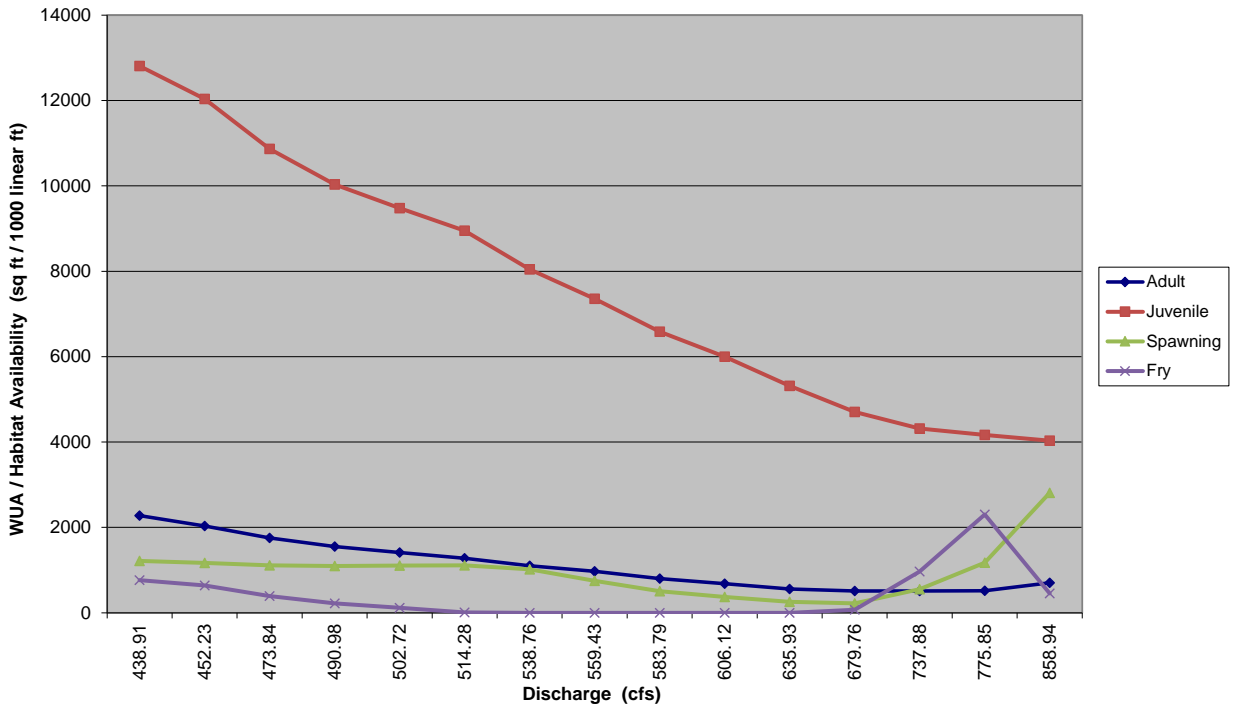
**Rainbow River - PHABSIM2
High Back Water (75%)
Fish Habitat Guilds**



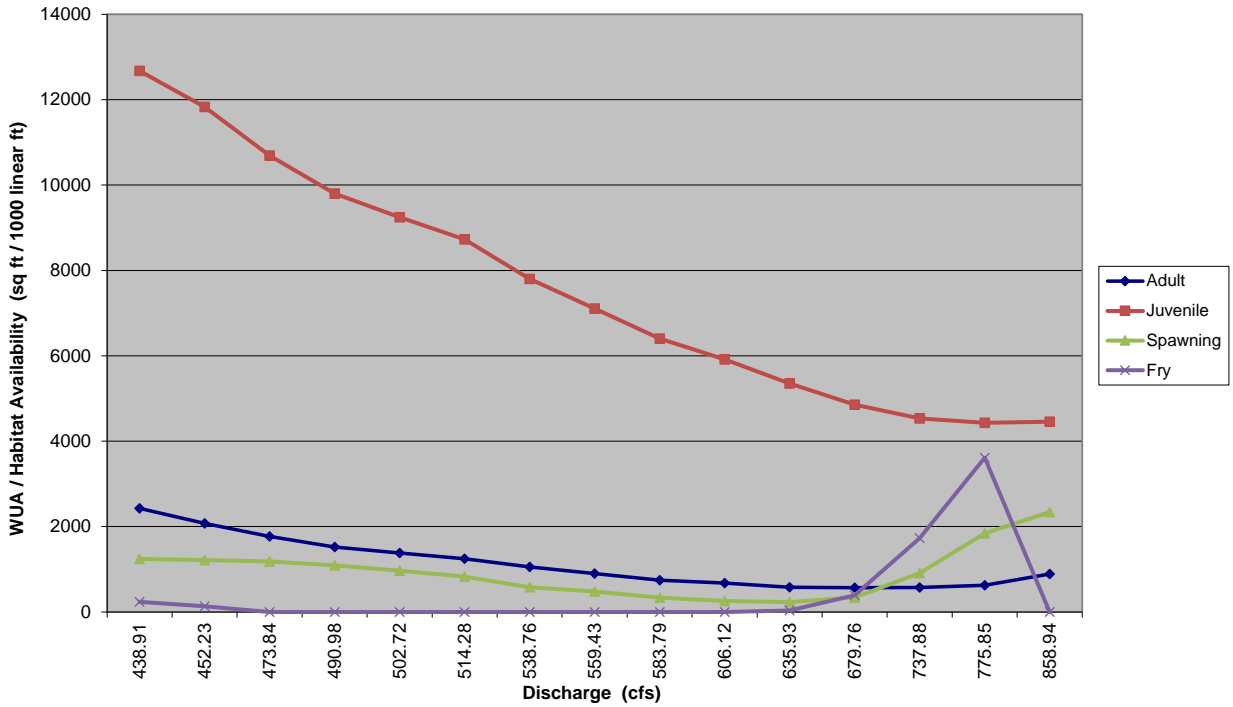
**Rainbow River - PHABSIM2
Low Back Water (25%)
Largemouth Bass**



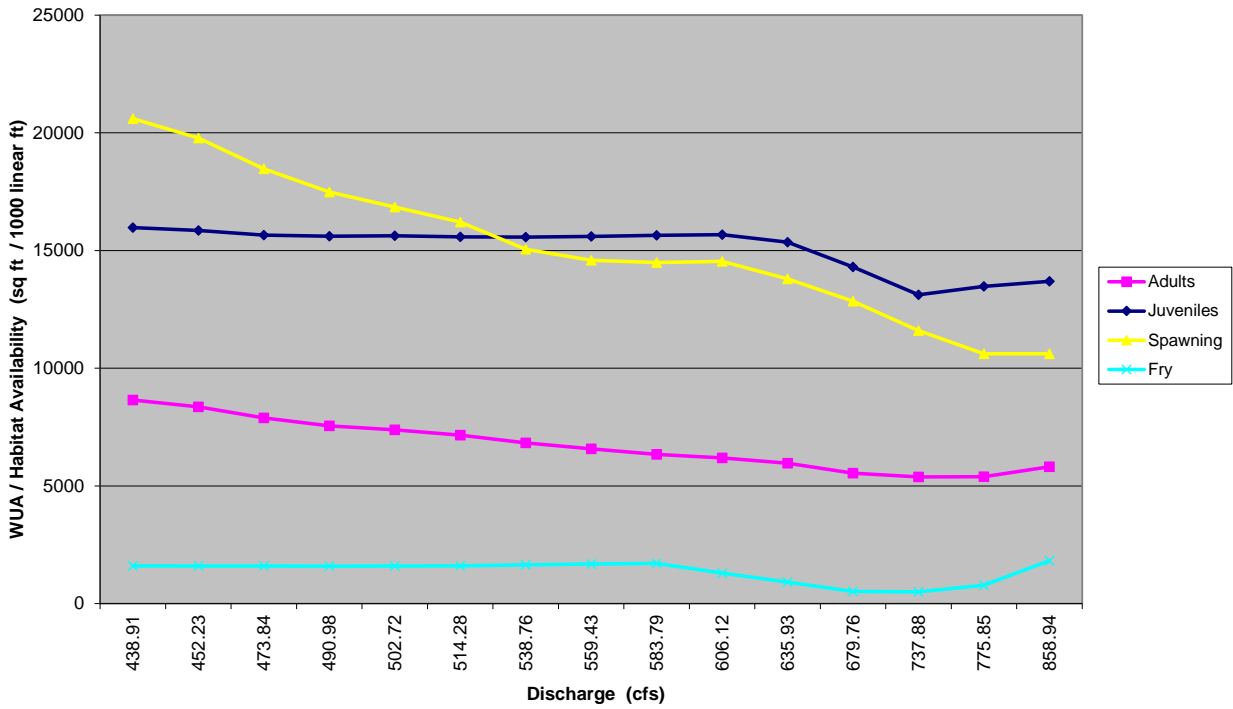
**Rainbow River - PHABSIM2
Medium Back Water (50%)
Largemouth Bass**



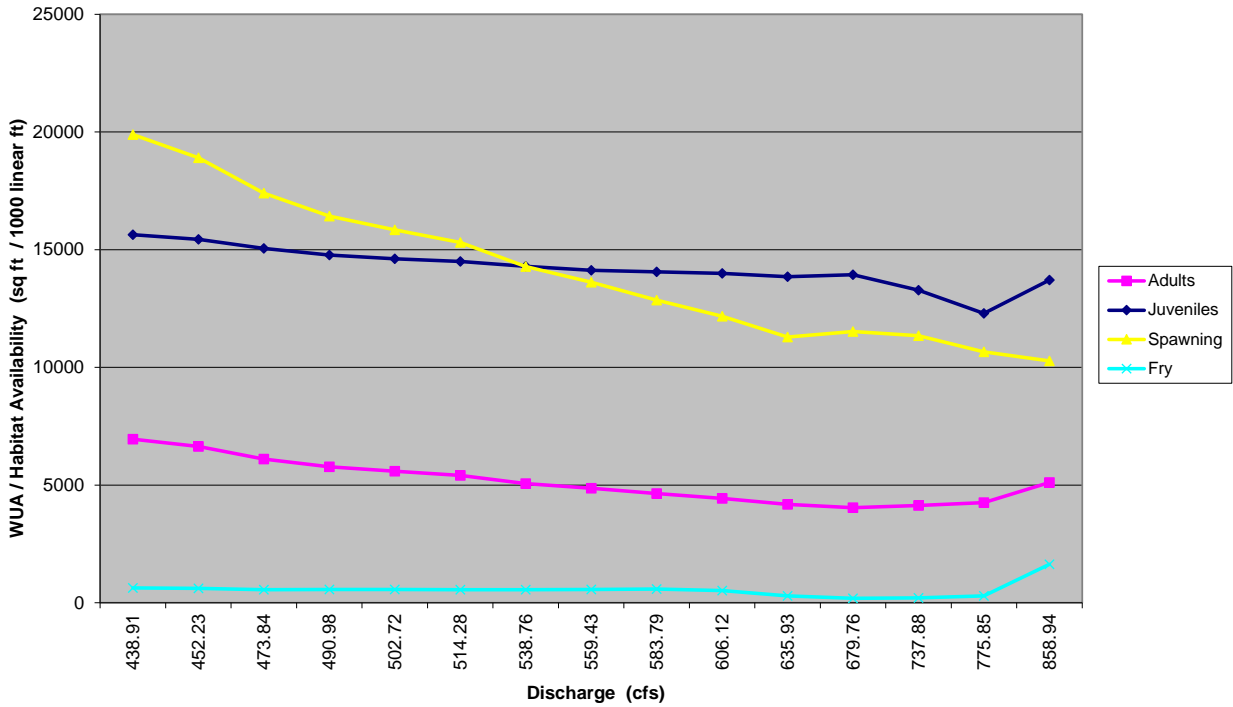
**Rainbow River - PHABSIM2
High Back Water (75%)
Largemouth Bass**



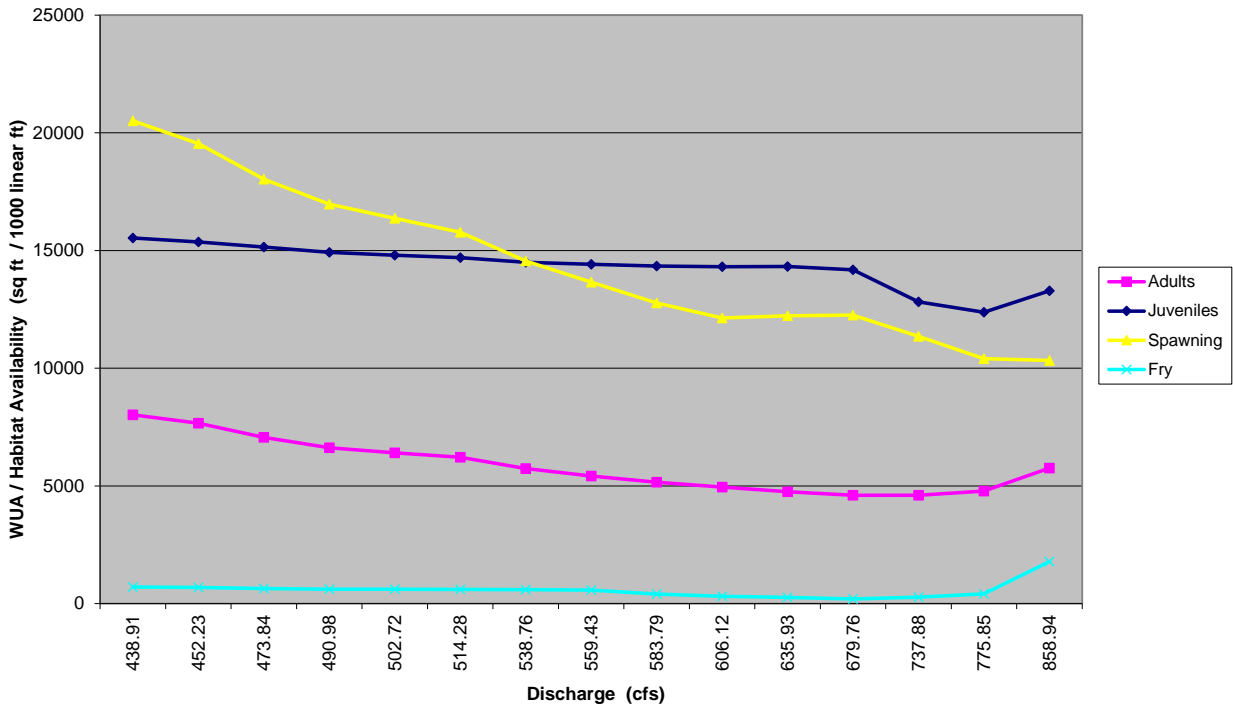
**Rainbow River - PHABSIM2
Low Back Water (25%)
Bluegill Sunfish**



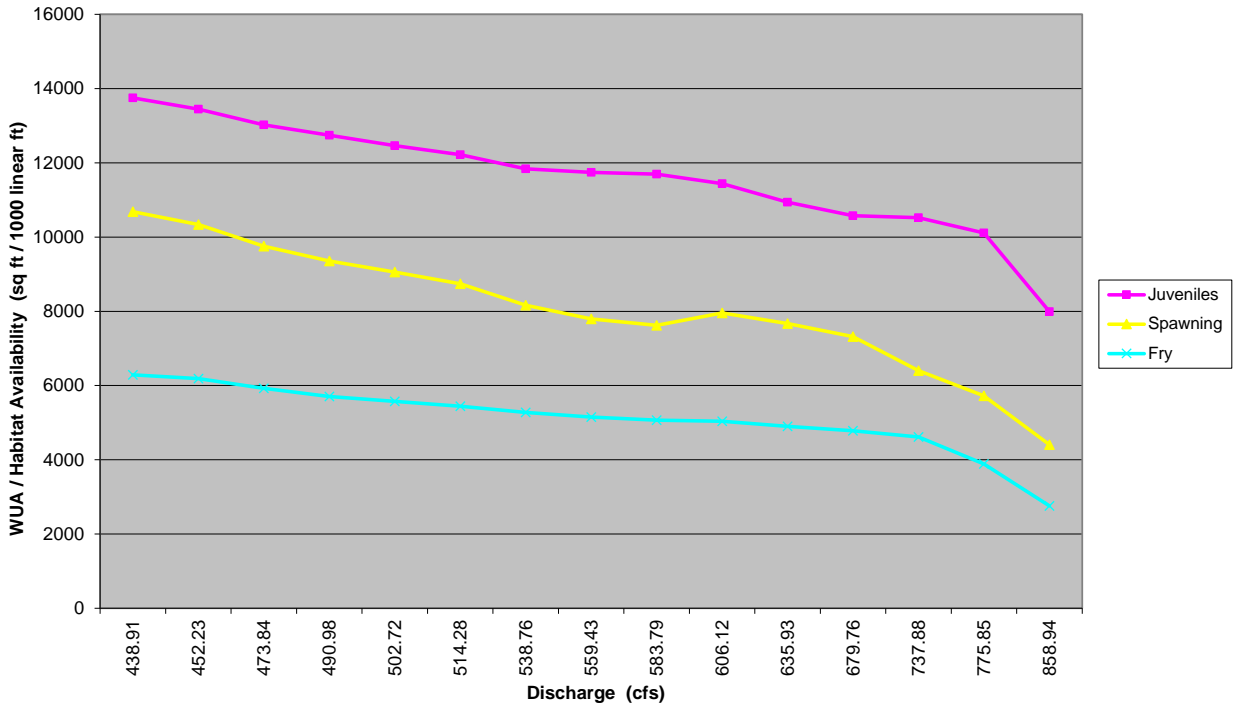
**Rainbow River - PHABSIM2
Medium Back Water (50%)
Bluegill Sunfish**



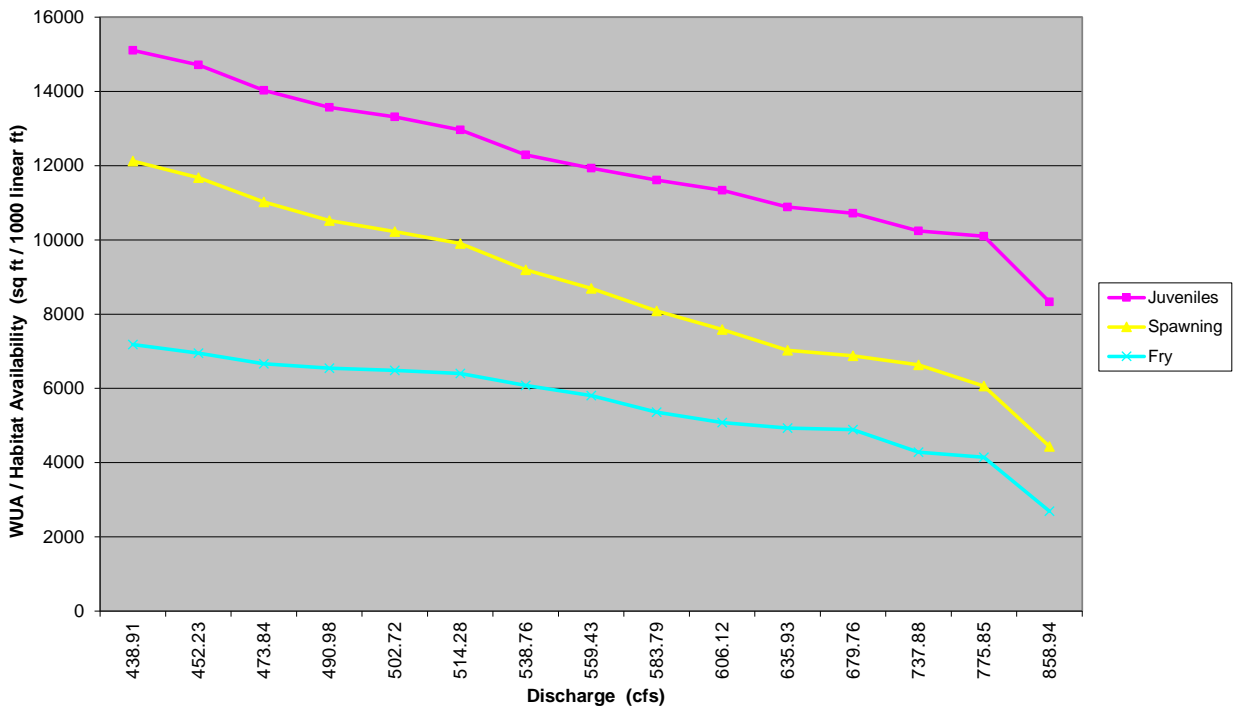
**Rainbow River - PHABSIM2
High Backwater (75%)
Bluegill Sunfish**



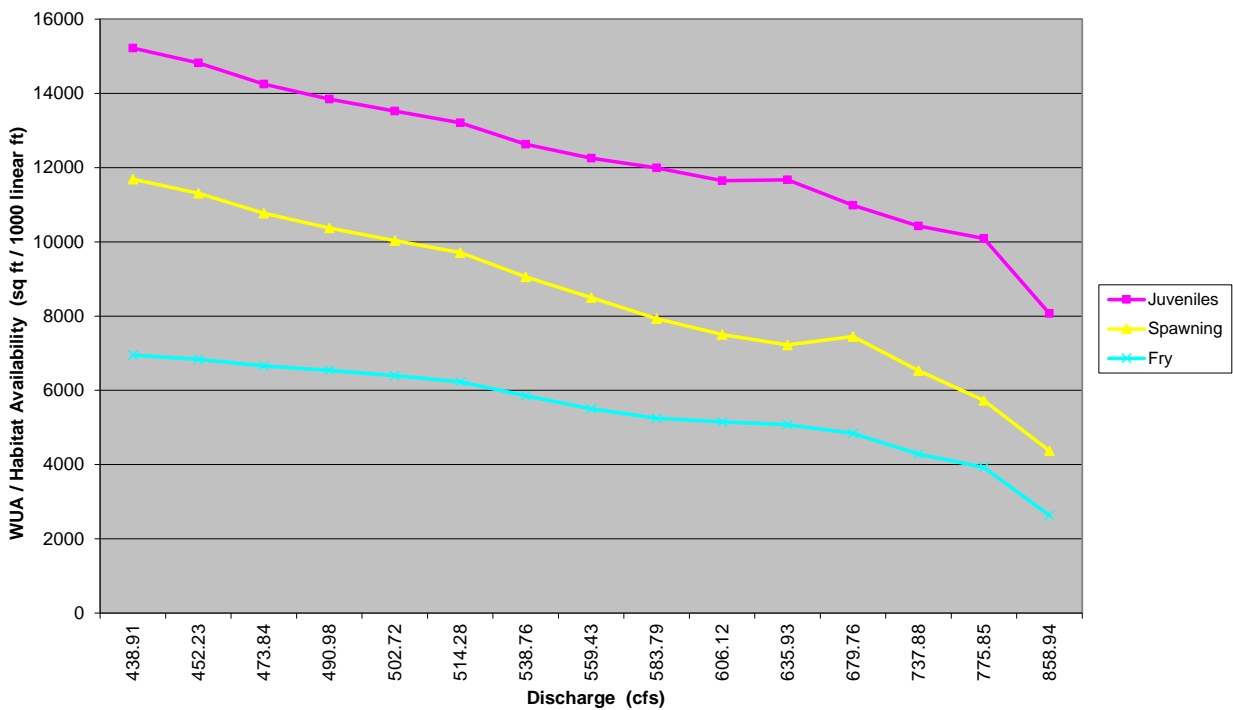
**Rainbow River - PHABSIM2
Low Back Water (25%)
Spotted Sunfish**



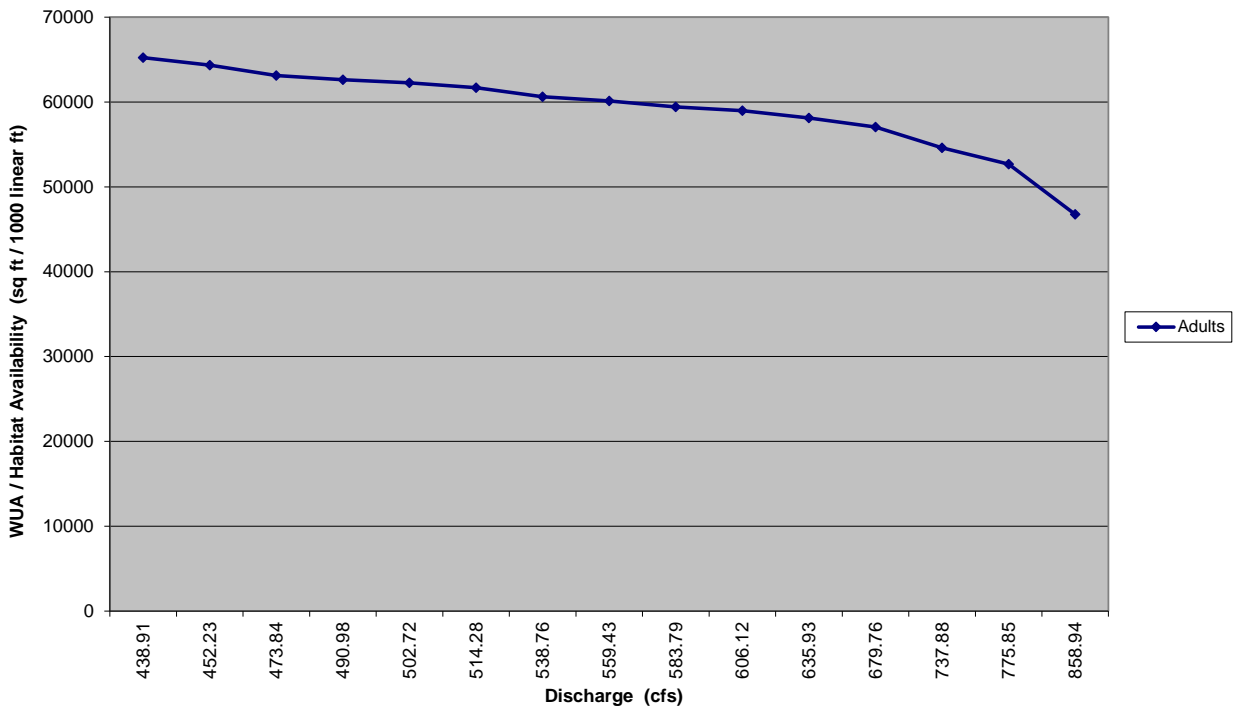
**Rainbow River - PHABSIM2
Medium Back Water (50%)
Spotted Sunfish**



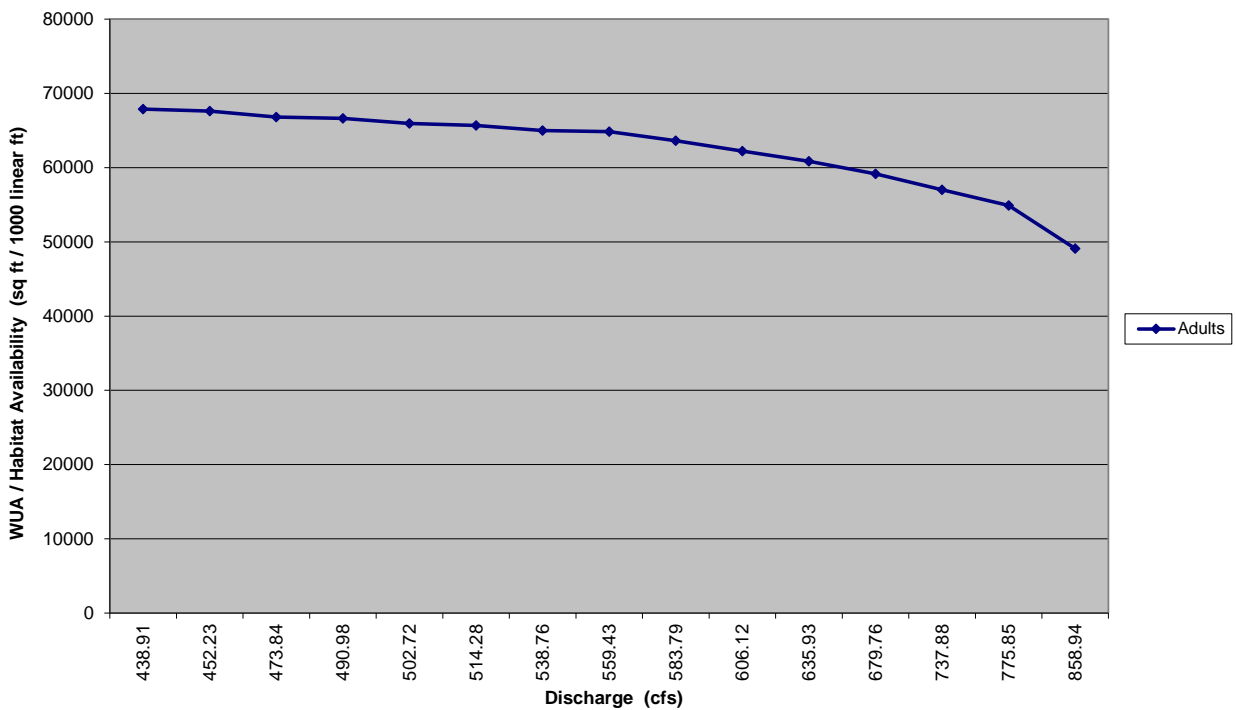
**Rainbow River - PHABSIM2
High Back Water (75%)
Spotted Sunfish**



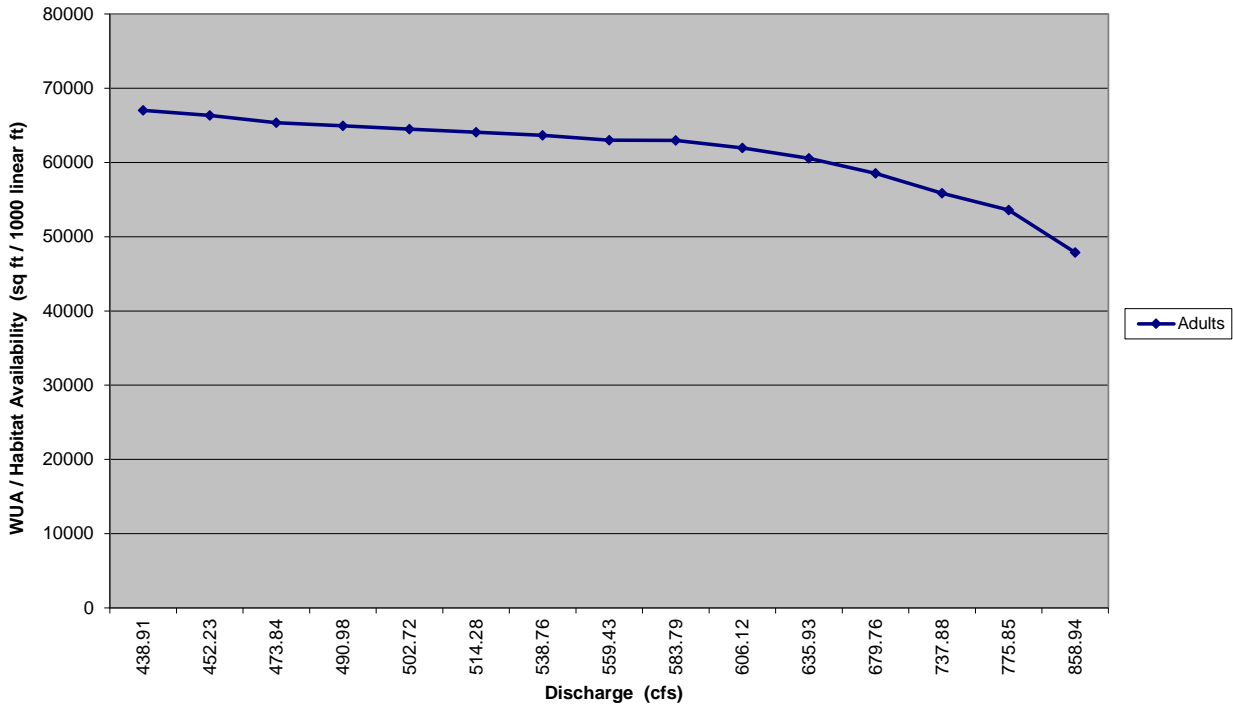
**Rainbow River - PHABSIM2
Low Back Water (25%)
Spotted Sunfish**



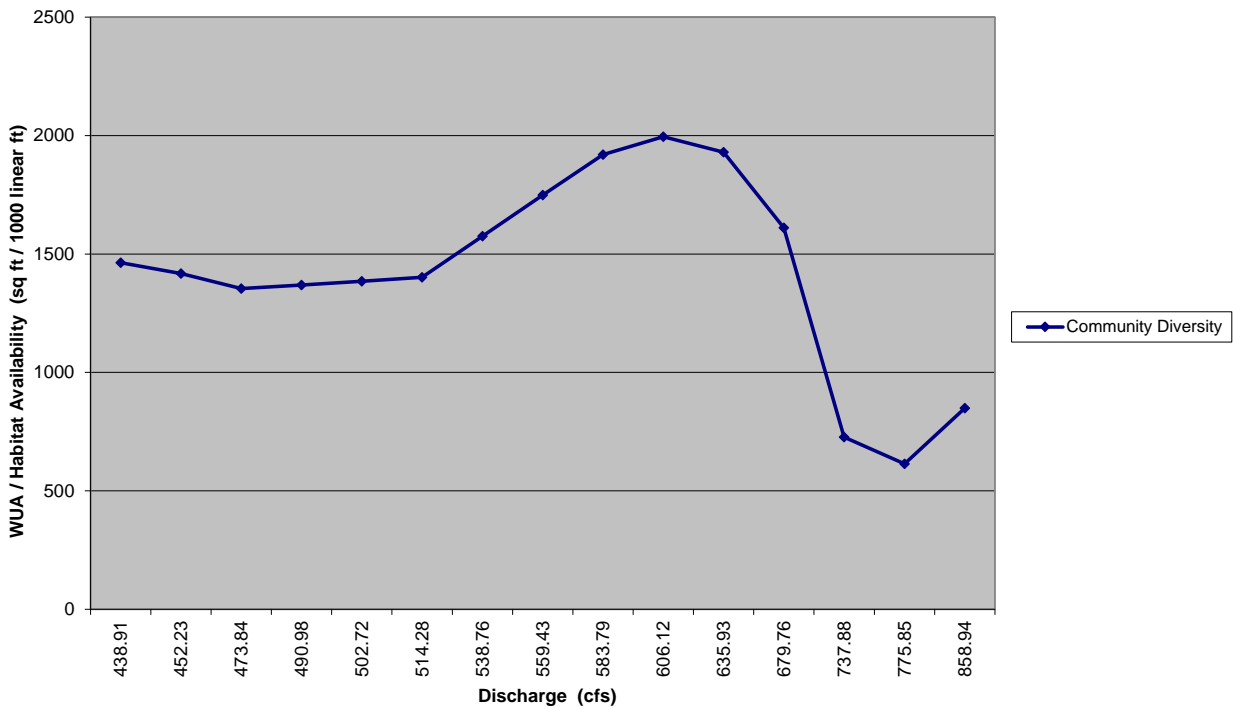
**Rainbow River - PHABSIM2
Medium Back Water (50%)
Spotted Sunfish**



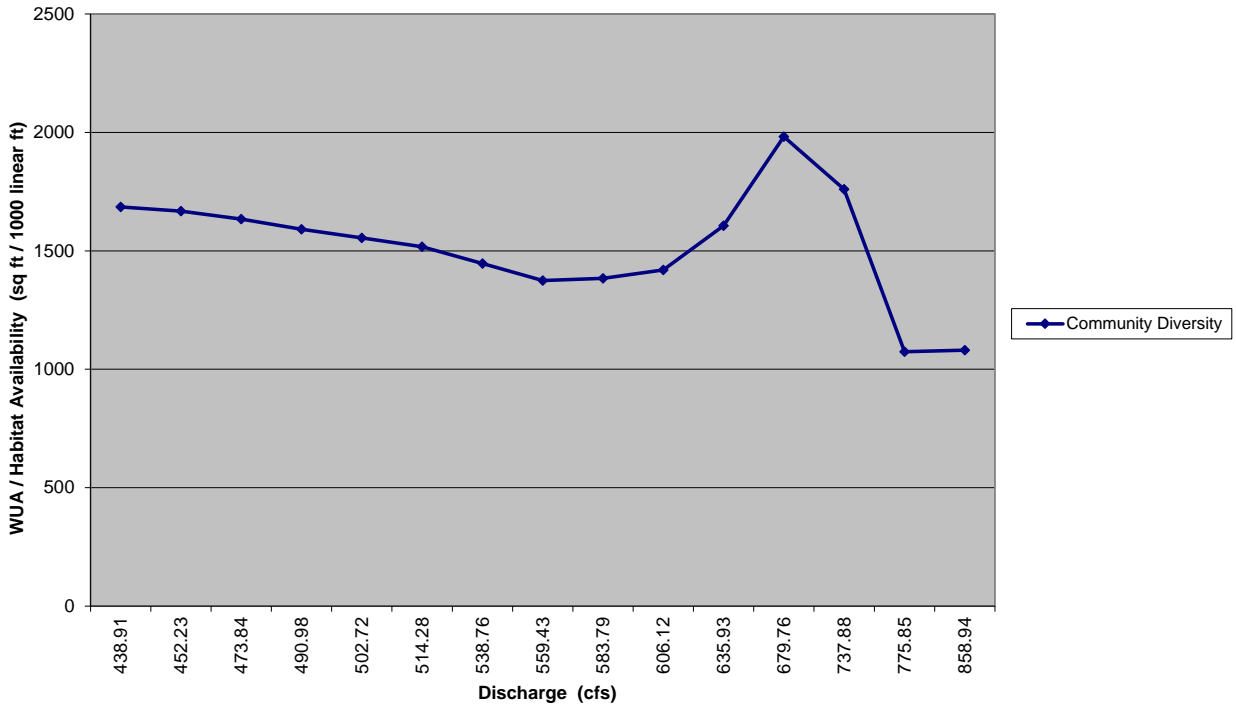
**Rainbow River - PHABSIM2
High Back Water (75%)
Spotted Sunfish**



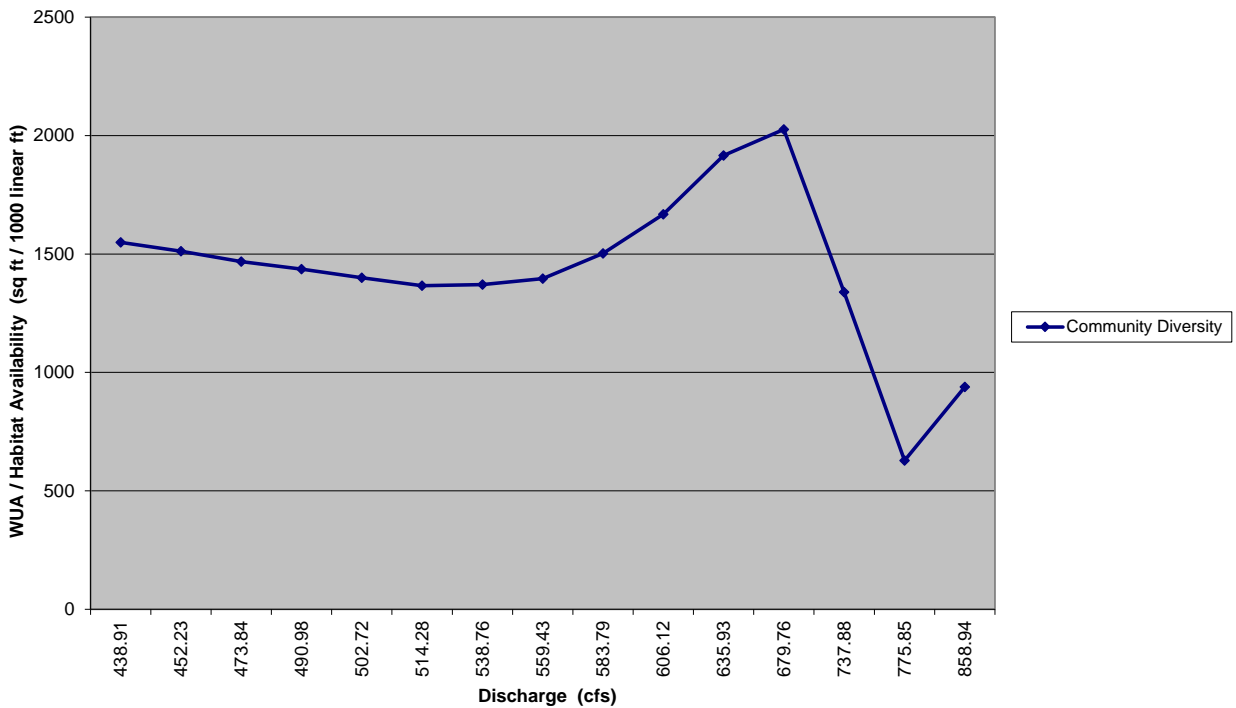
**Rainbow River - PHABSIM2
Low Back Water (25%)
Benthic Macroinvertebrates**



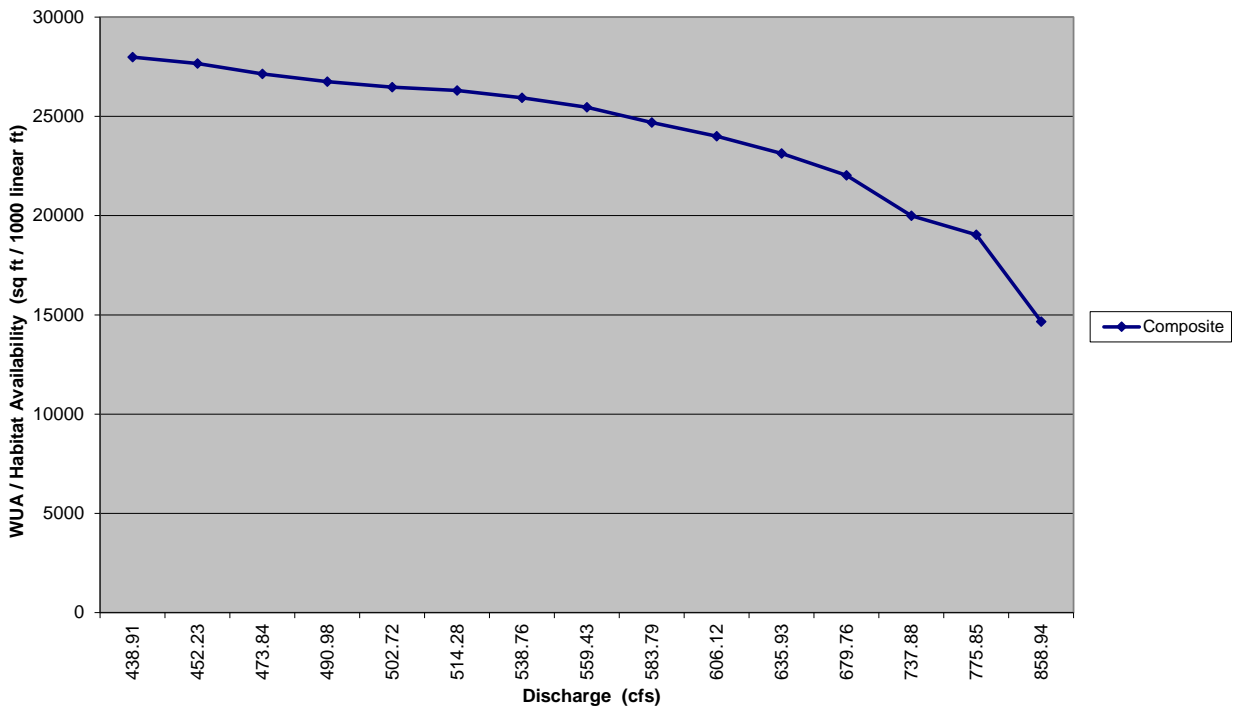
**Rainbow River - PHABSIM2
Medium Back Water (50%)
Benthic Macroinvertebrates**



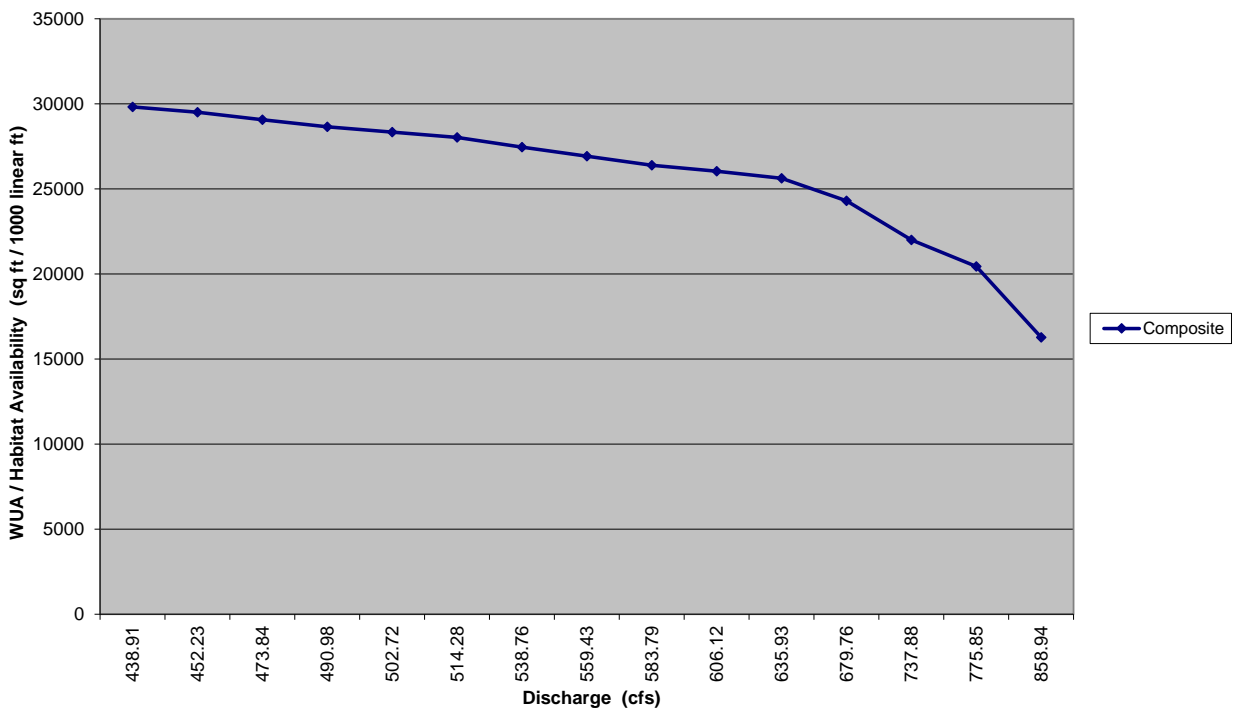
**Rainbow River - PHABSIM2
High Back Water (75%)
Benthic Macroinvertebrates**



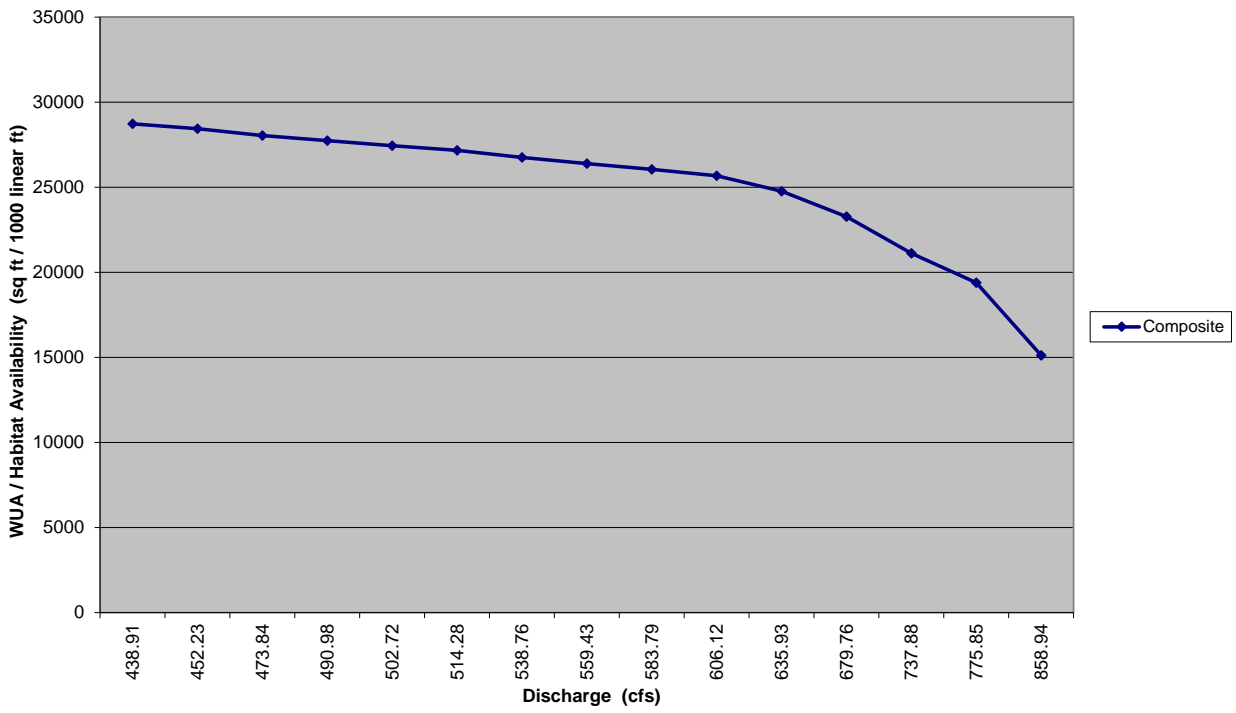
**Rainbow River - PHABSIM2
Low Back Water (25%)
Cyprinidae - Minnows, Chubs, Dace, Shiners**



**Rainbow River - PHABSIM2
Medium Back Water (50%)
Cyprinidae - Minnows, Chubs, Dace, Shiners**



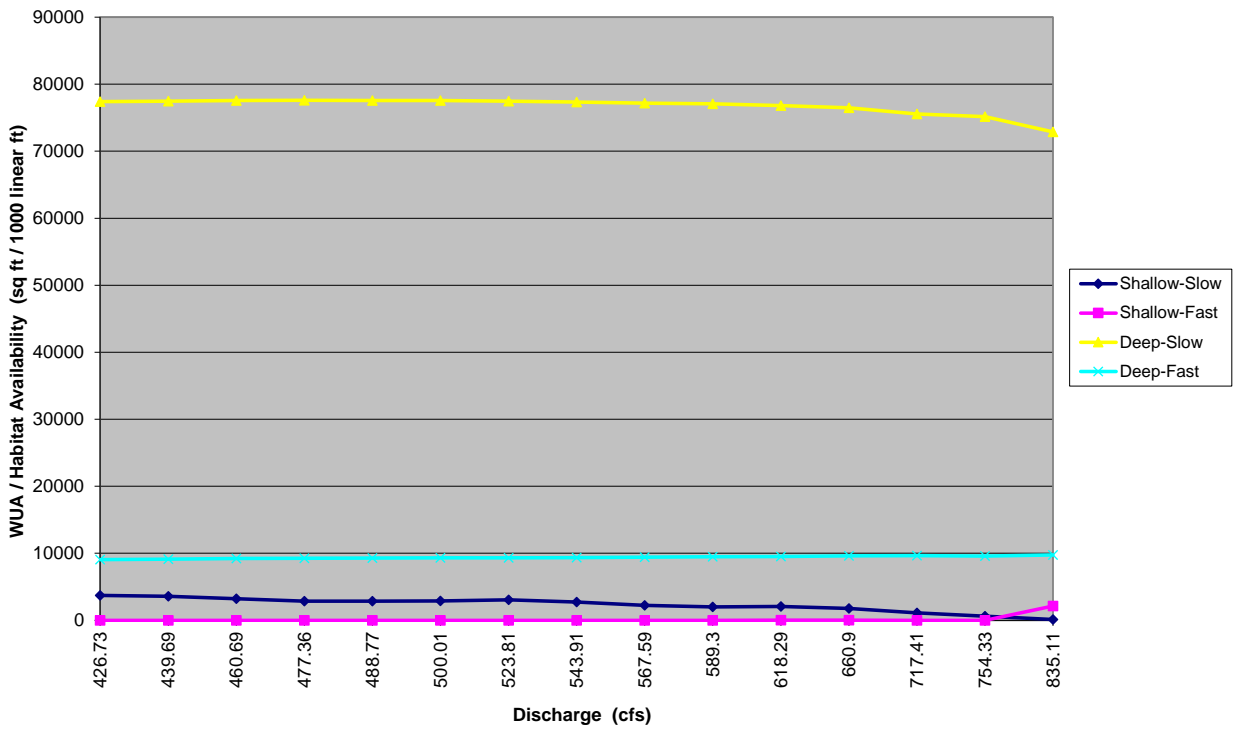
Rainbow River - PHABSIM2
High Back Water (75%)
Cyprinidae - Minnows, Chubs, Dace, Shiners



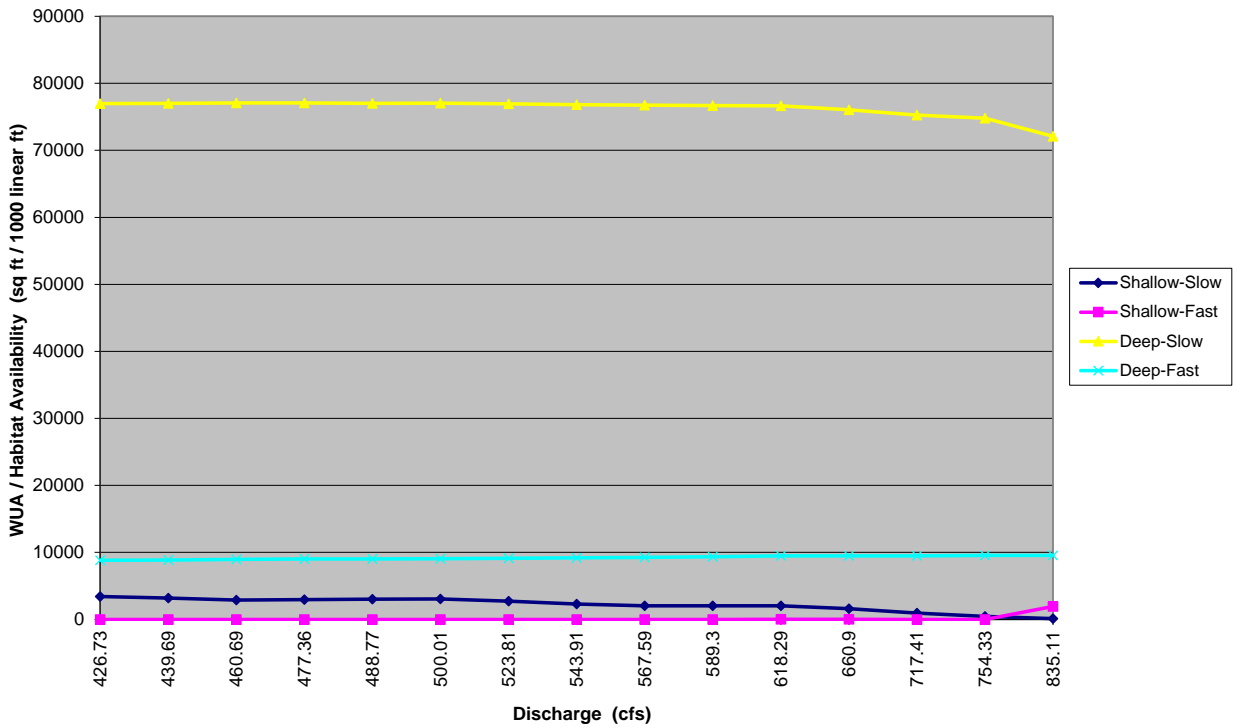
Section 2

Rainbow River System PHABSIM Modeling Results: Weighted Usable Area vs. Discharge Plots for the Pool Site

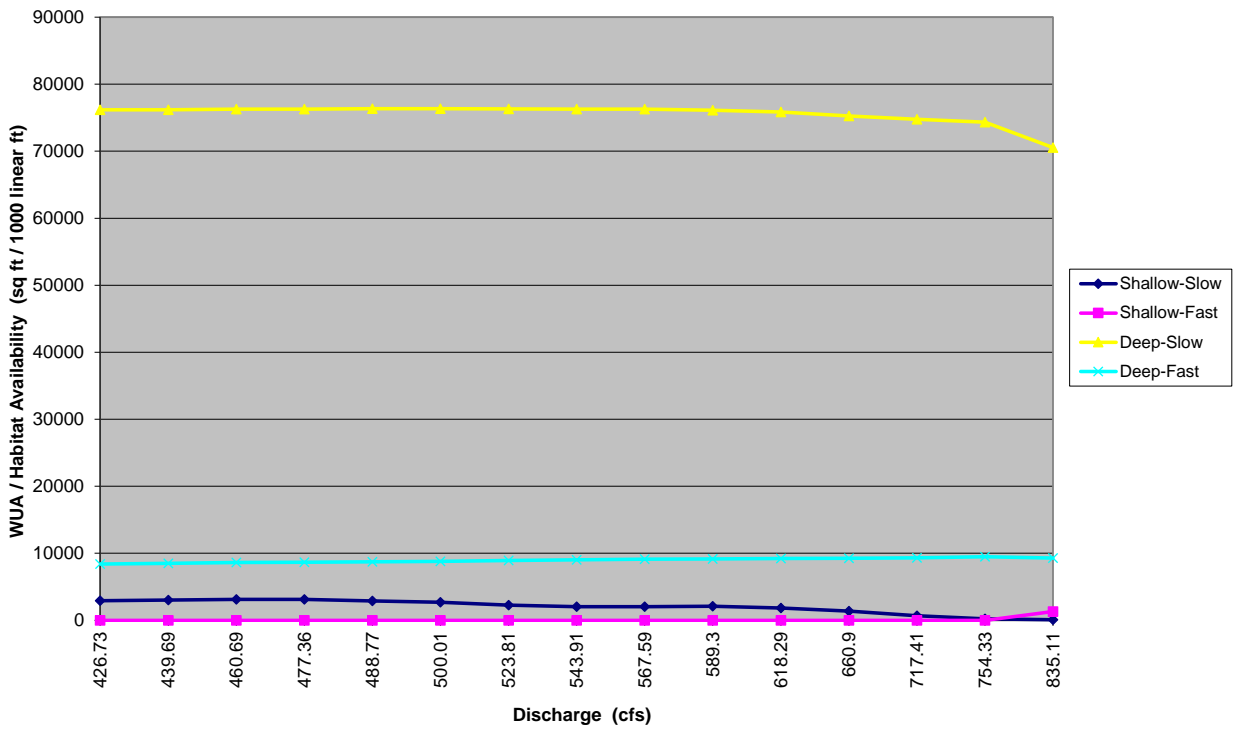
**Rainbow River - Pool Site
Low Back Water (25%)
Fish Habitat Guilds**



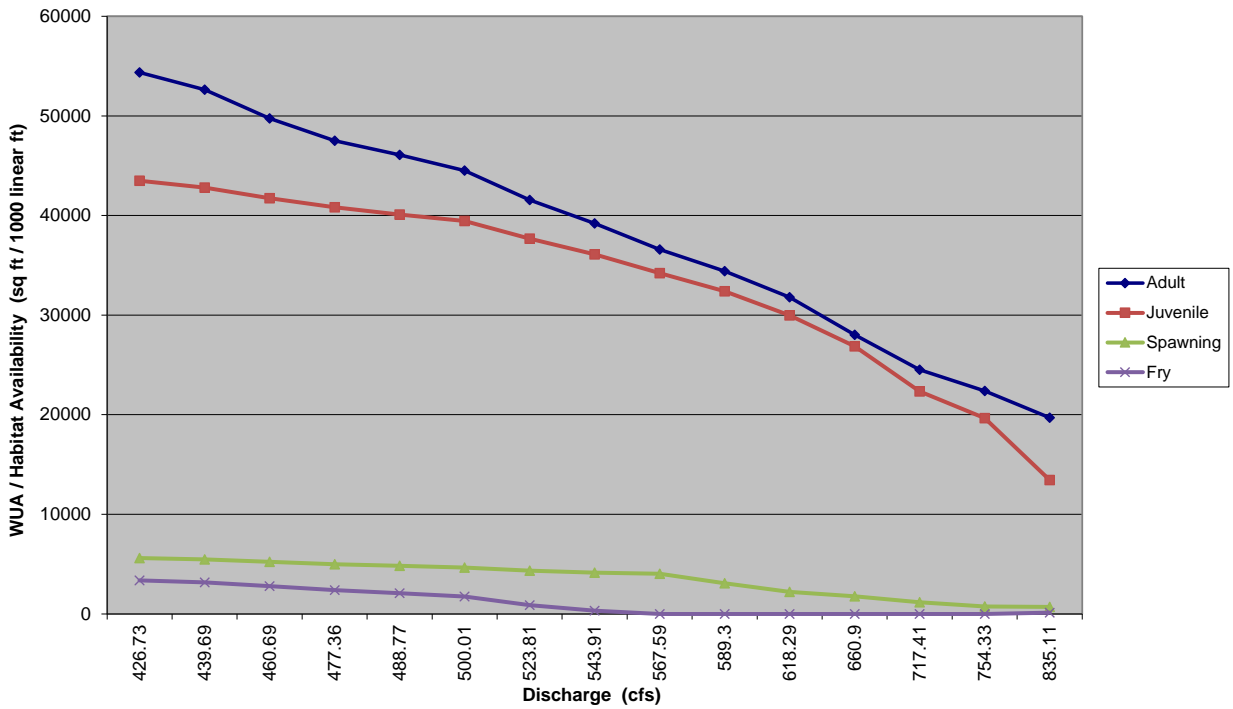
**Rainbow River - Pool Site
Medium Back Water (50%)
Fish Habitat Guilds**



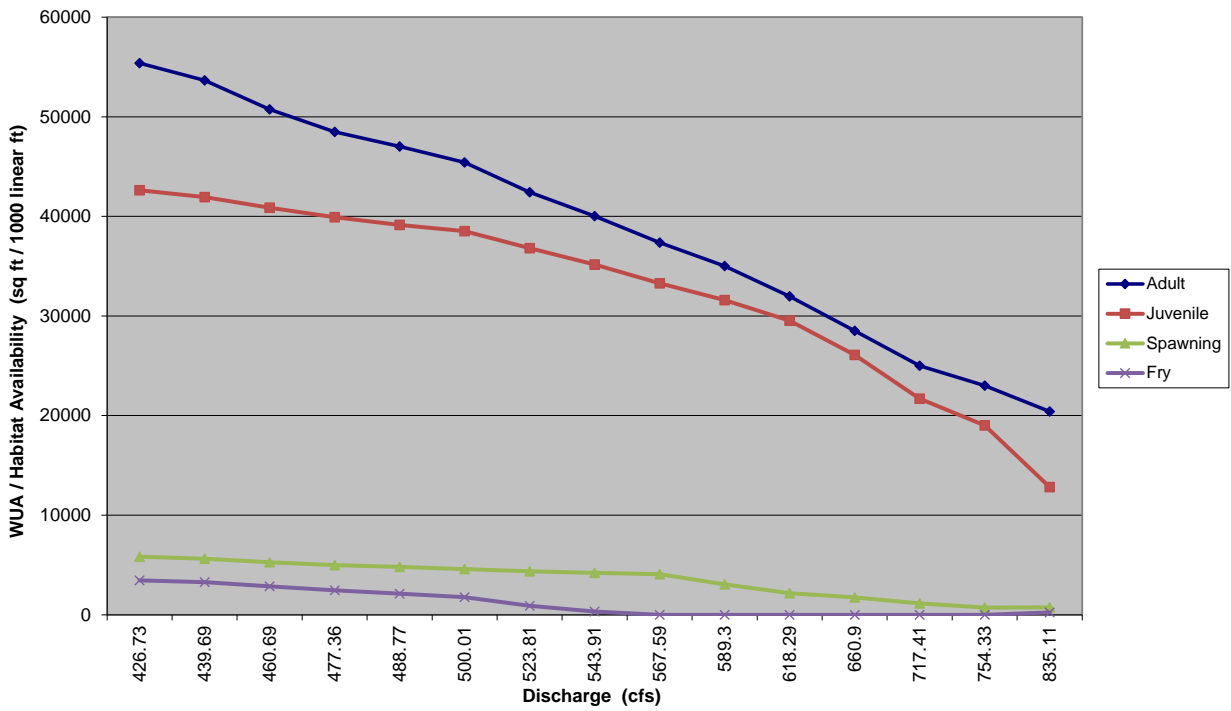
**Rainbow River - Pool Site
High Back Water (75%)
Fish Habitat Guilds**



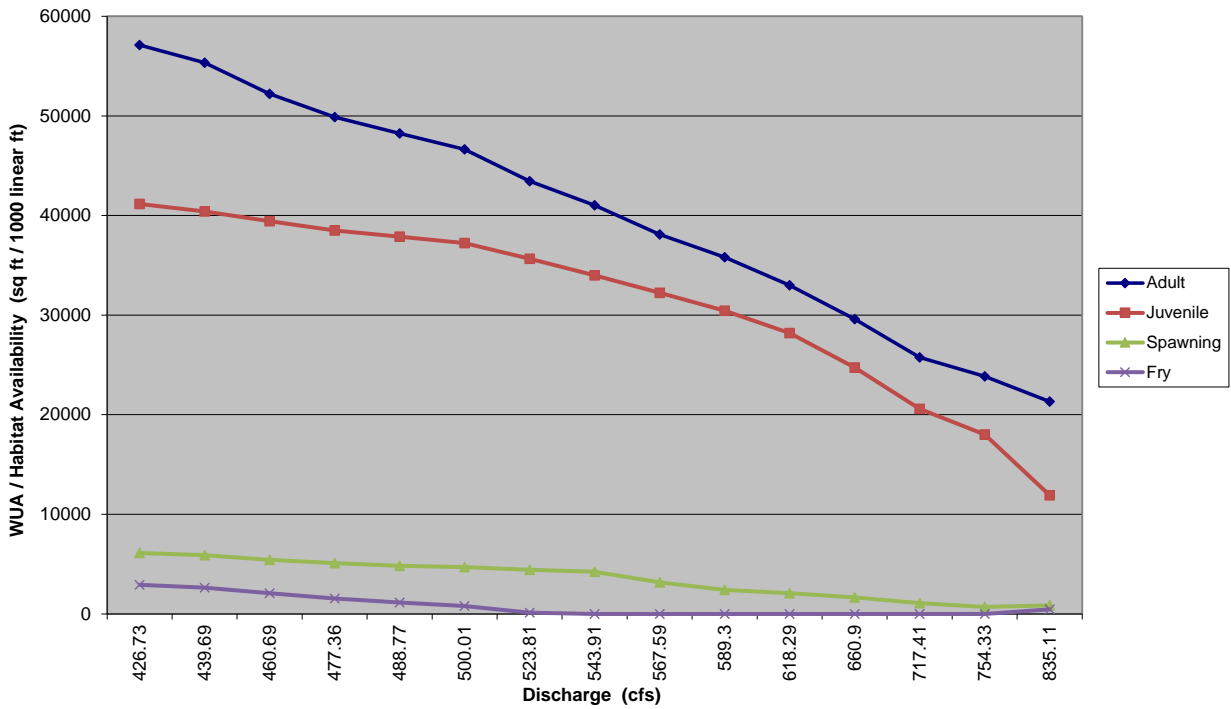
**Rainbow River - Pool Site
Low Back Water (25%)
Largemouth Bass**



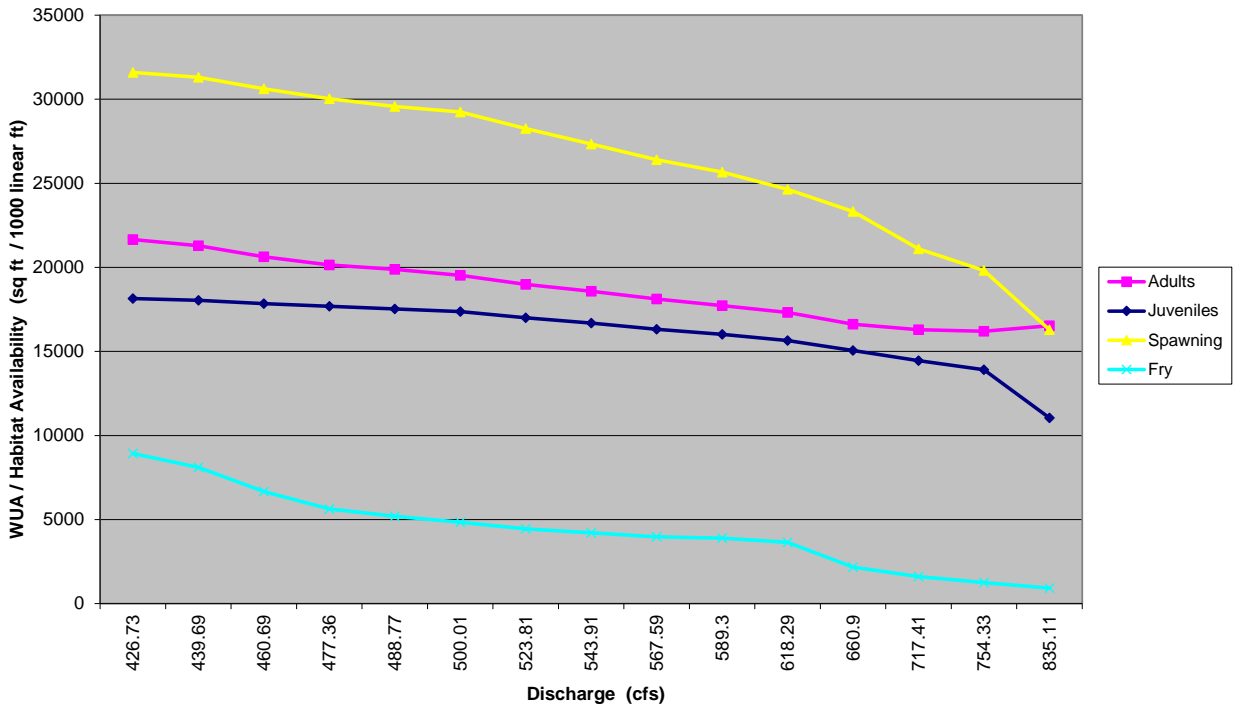
**Rainbow River - Pool Site
Medium Back Water (50%)
Largemouth Bass**



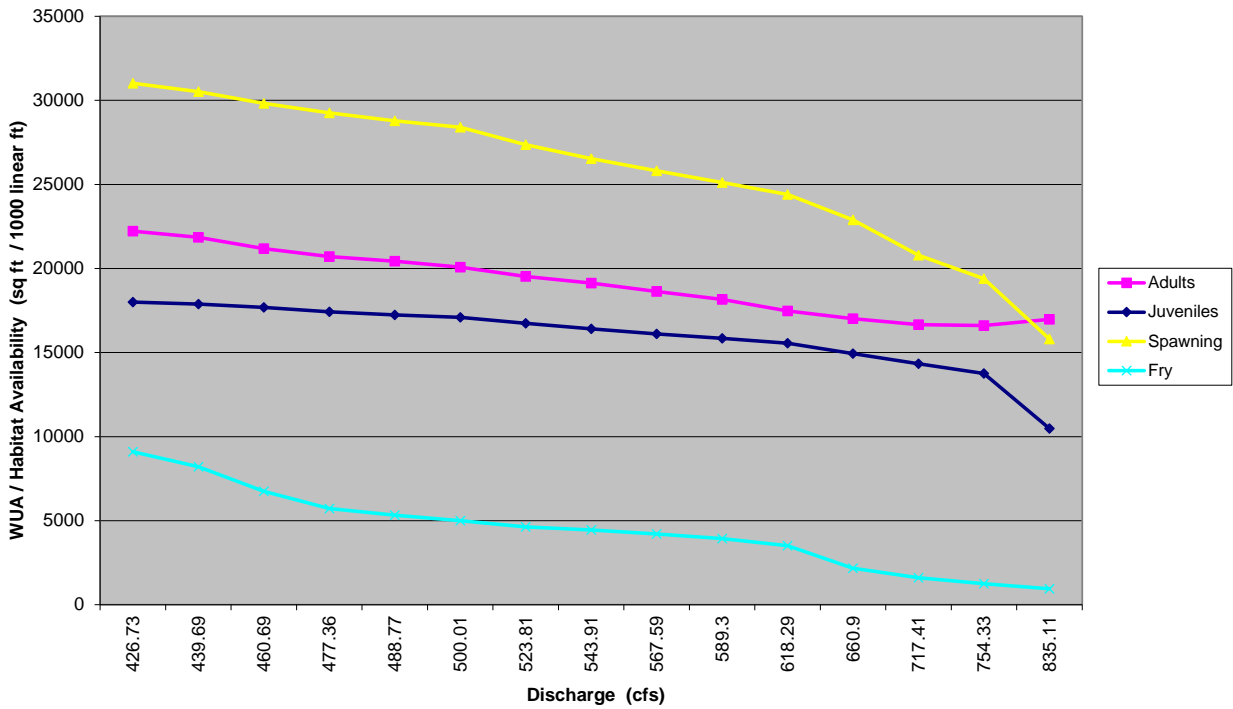
**Rainbow River - Pool Site
High Back Water (75%)
Largemouth Bass**



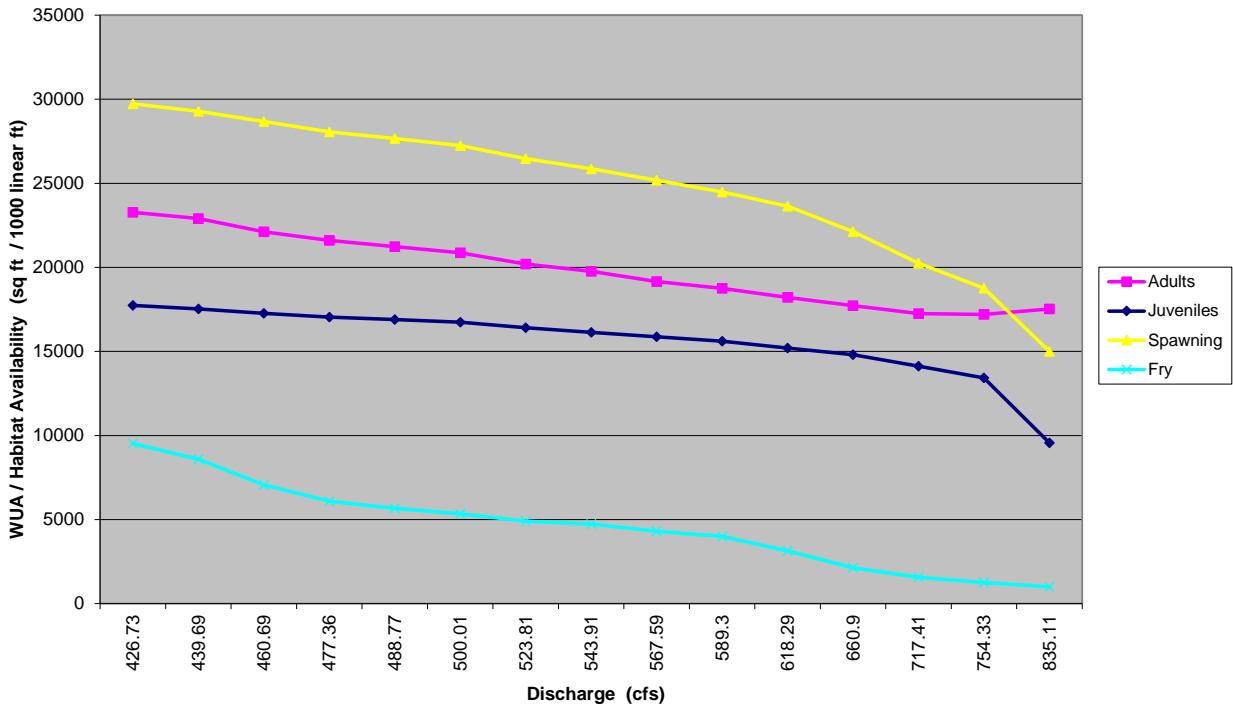
**Rainbow River - Pool Site
Low Back Water (25%)
Bluegill Sunfish**



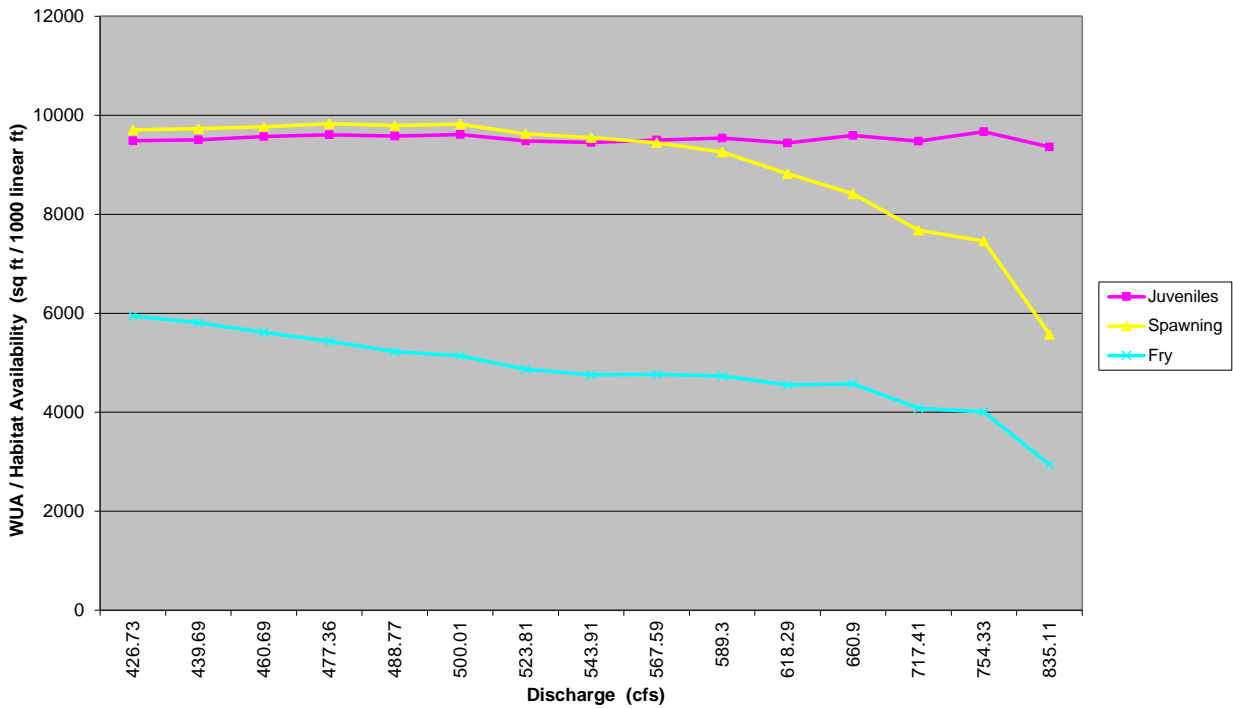
**Rainbow River - Pool Site
Medium Back Water (50%)
Bluegill Sunfish**



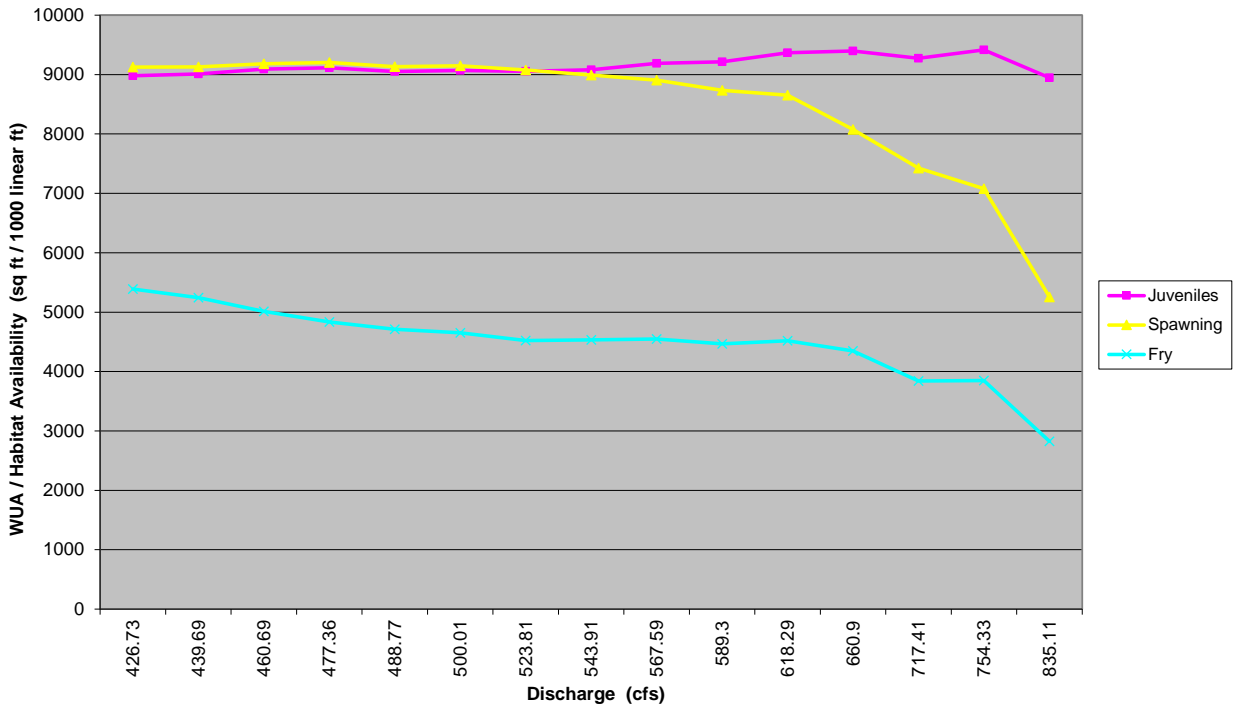
**Rainbow River - Pool Site
High Back Water (75%)
Bluegill Sunfish**



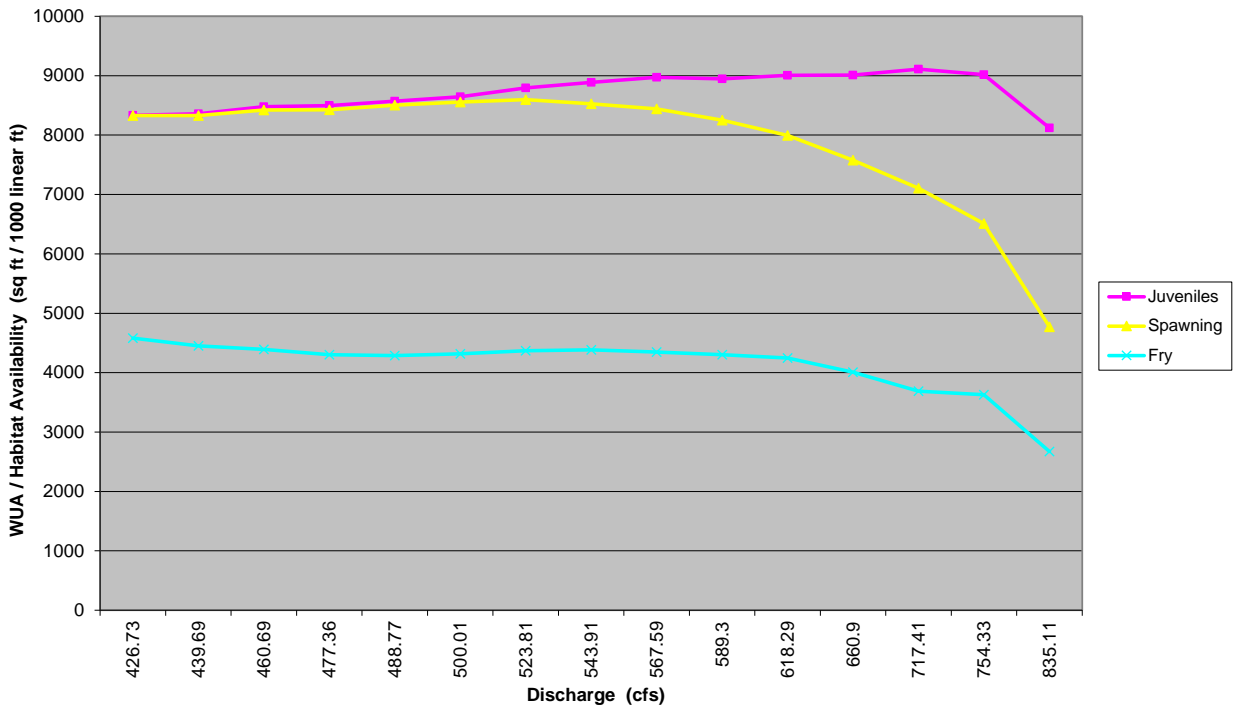
**Rainbow River - Pool Site
Low Back Water (25%)
Spotted Sunfish**



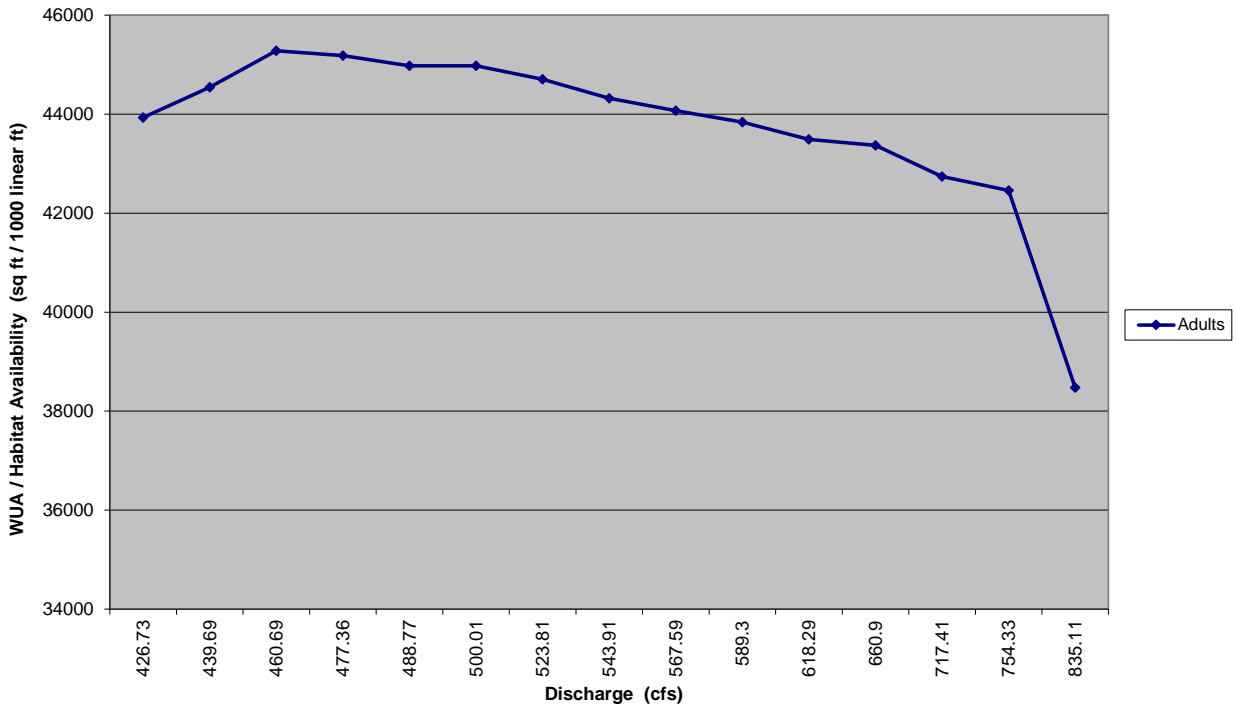
**Rainbow River - Pool Site
Medium Back Water (50%)
Spotted Sunfish**



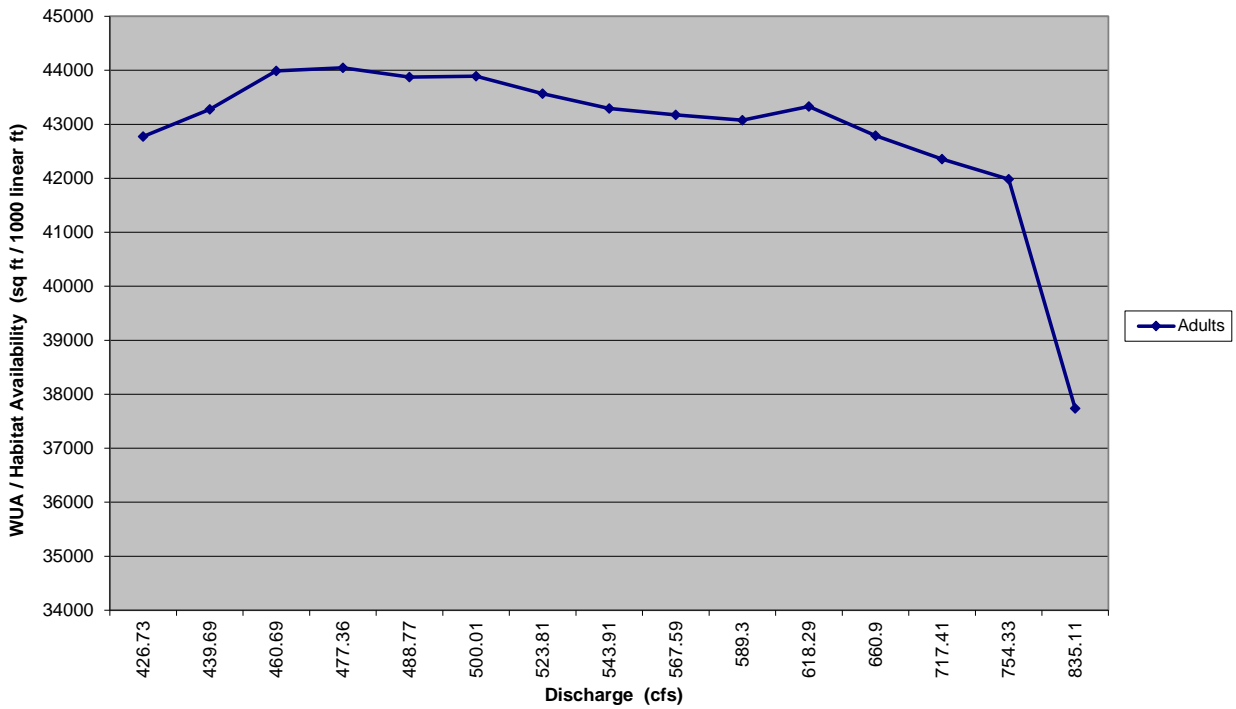
**Rainbow River - Pool Site
High Back Water (75%)
Spotted Sunfish**



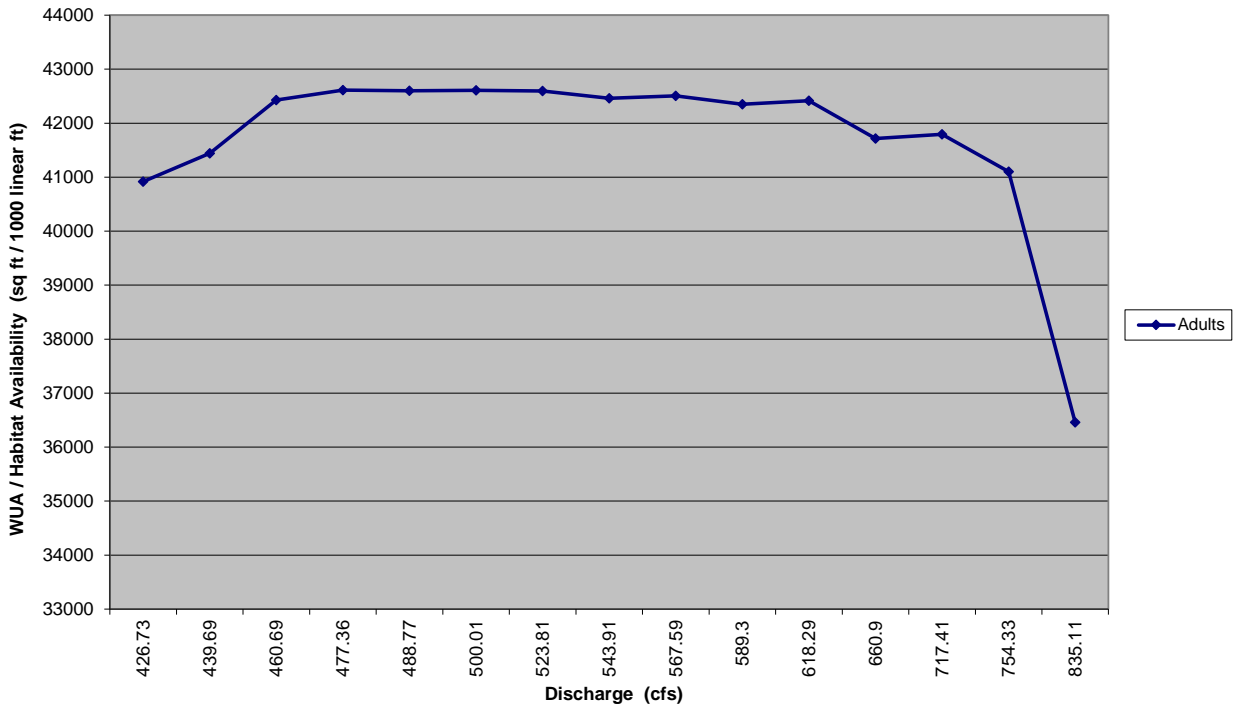
**Rainbow River - Pool Site
Low Back Water (25%)
Spotted Sunfish**



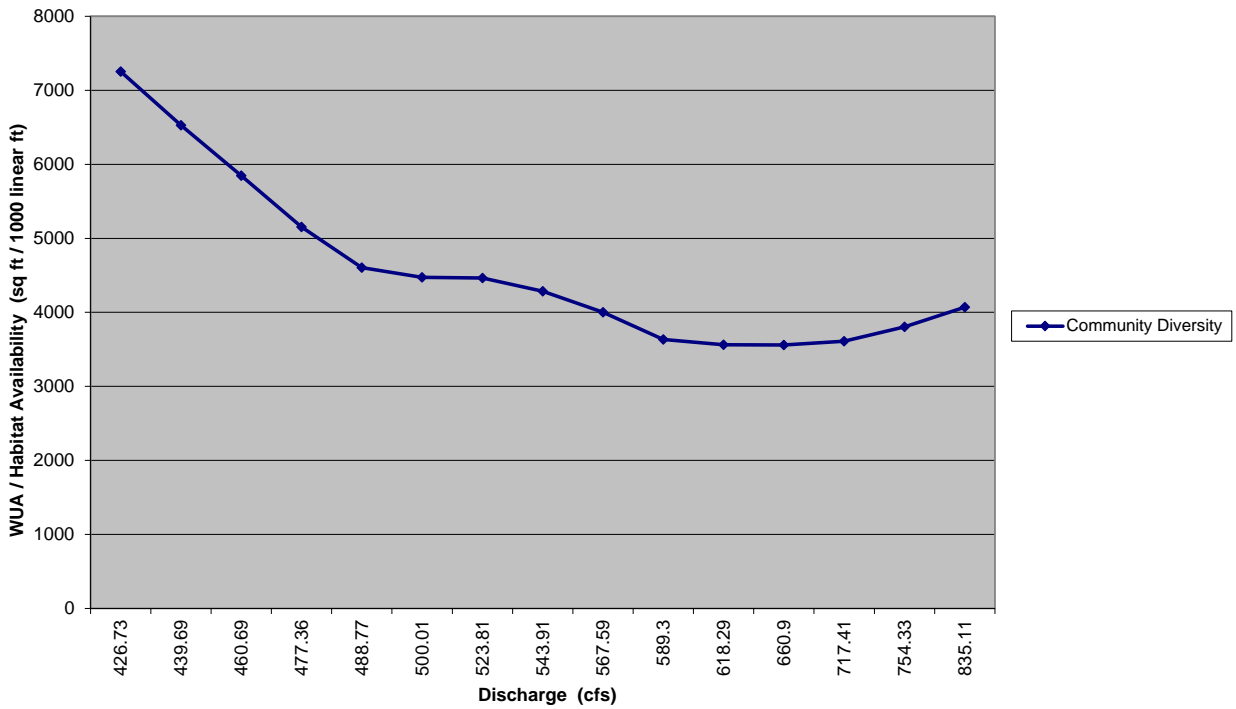
**Rainbow River - Pool Site
Medium Back Water (50%)
Spotted Sunfish**



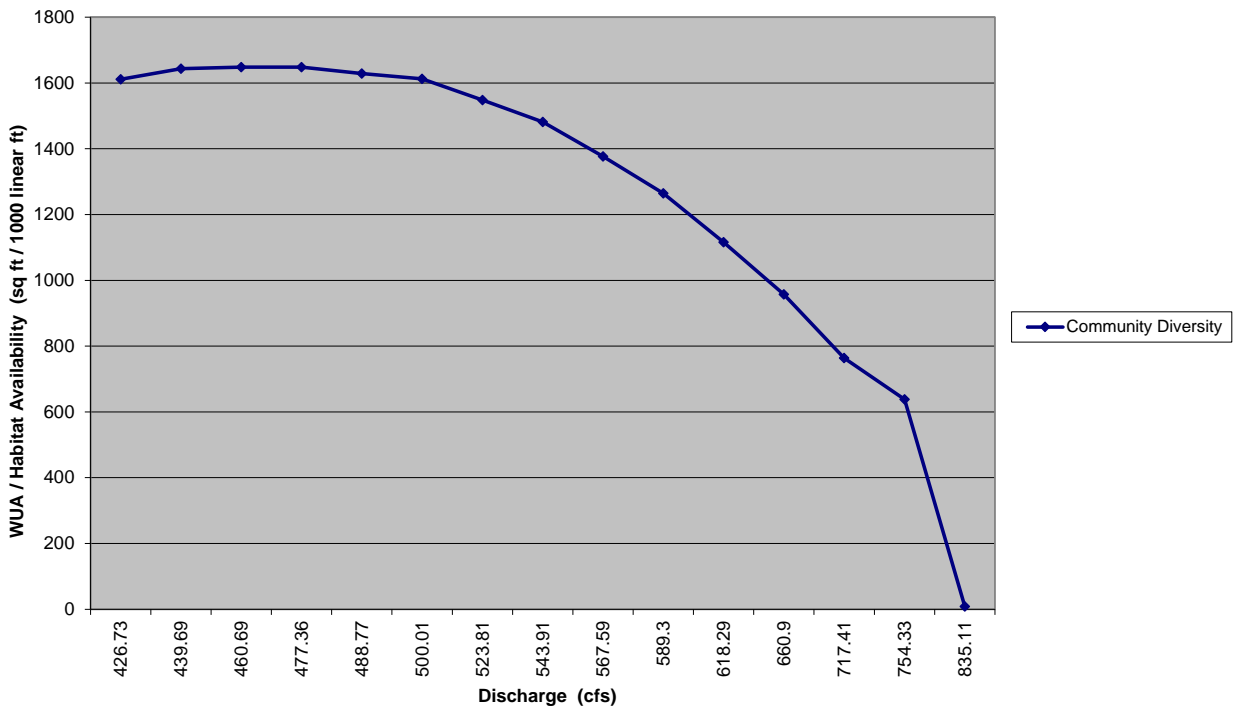
**Rainbow River - Pool Site
High Back Water (75%)
Spotted Sunfish**



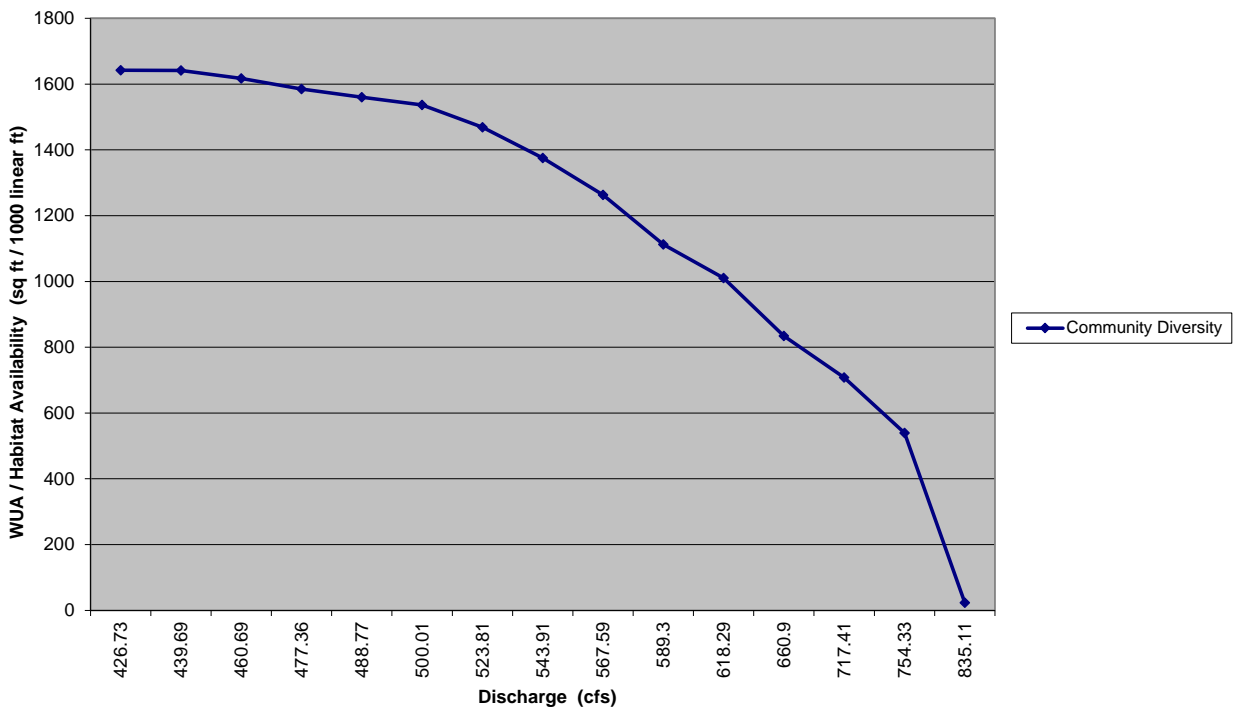
**Rainbow River - Pool Site
Low Back Water (25%)
Benthic Macroinvertebrates**



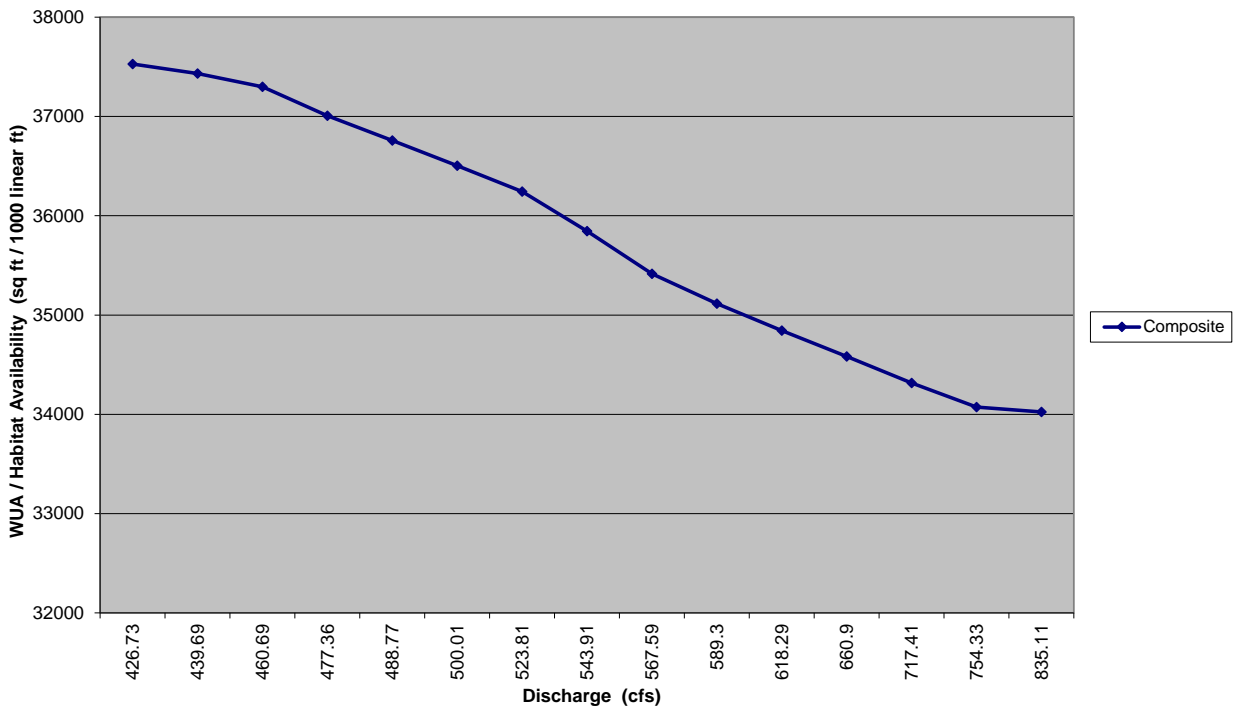
**Rainbow River - Pool Site
Medium Back Water (50%)
Benthic Macroinvertebrates**



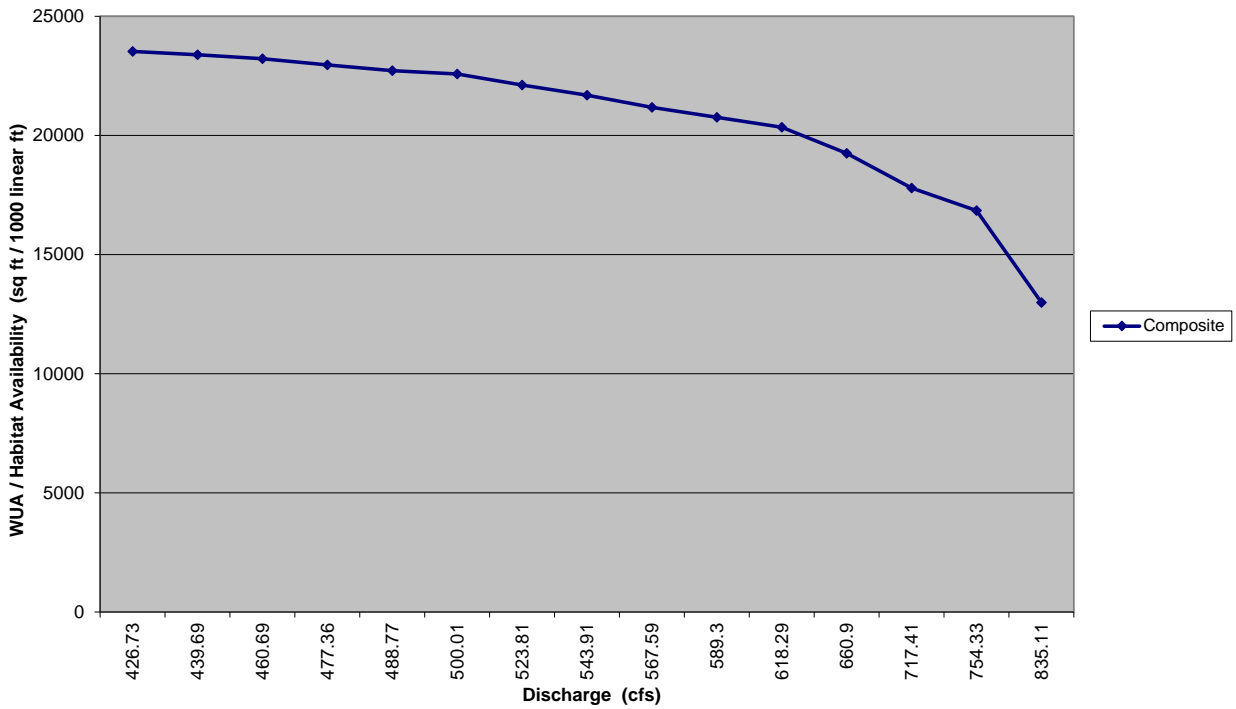
**Rainbow River - Pool Site
High Back Water (75%)
Benthic Macroinvertebrates**



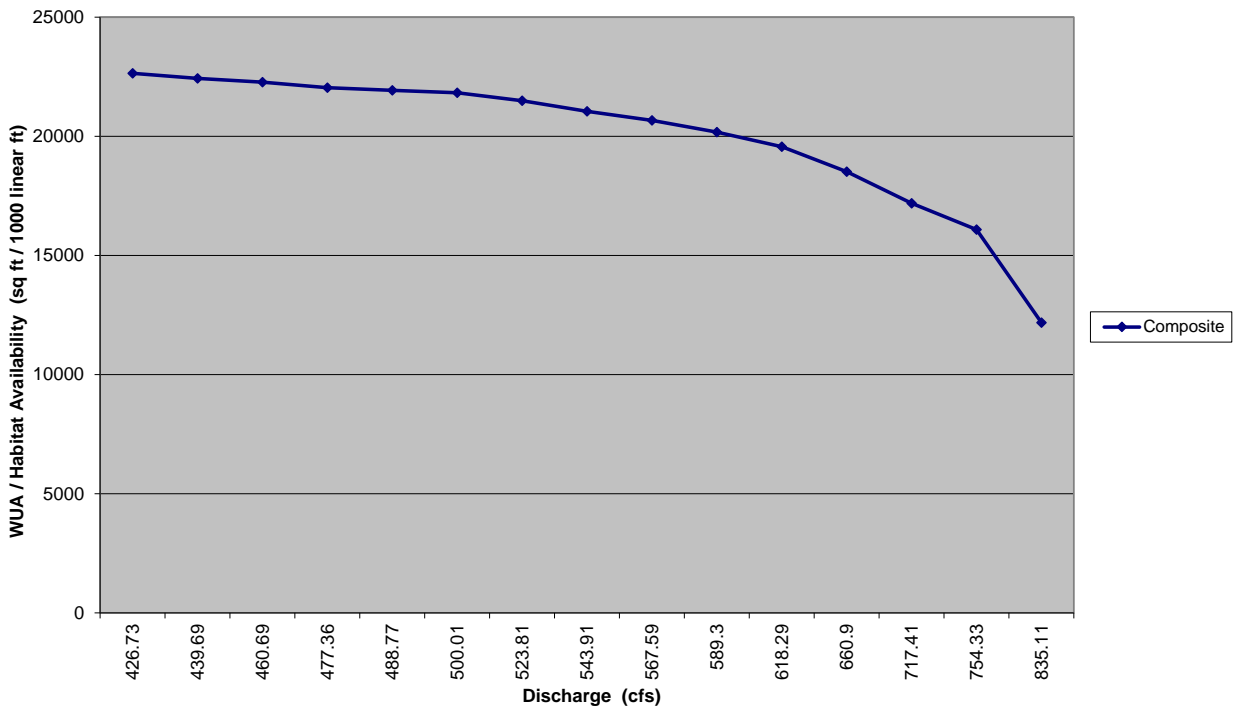
**Rainbow River - Pool Site
Low Back Water (25%)
Cyprinidae - Minnows, Chubs, Dace, Shiners**



**Rainbow River - Pool Site
Medium Back Water (50%)
Cyprinidae - Minnows, Chubs, Dace, Shiners**



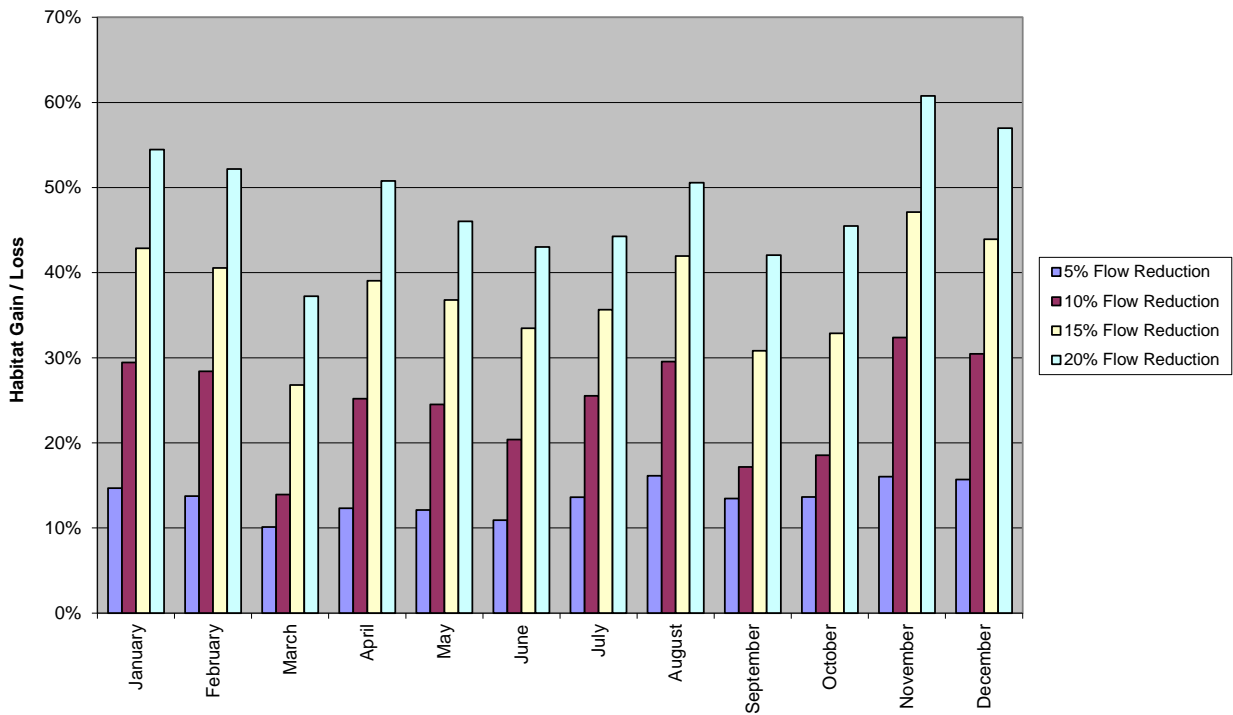
Rainbow River - Pool Site
High Back Water (75%)
Cyprinidae - Minnows, Chubs, Dace, Shiners



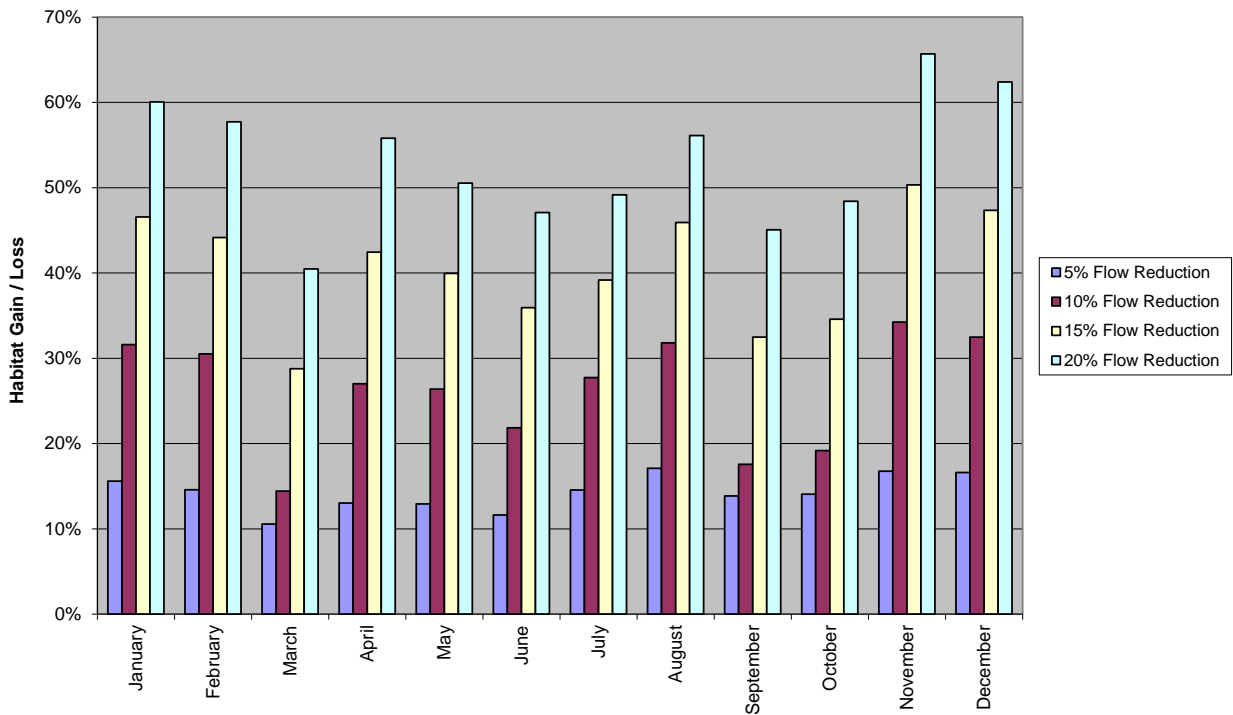
Section 3

Rainbow River System PHABSIM Modeling Results: Habitat Gain/Loss vs. 5, 10, 15, and 20% Flow Reduction Plots for PHABSIM 1

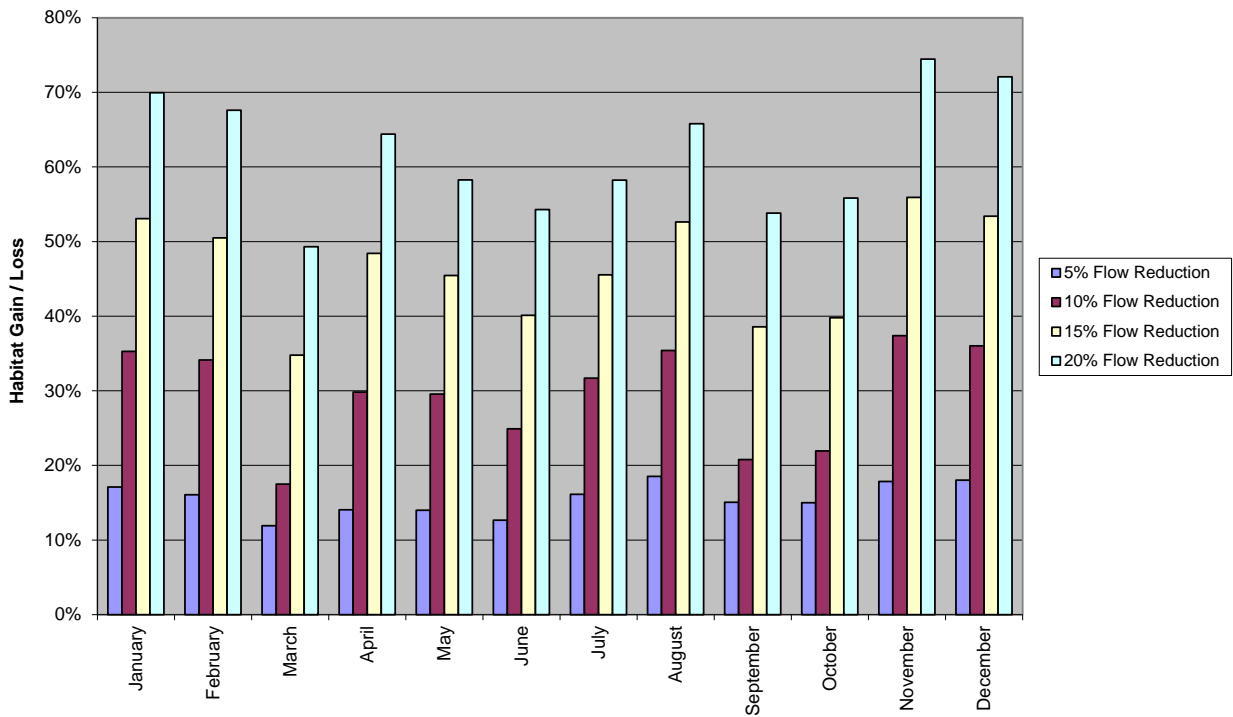
**Shallow-Slow Fish Habitat Guild (1965-2014)
Low Back Water (25%)
Rainbow River - PHABSIM1 Site**



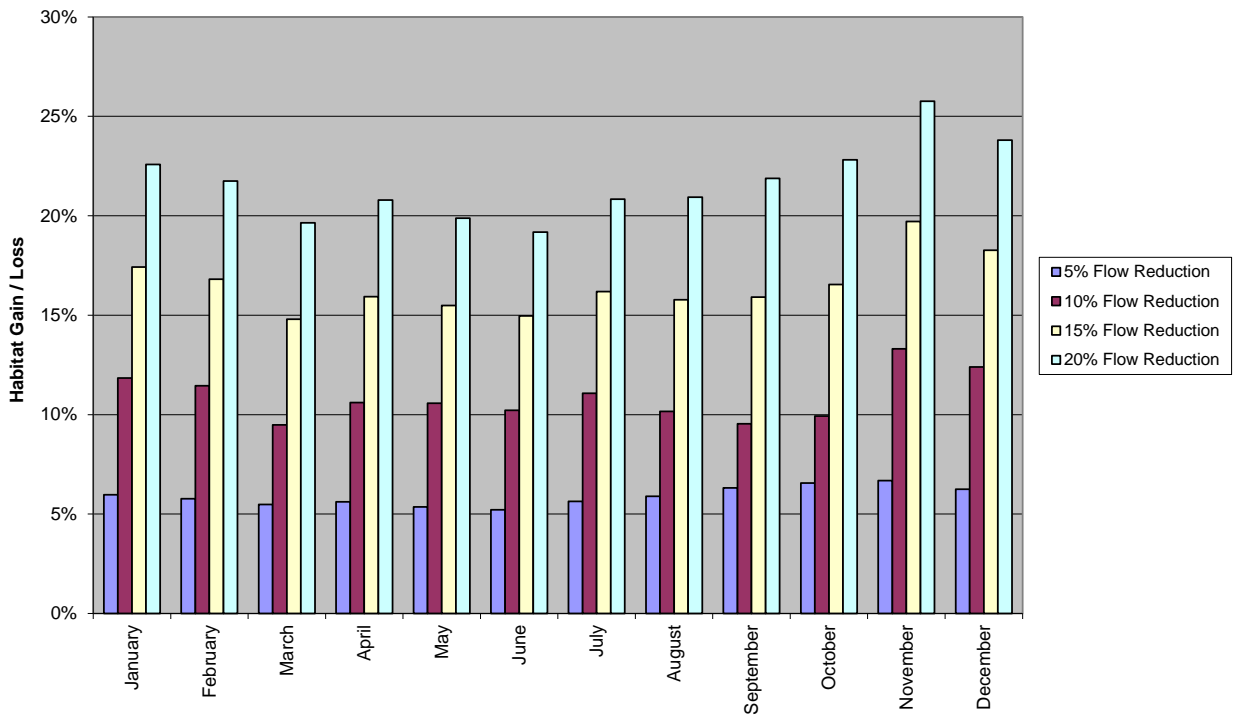
**Shallow-Slow Fish Habitat Guild (1965-2014)
Medium Back Water (50%)
Rainbow River - PHABSIM1 Site**



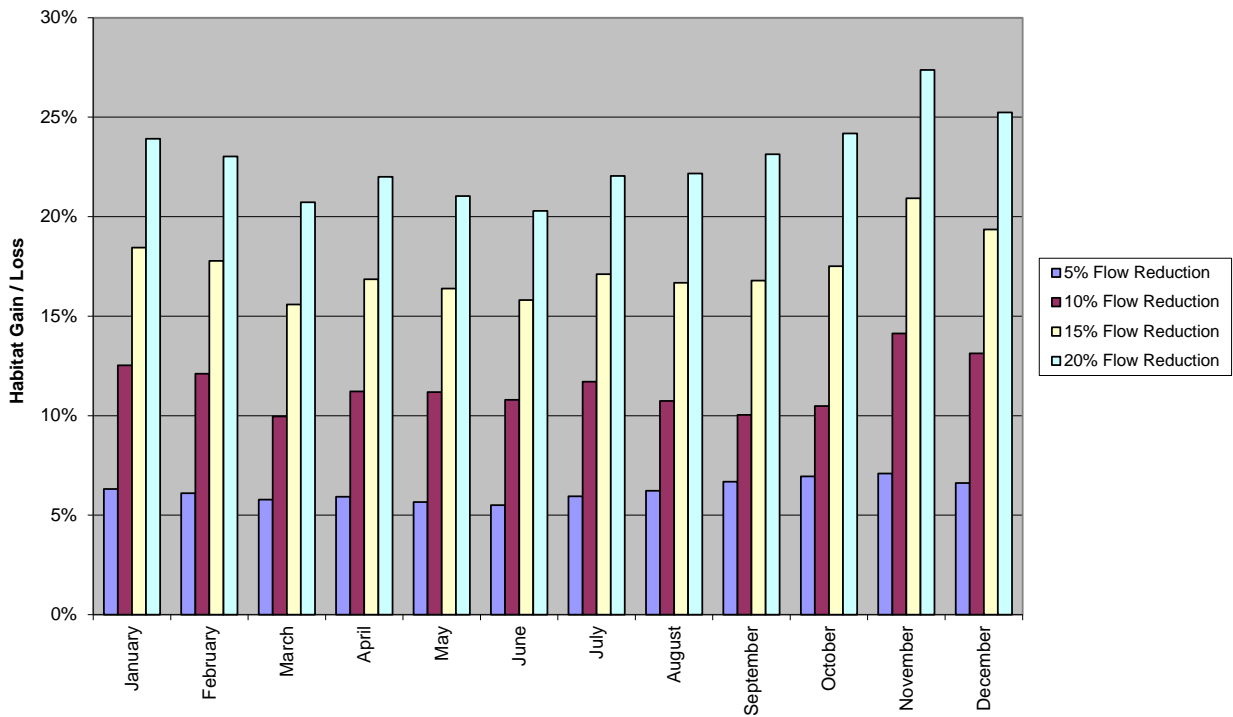
Shallow-Slow Fish Habitat Guild (1965-2014)
High Back Water (75%)
Rainbow River - PHABSIM1 Site



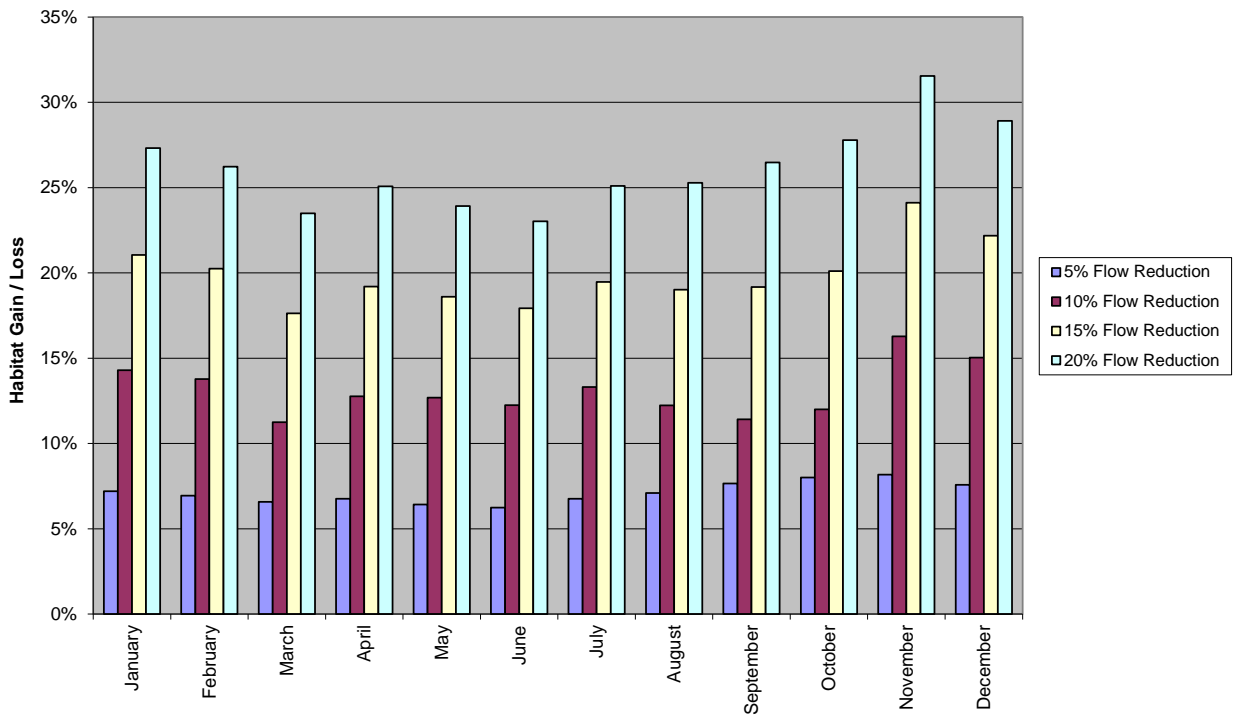
Deep-Slow Fish Habitat Guild (1965-2014)
Low Back Water (25%)
Rainbow River - PHABSIM1 Site



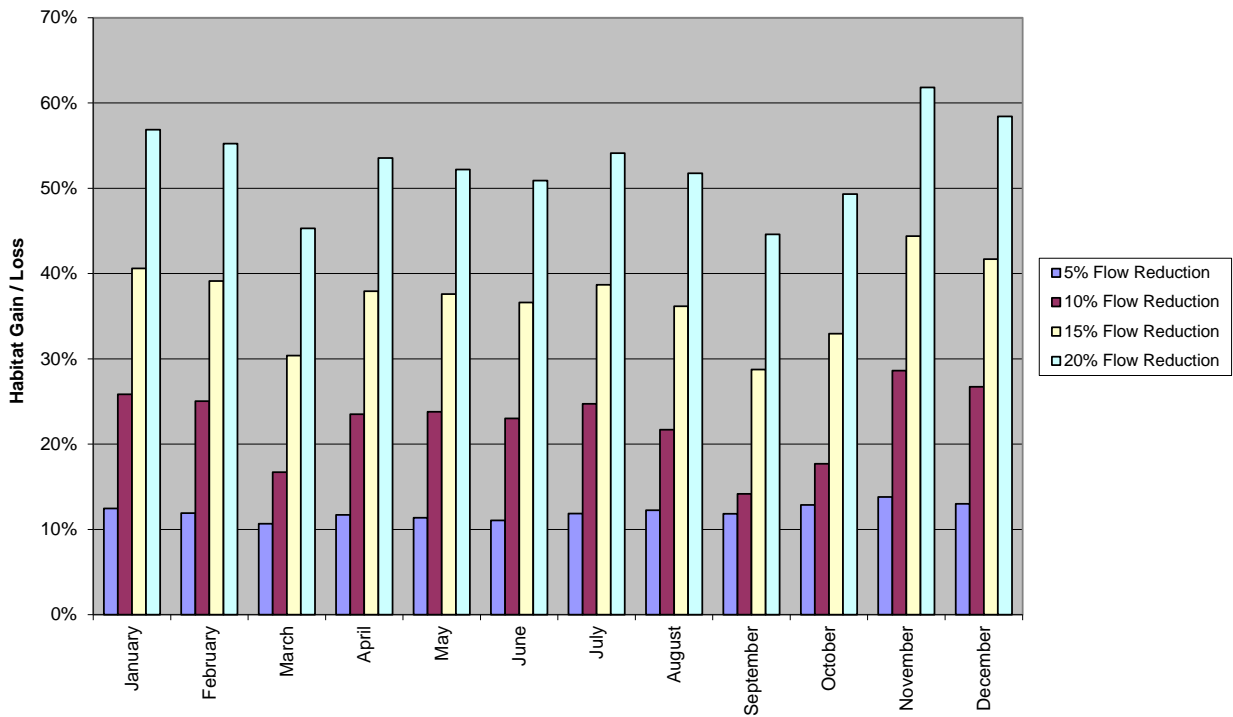
**Deep-Slow Fish Habitat Guild (1965-2014)
Medium Back Water (50%)
Rainbow River - PHABSIM1 Site**



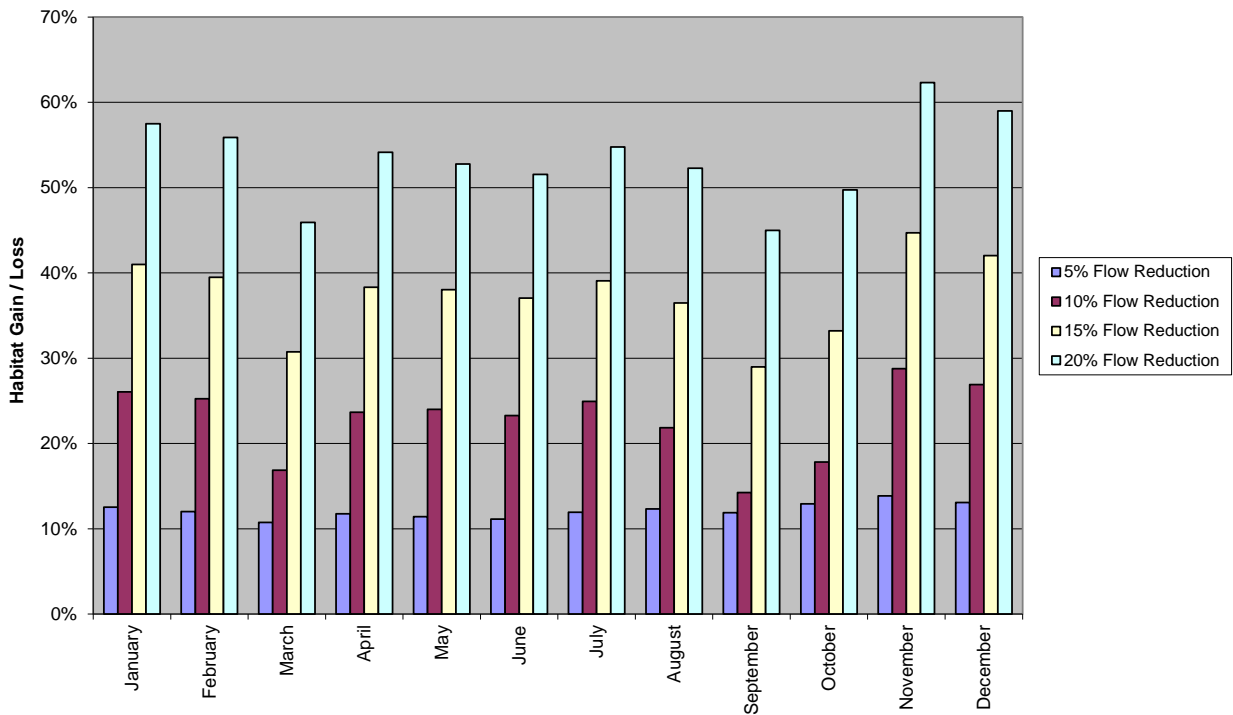
**Deep-Slow Fish Habitat Guild (1965-2014)
High Back Water (75%)
Rainbow River - PHABSIM1 Site**



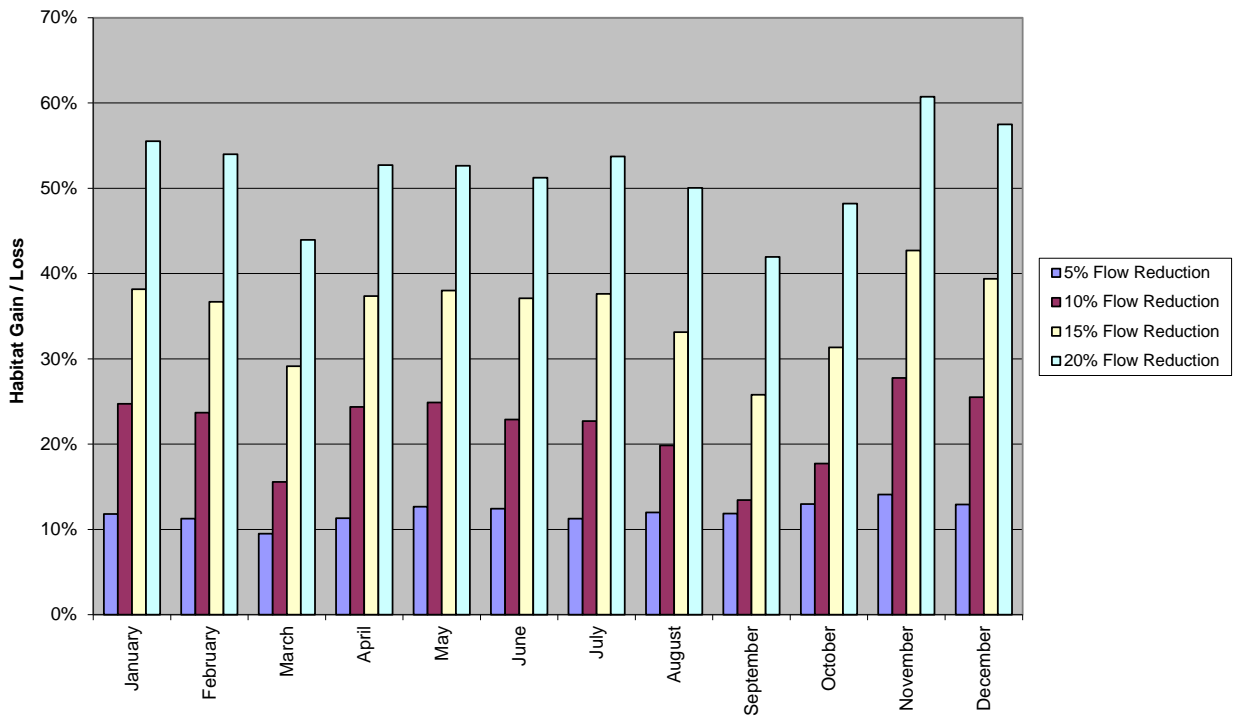
**Deep-Fast Fish Habitat Guild (1965-2014)
Low Back Water (25%)
Rainbow River - PHABSIM1 Site**



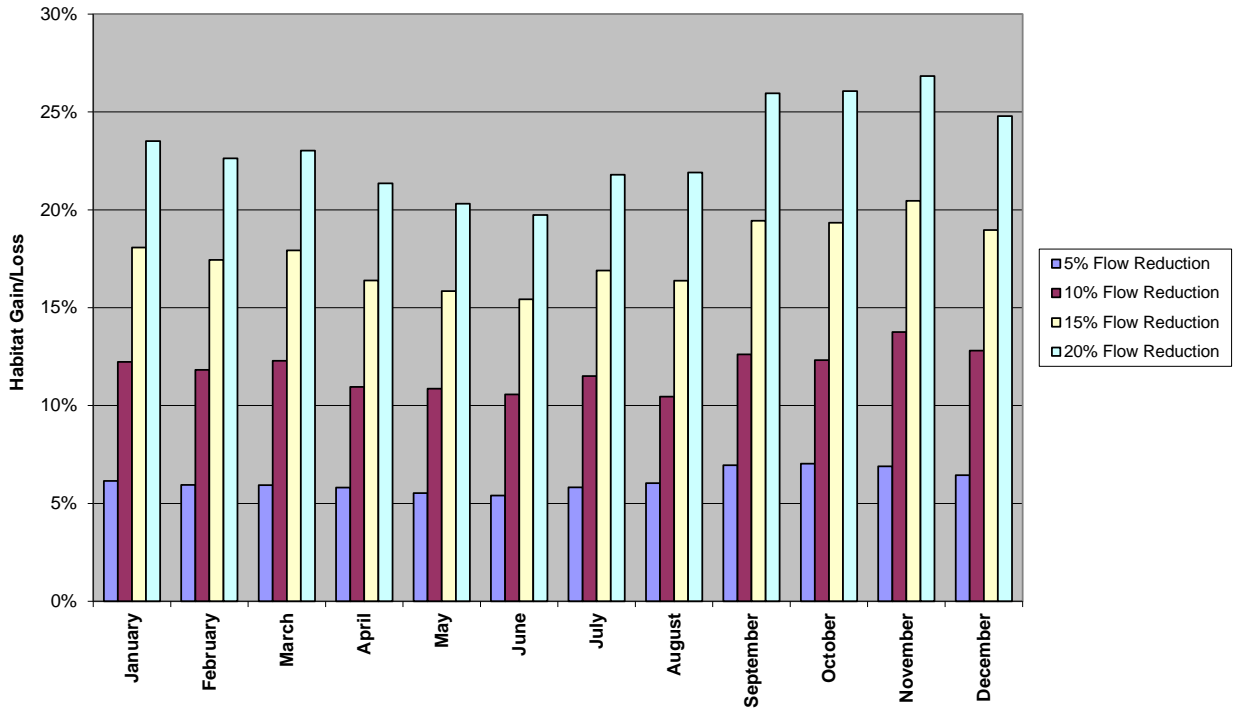
**Deep-Fast Fish Habitat Guild (1965-2014)
Medium Back Water (50%)
Rainbow River - PHABSIM1 Site**



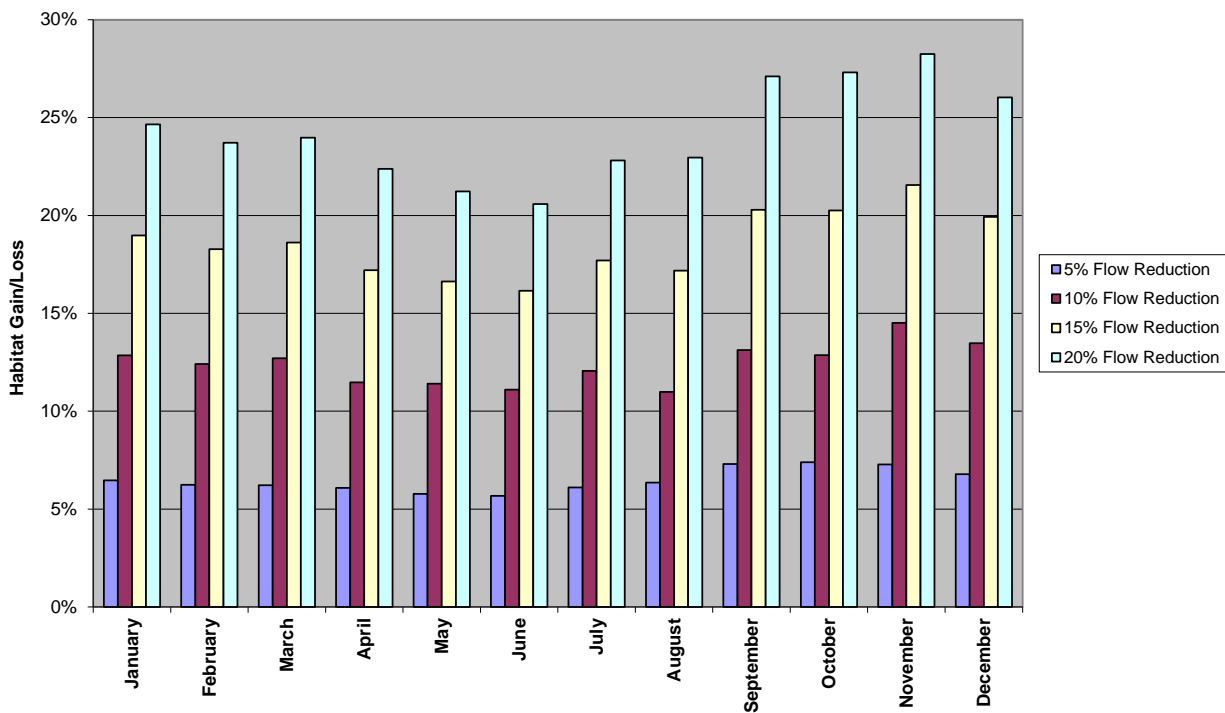
Deep-Fast Fish Habitat Guild (1965-2014)
High Back Water (75%)
Rainbow River - PHABSIM1 Site



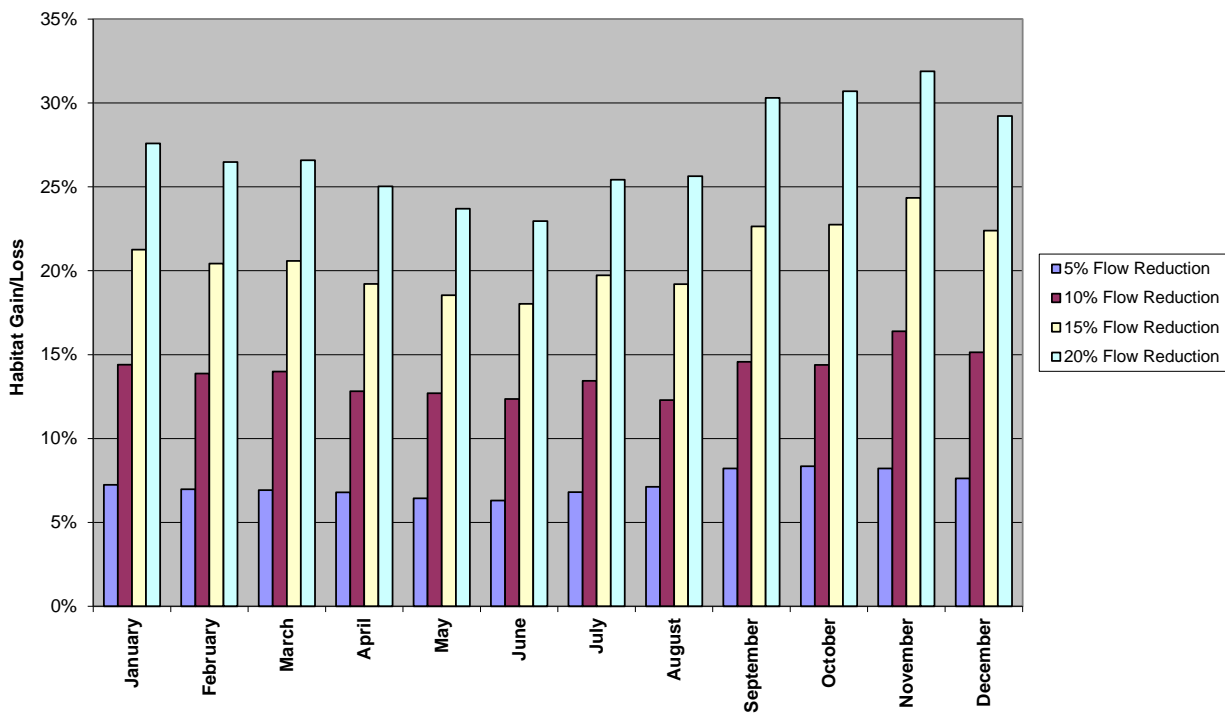
Spotted Sunfish Adults (1965-2014)
Low Back Water (25%)
Rainbow River - PHABSIM1 Site



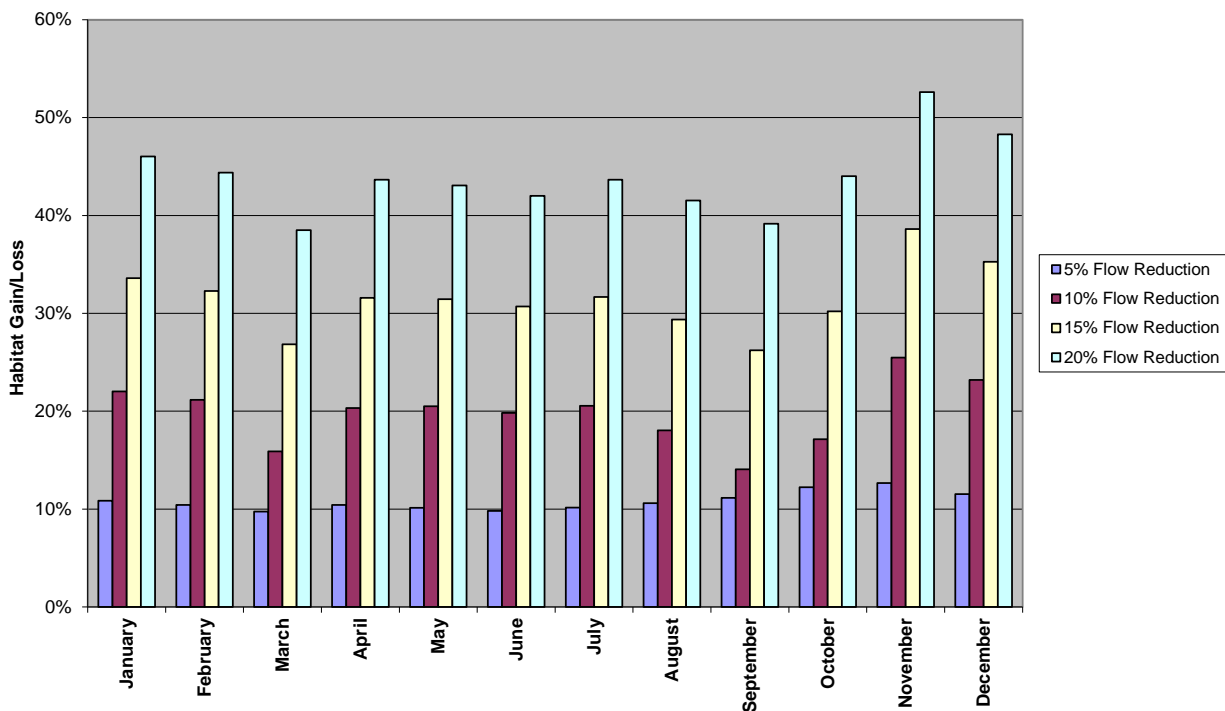
Spotted Sunfish Adults (1965-2014)
Medium Back Water (50%)
Rainbow River - PHABSIM1 Site



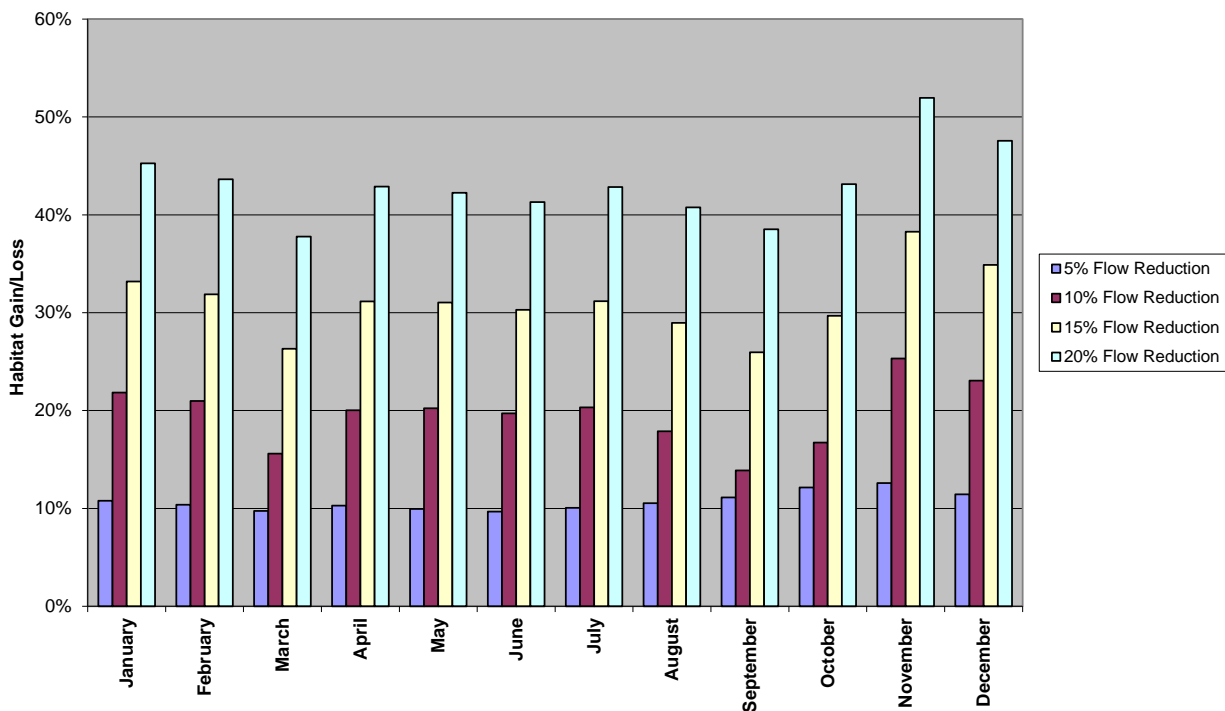
Spotted Sunfish Adults (1965-2014)
High Back Water (75%)
Rainbow River - PHABSIM1 Site



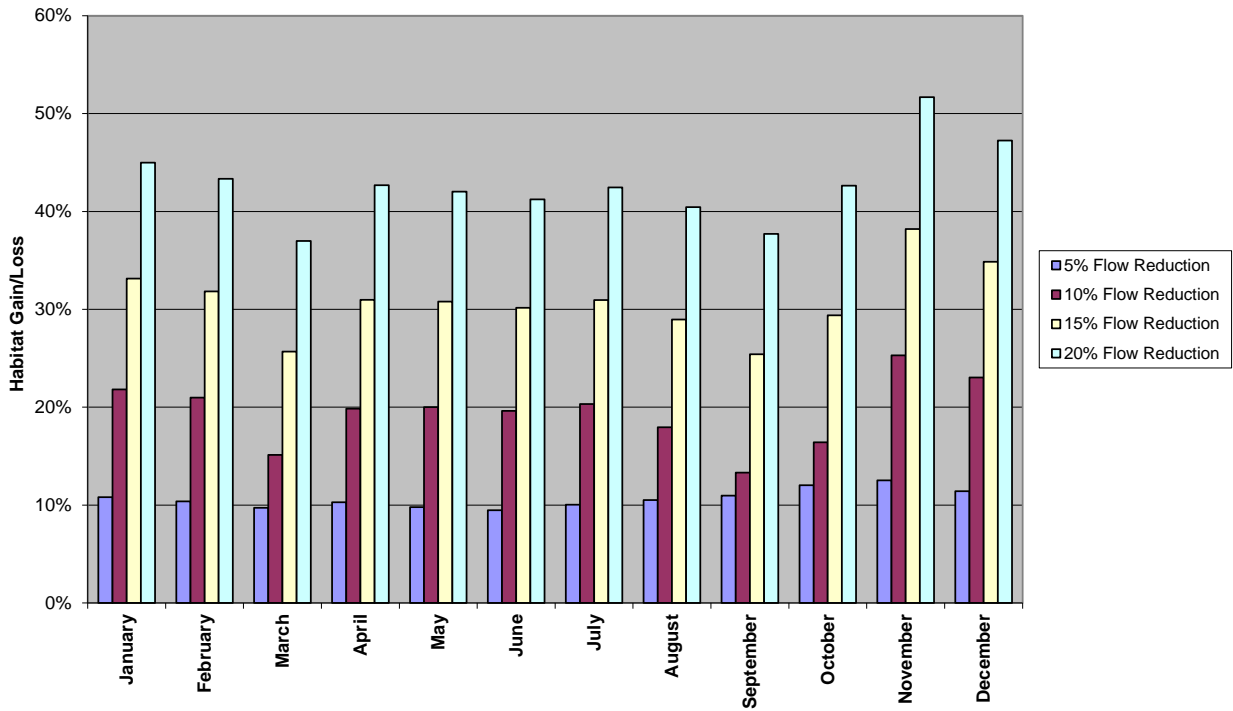
**Juvenile Spotted Sunfish (1965-2014)
Low Back Water (25%)
Rainbow River - PHABSIM1 Site**



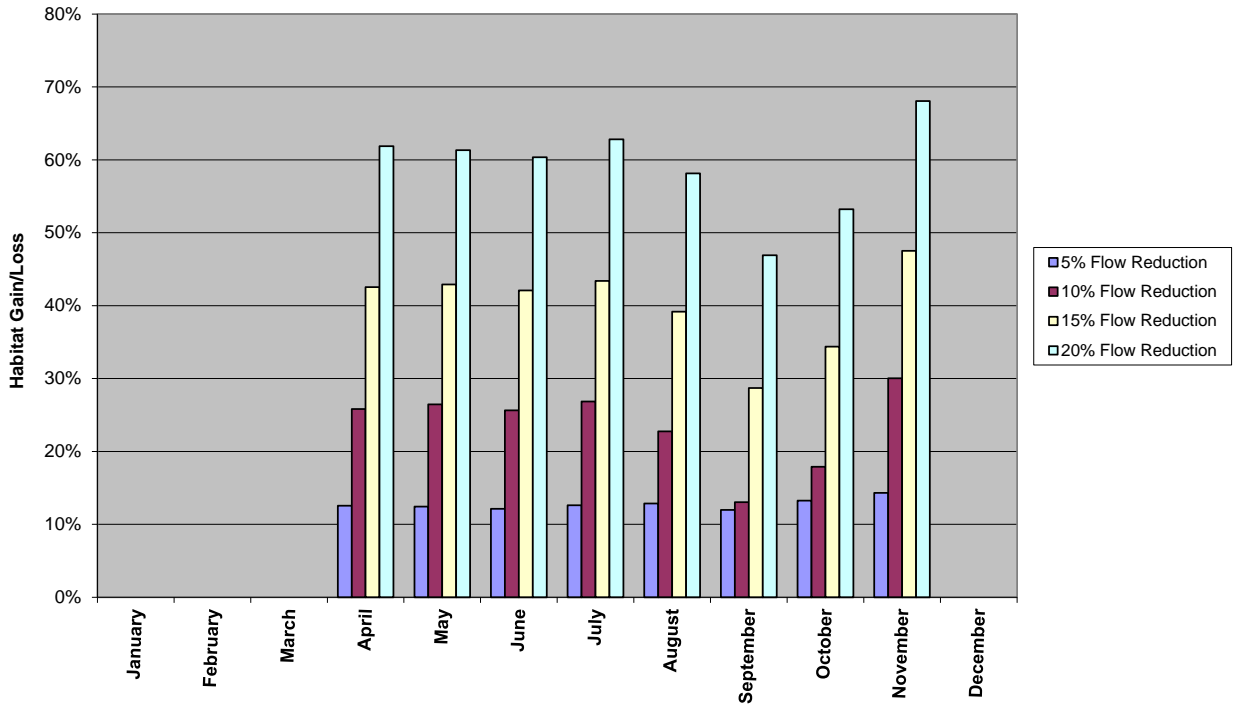
**Juvenile Spotted Sunfish (1965-2014)
Medium Back Water (50%)
Rainbow River - PHABSIM1 Site**



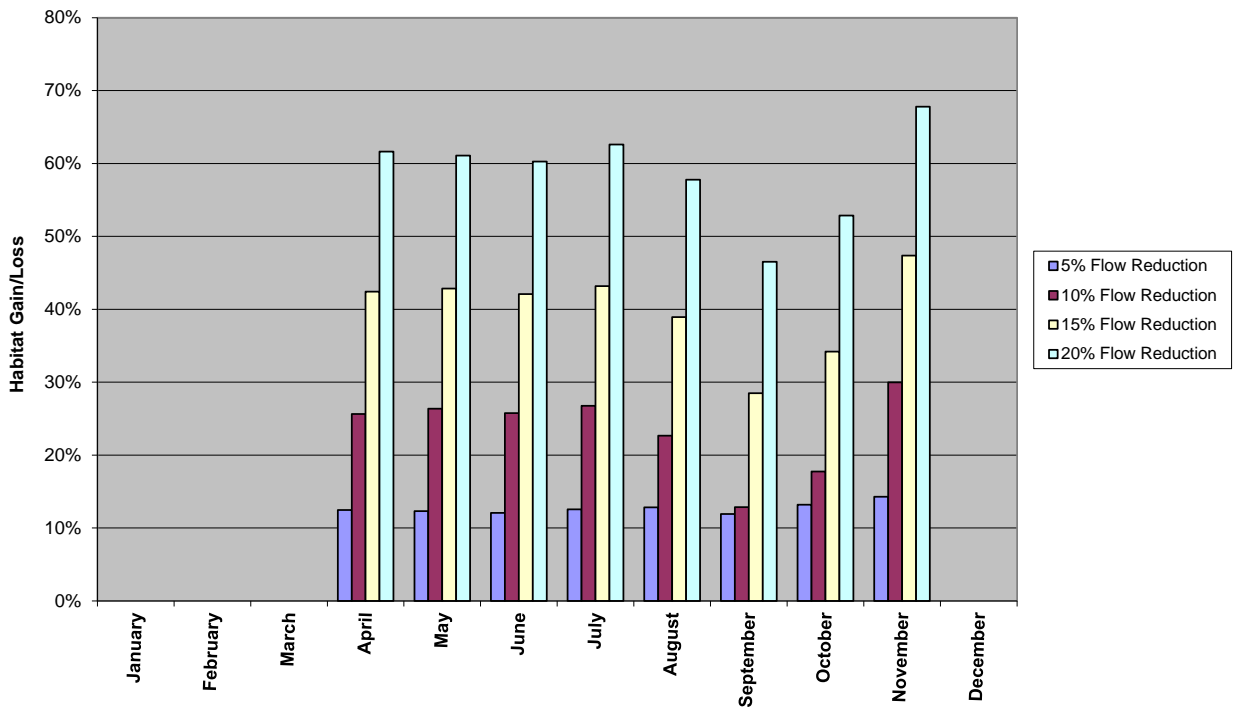
**Juvenile Spotted Sunfish (1965-2014)
High Back Water (75%)
Rainbow River - PHABSIM1 Site**



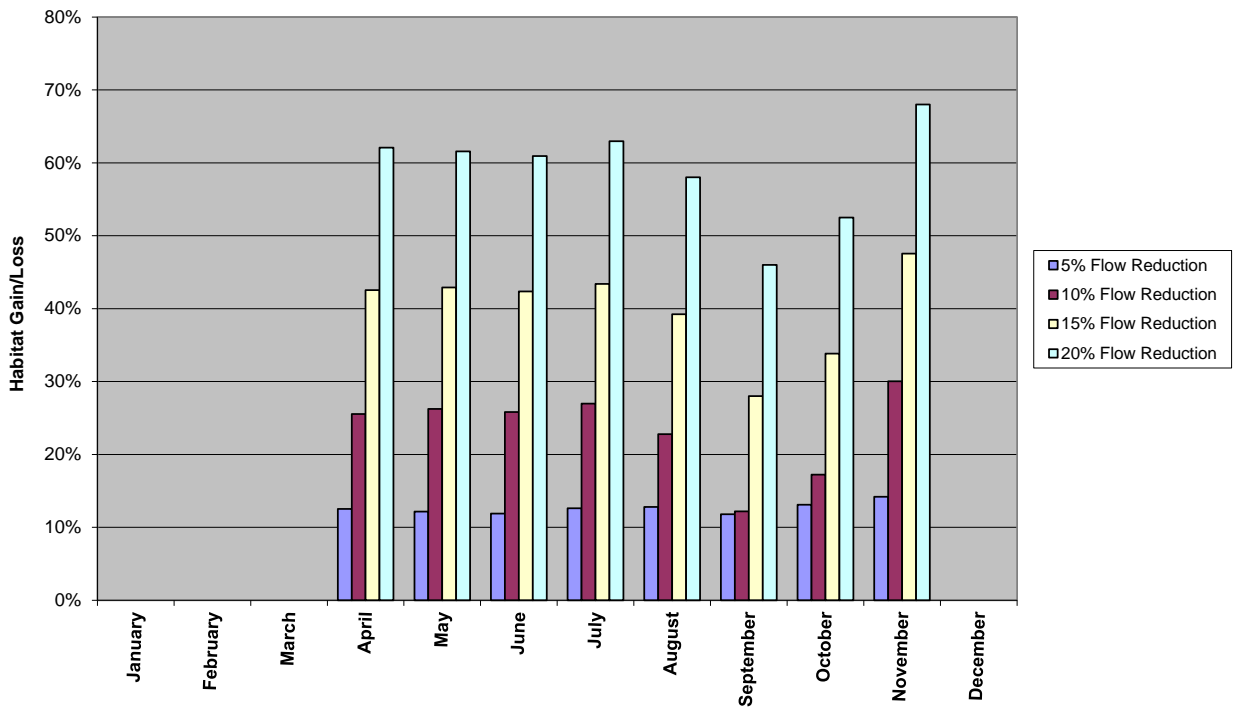
**Spawning Spotted Sunfish (1965-2014)
Low Back Water (25%)
Rainbow River - PHABSIM1 Site**



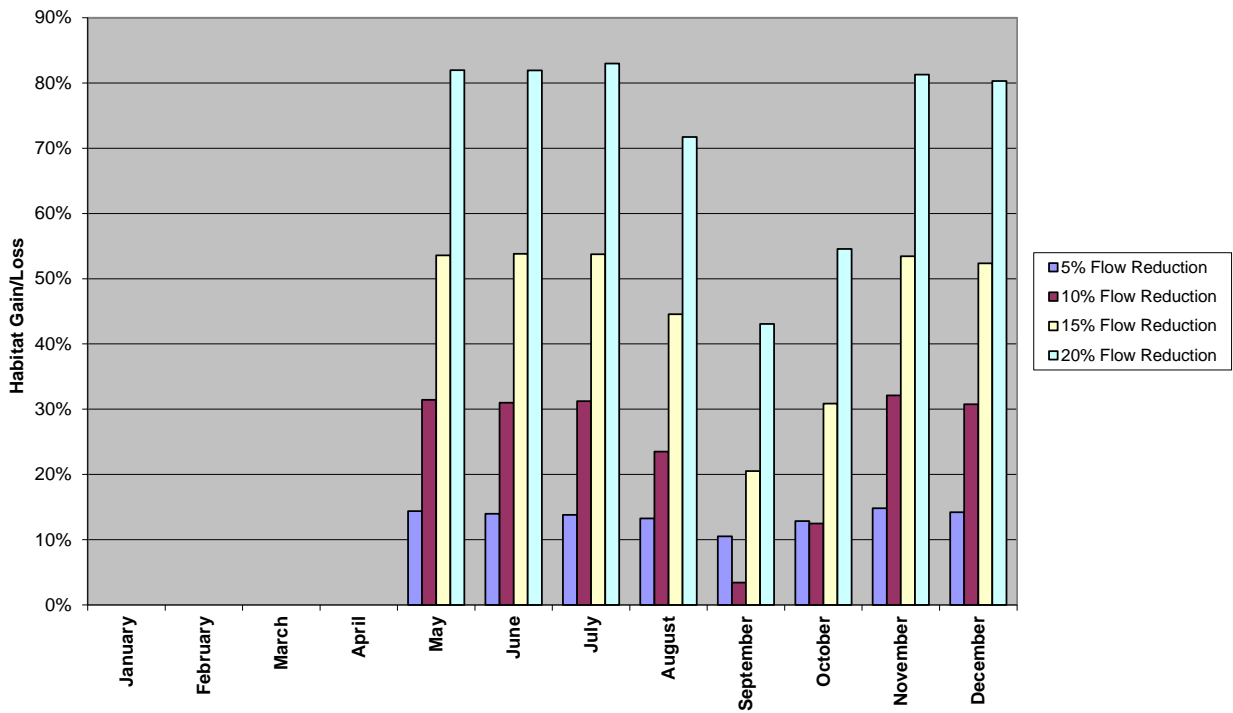
**Spawning Spotted Sunfish (1965-2014)
Medium Back Water (50%)
Rainbow River - PHABSIM1 Site**



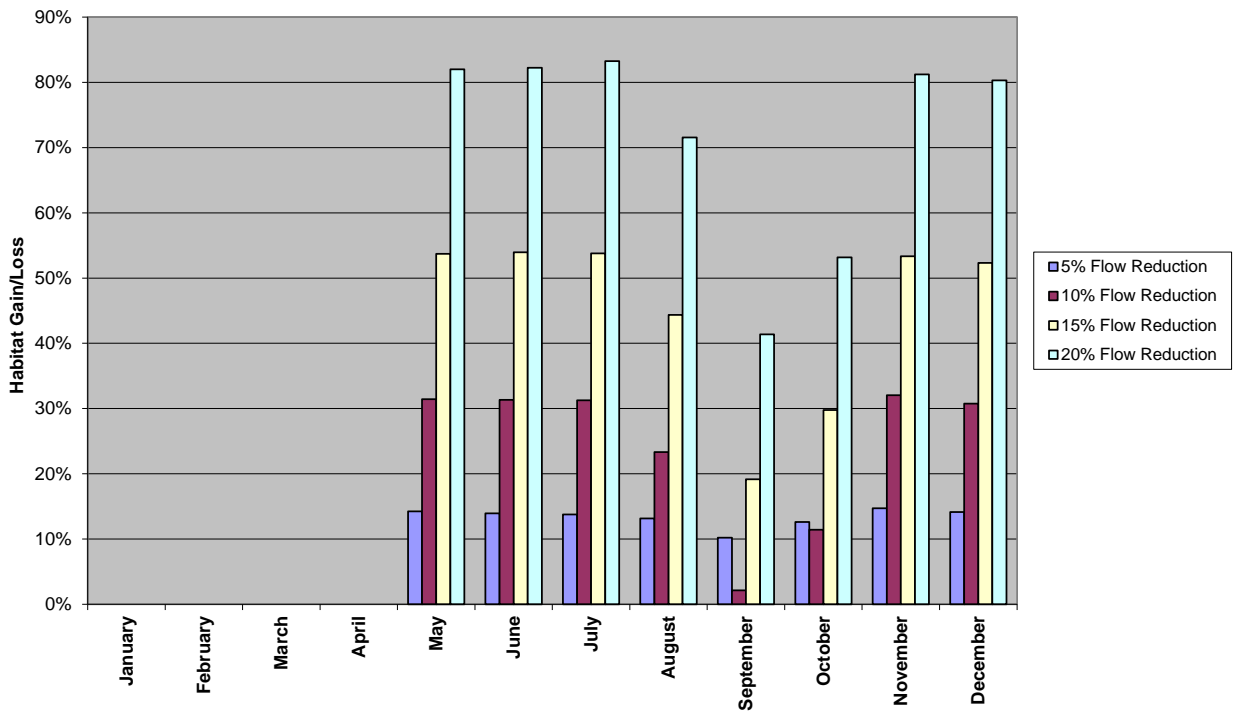
**Spawning Spotted Sunfish (1965-2014)
High Back Water (75%)
Rainbow River - PHABSIM1 Site**



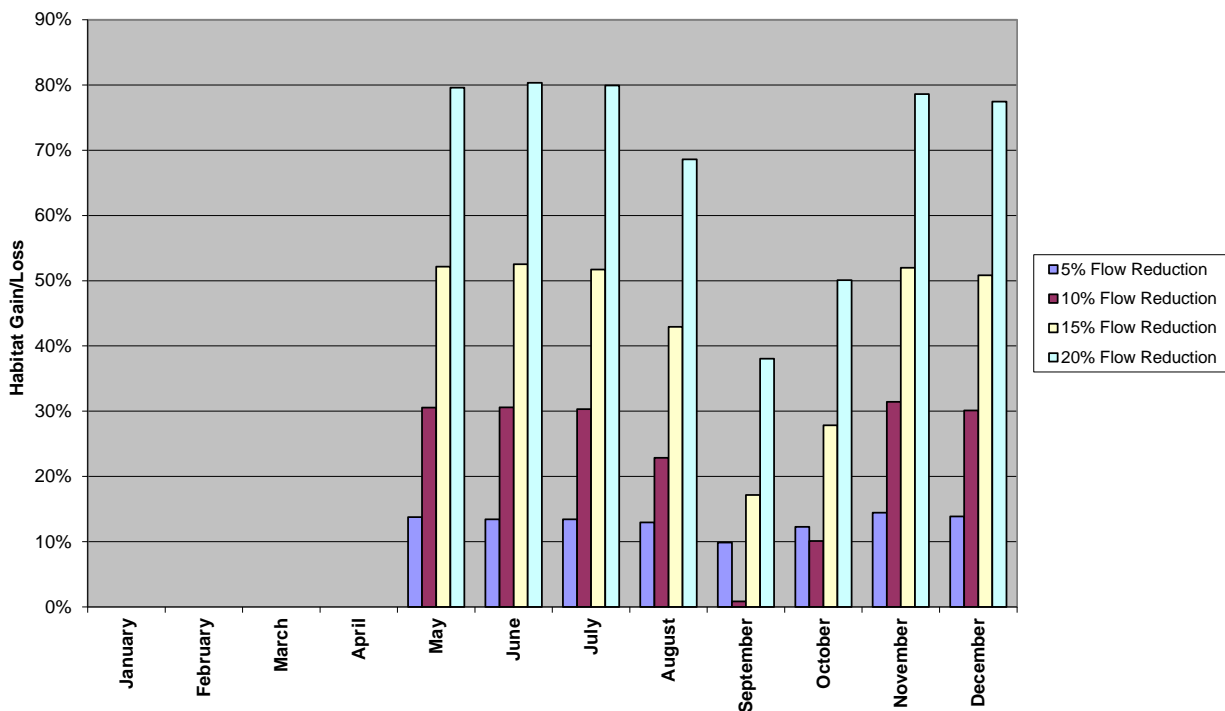
Spotted Sunfish Fry (1965-2014)
Low Back Water (25%)
Rainbow River - PHABSIM1 Site



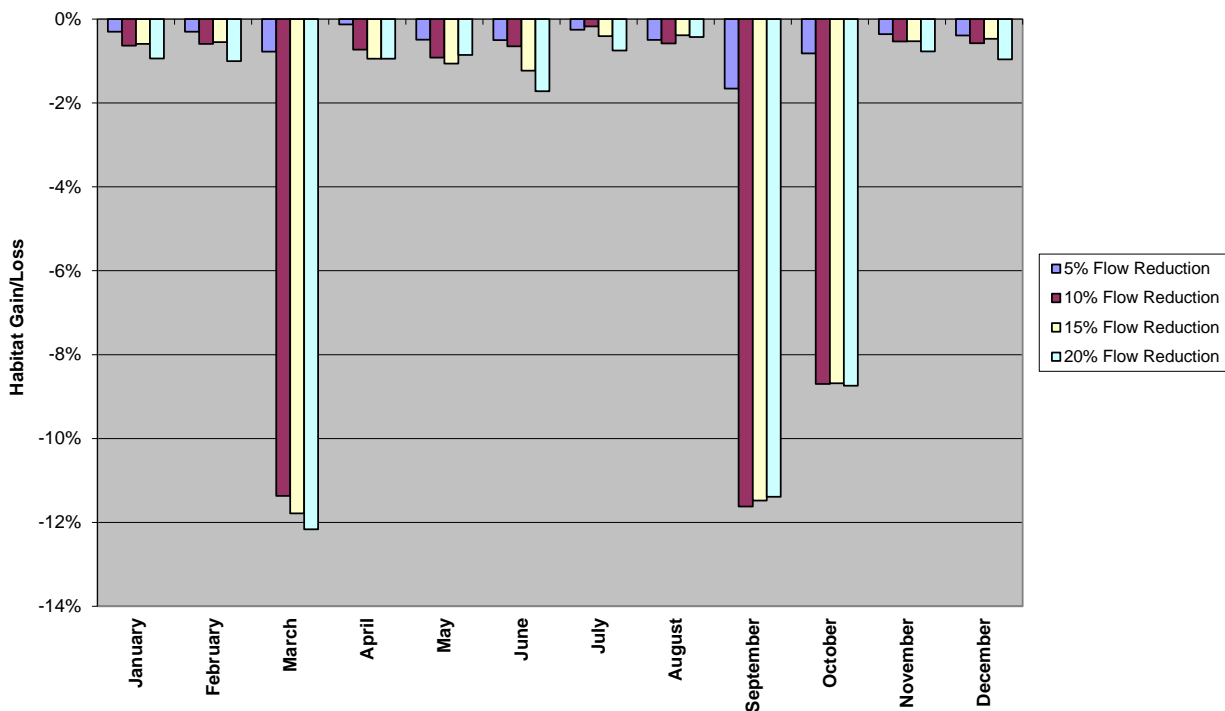
Spotted Sunfish Fry (1965-2014)
Medium Back Water (50%)
Rainbow River - PHABSIM1 Site



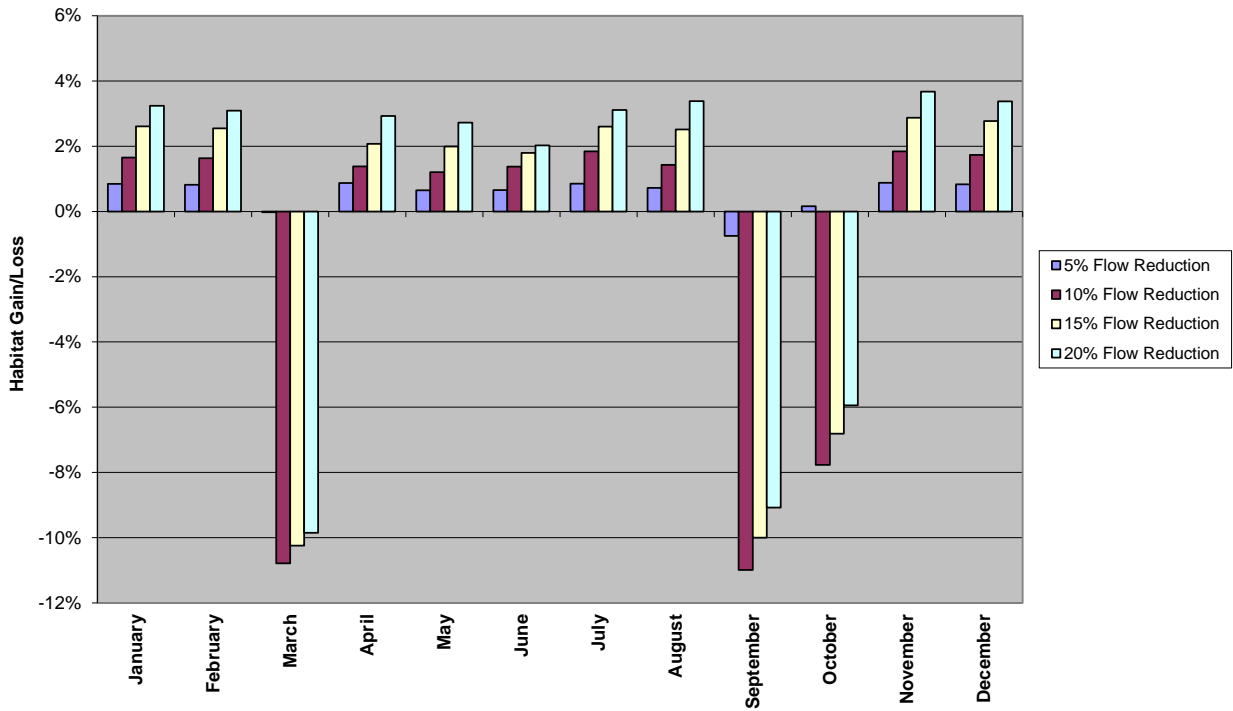
Spotted Sunfish Fry (1965-2014)
High Back Water (75%)
Rainbow River - PHABSIM1 Site



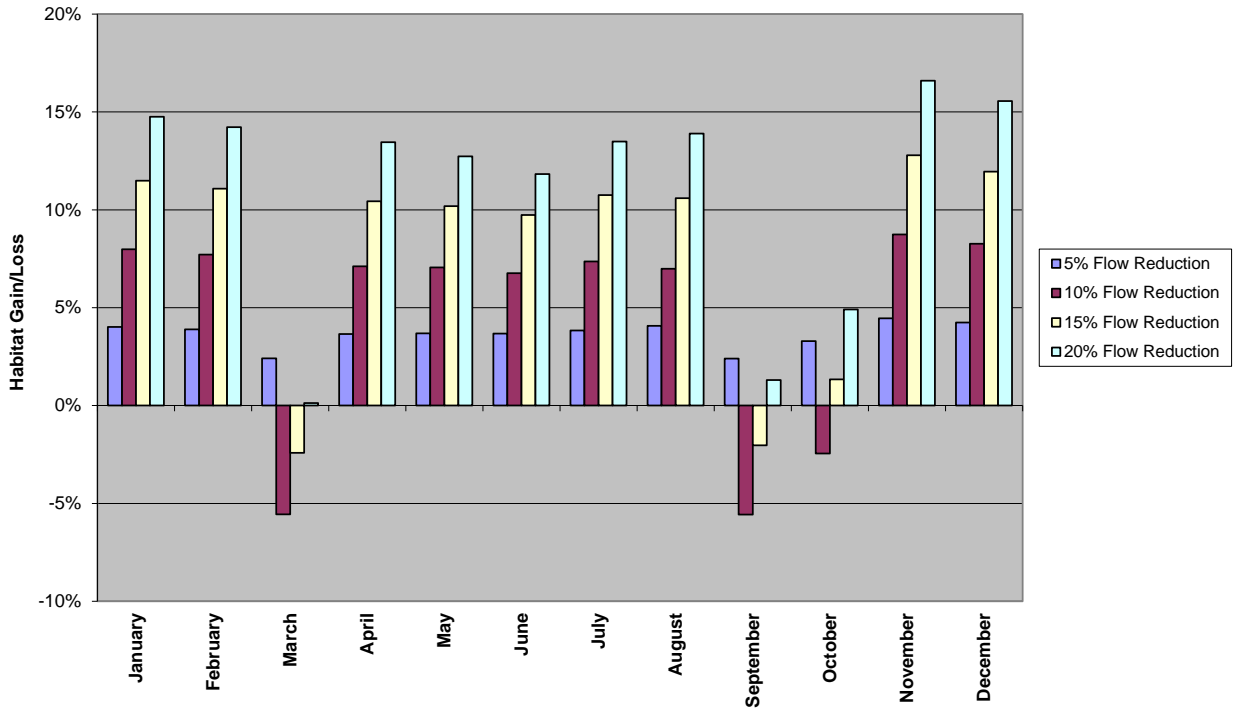
Benthic Macroinvertebrates (1965-2014)
Low Back Water (25%)
Rainbow River - PHABSIM1 Site



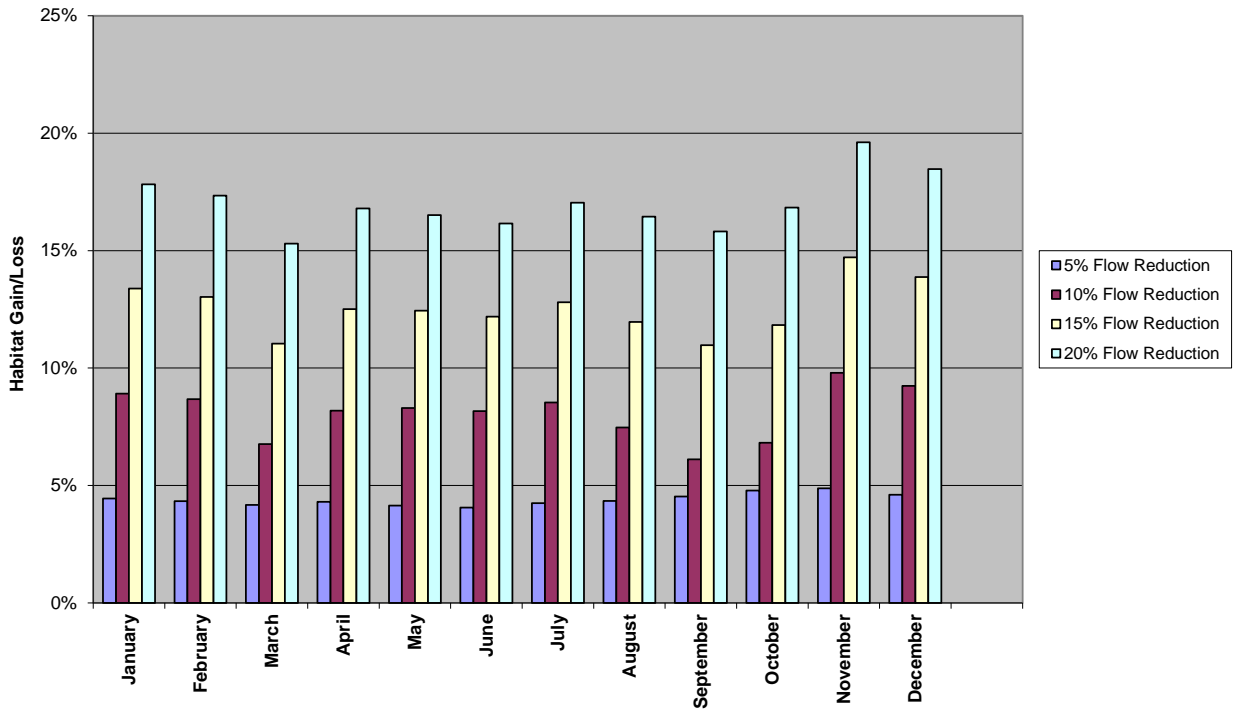
Benthic Macroinvertebrates (1965-2014)
Medium Back Water (50%)
Rainbow River - PHABSIM1 Site



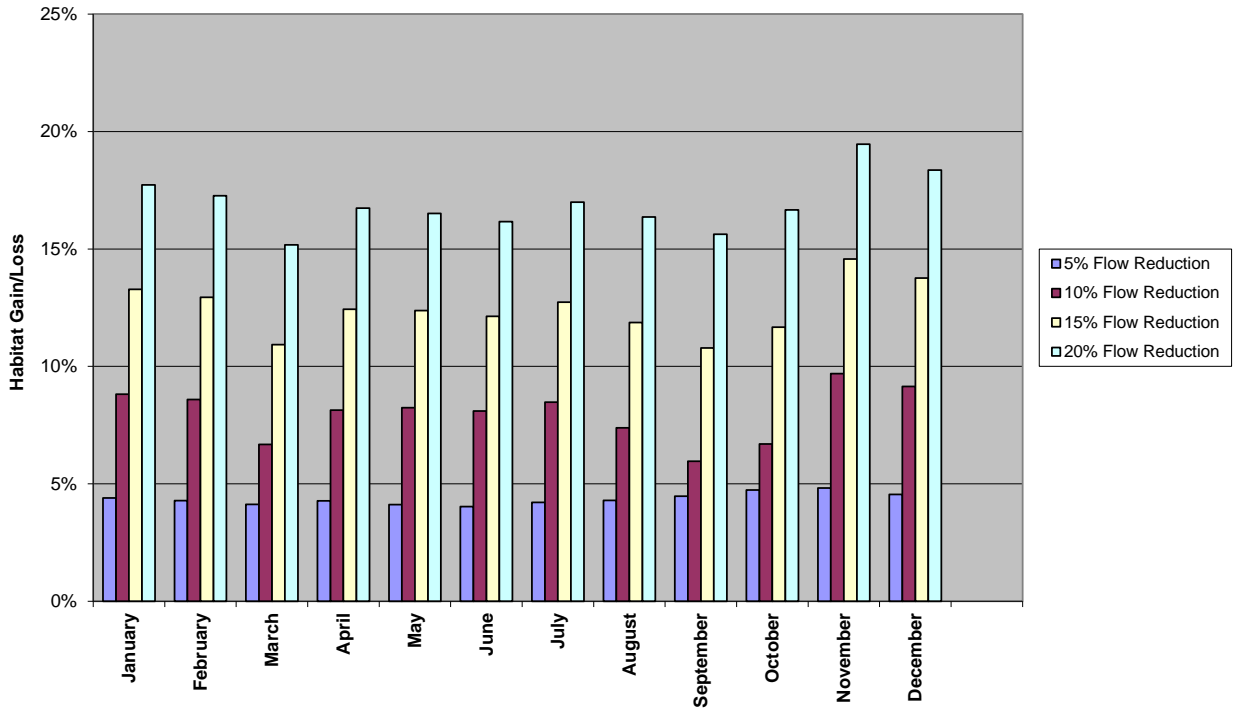
Benthic Macroinvertebrates (1965-2014)
High Back Water (75%)
Rainbow River - PHABSIM1 Site



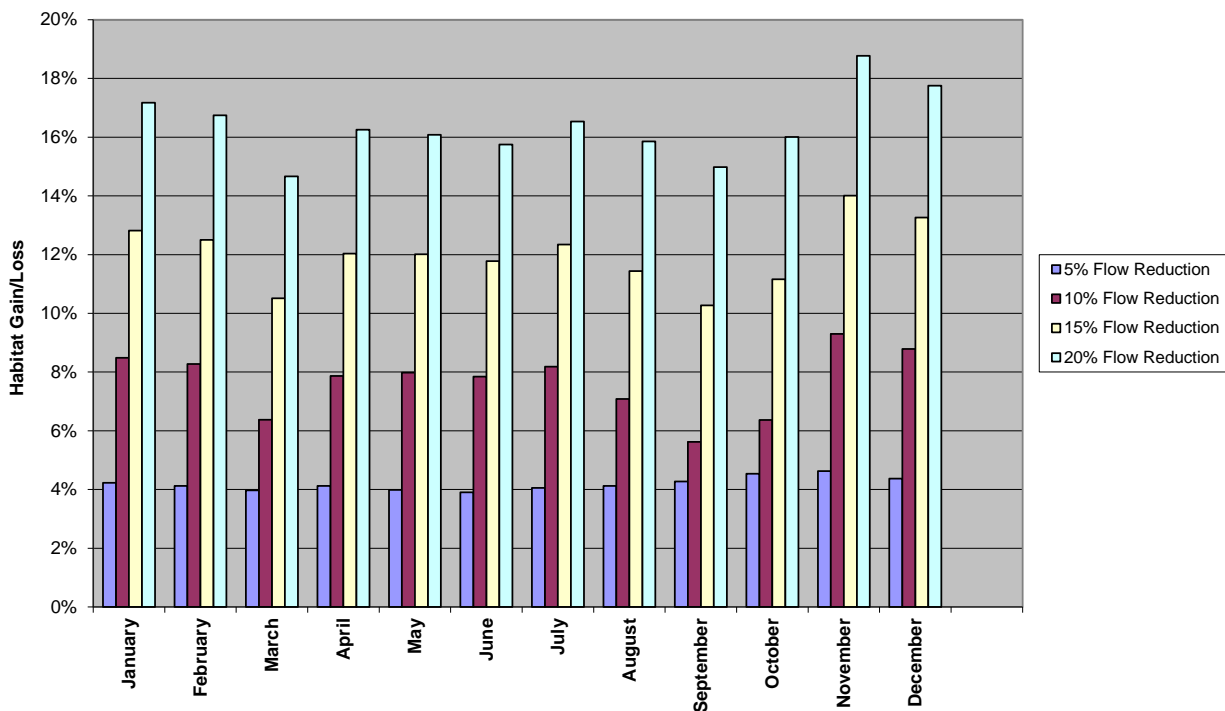
Largemouth Bass Adults (1965-2014)
Low Back Water (25%)
Rainbow River - PHABSIM1 Site



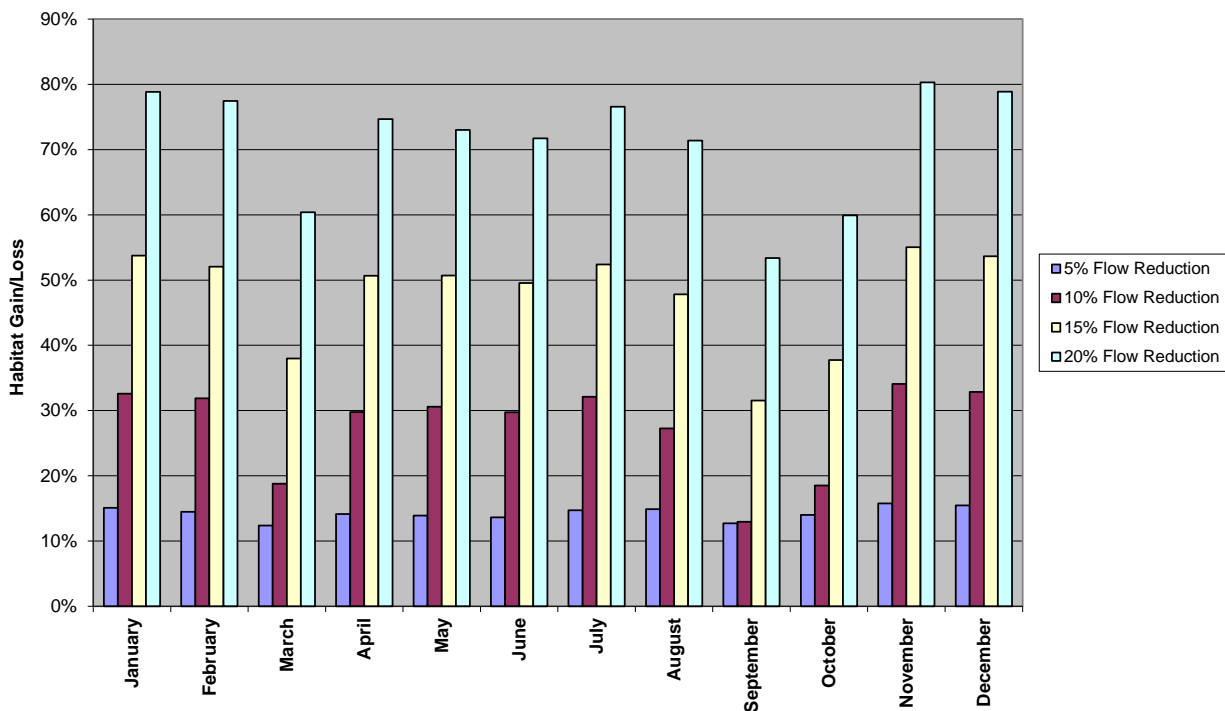
Largemouth Bass Adults (1965-2014)
Medium Back Water (50%)
Rainbow River - PHABSIM1 Site



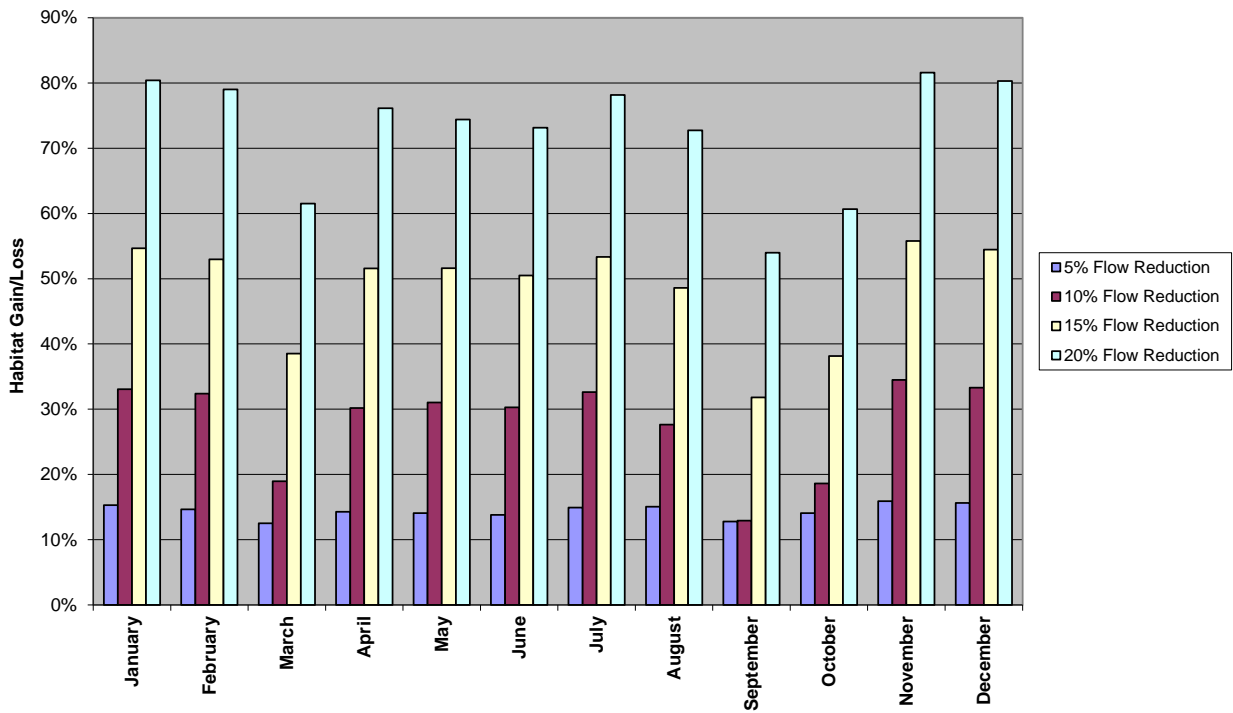
**Largemouth Bass Adults (1965-2014)
High Back Water (75%)
Rainbow River - PHABSIM1 Site**



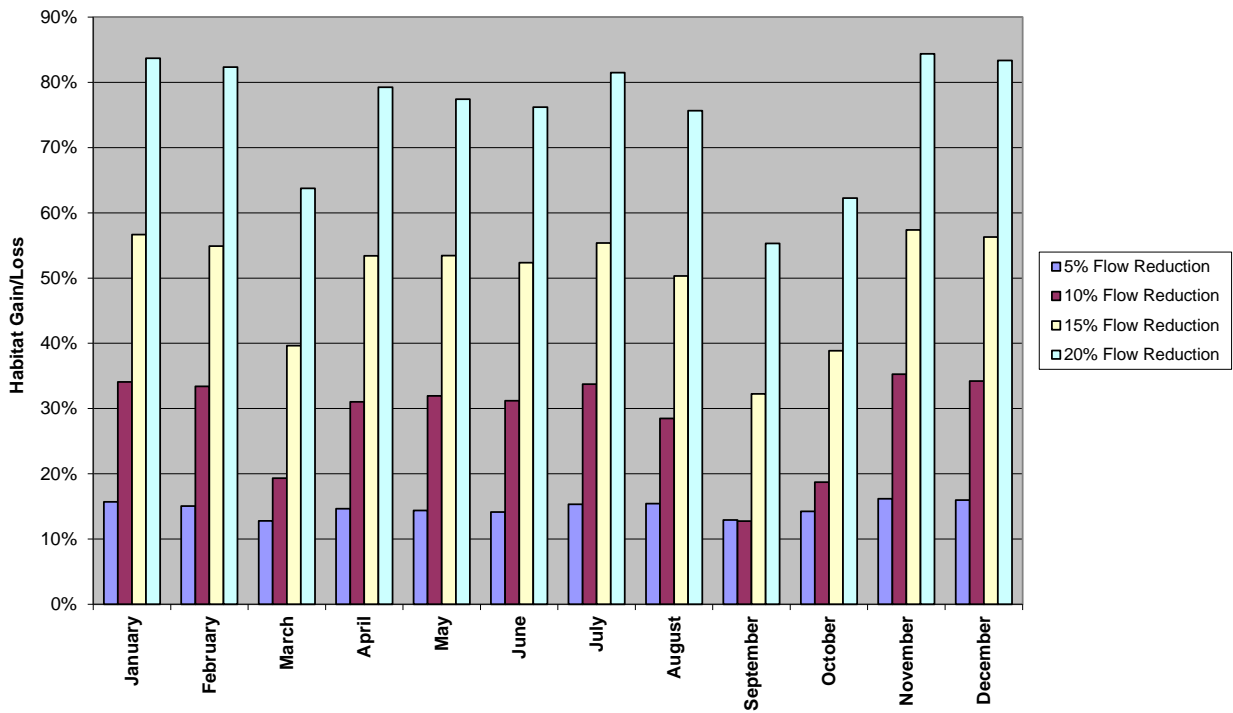
**Largemouth Bass Juvenile (1965-2014)
Low Back Water (25%)
Rainbow River - PHABSIM1 Site**



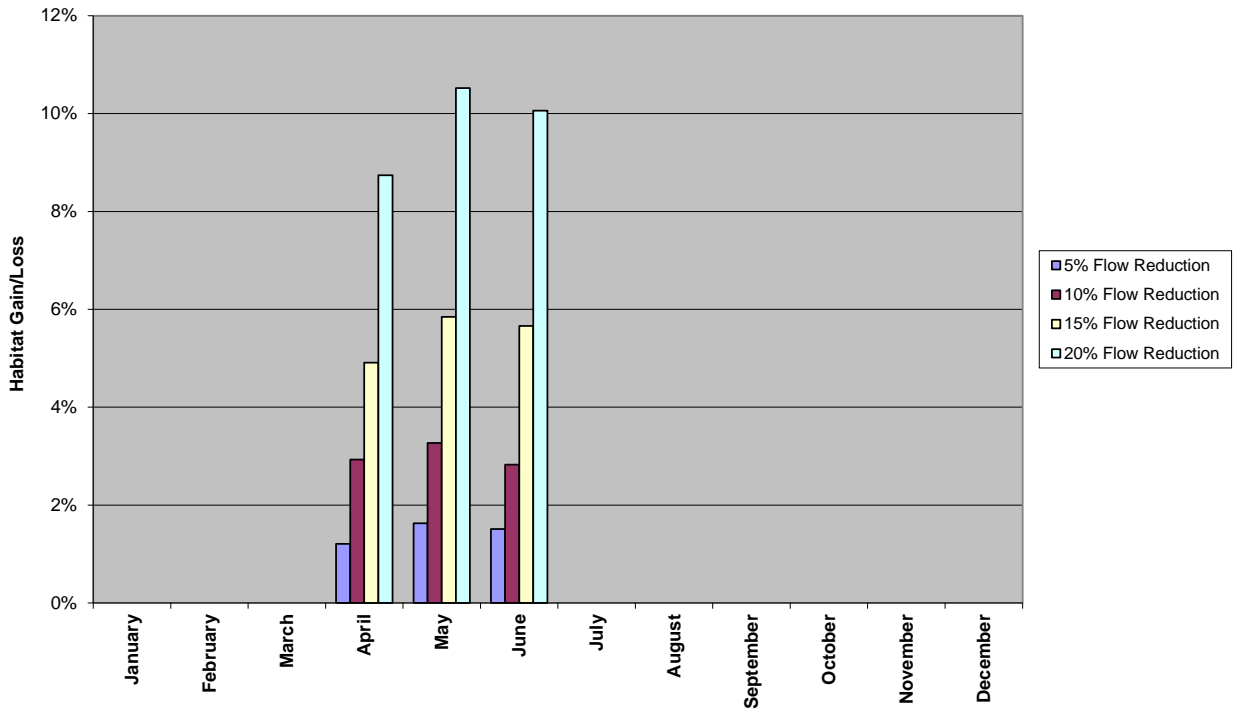
**Largemouth Bass Juvenile (1965-2014)
Medium Back Water (50%)
Rainbow River - PHABSIM1Site**



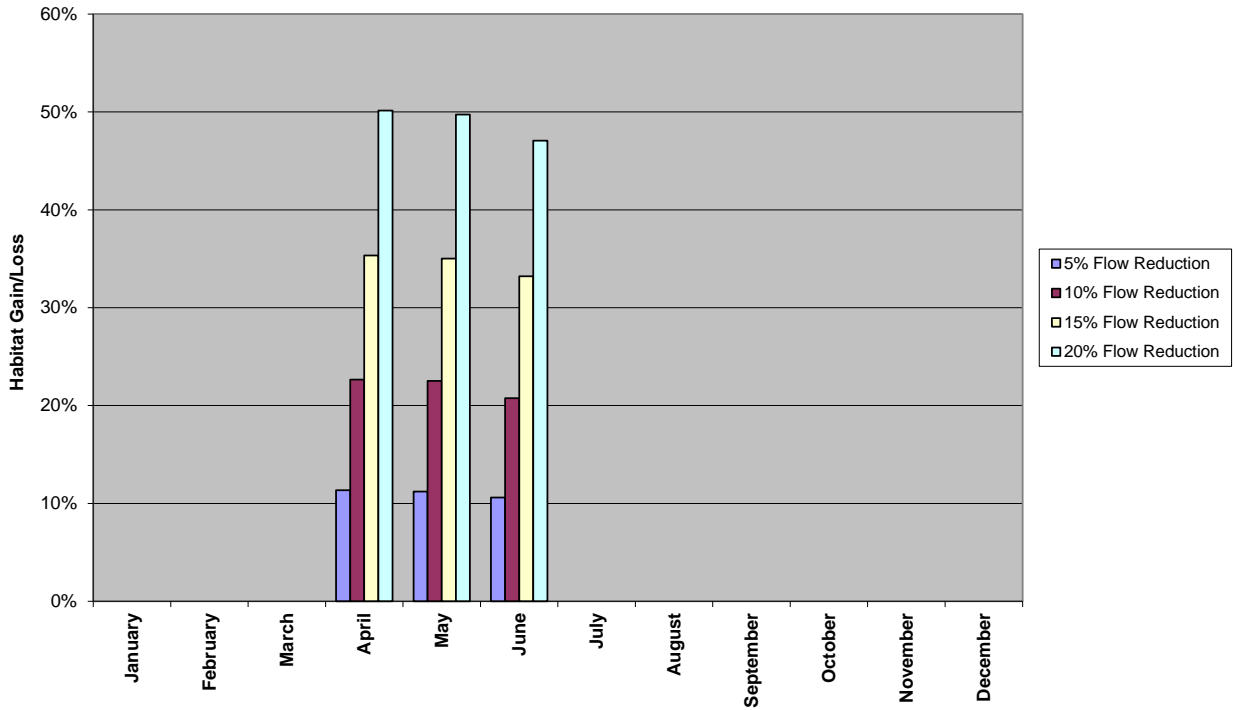
**Largemouth Bass Juvenile (1965-2014)
High Back Water (75%)
Rainbow River - PHABSIM1Site**



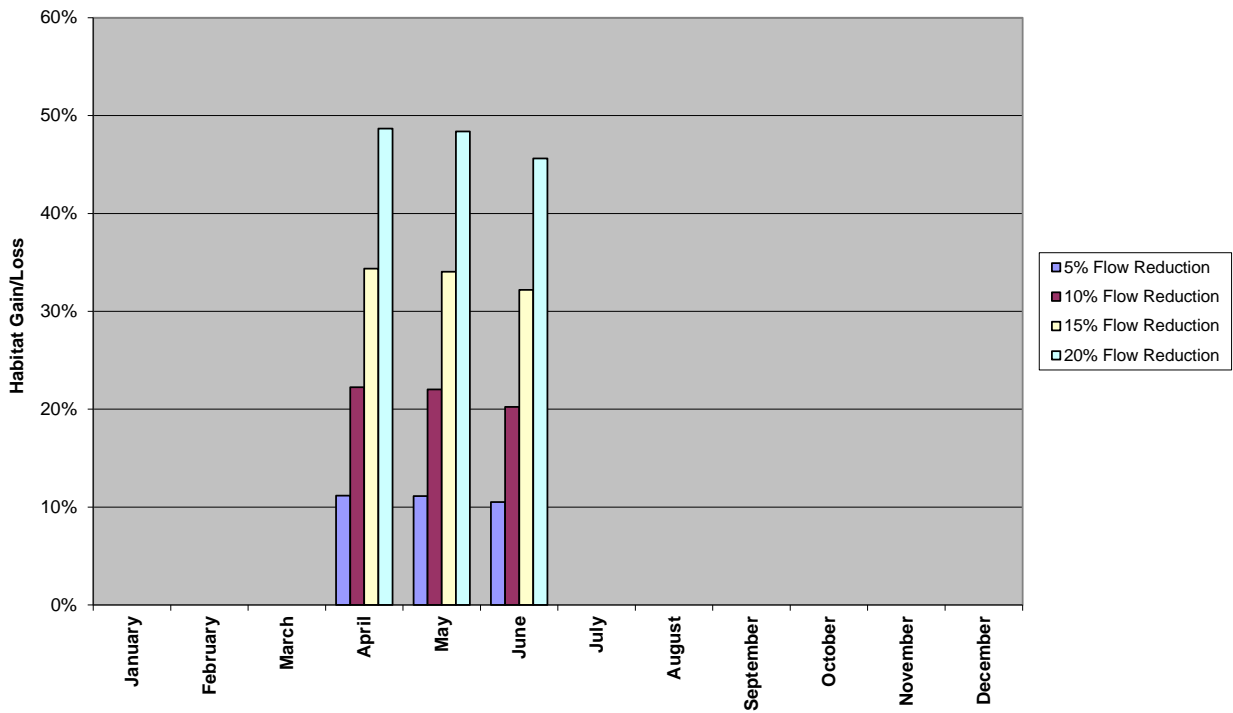
Largemouth Bass Spawning (1965-2014)
Low Back Water (25%)
Rainbow River - PHABSIM1 Site



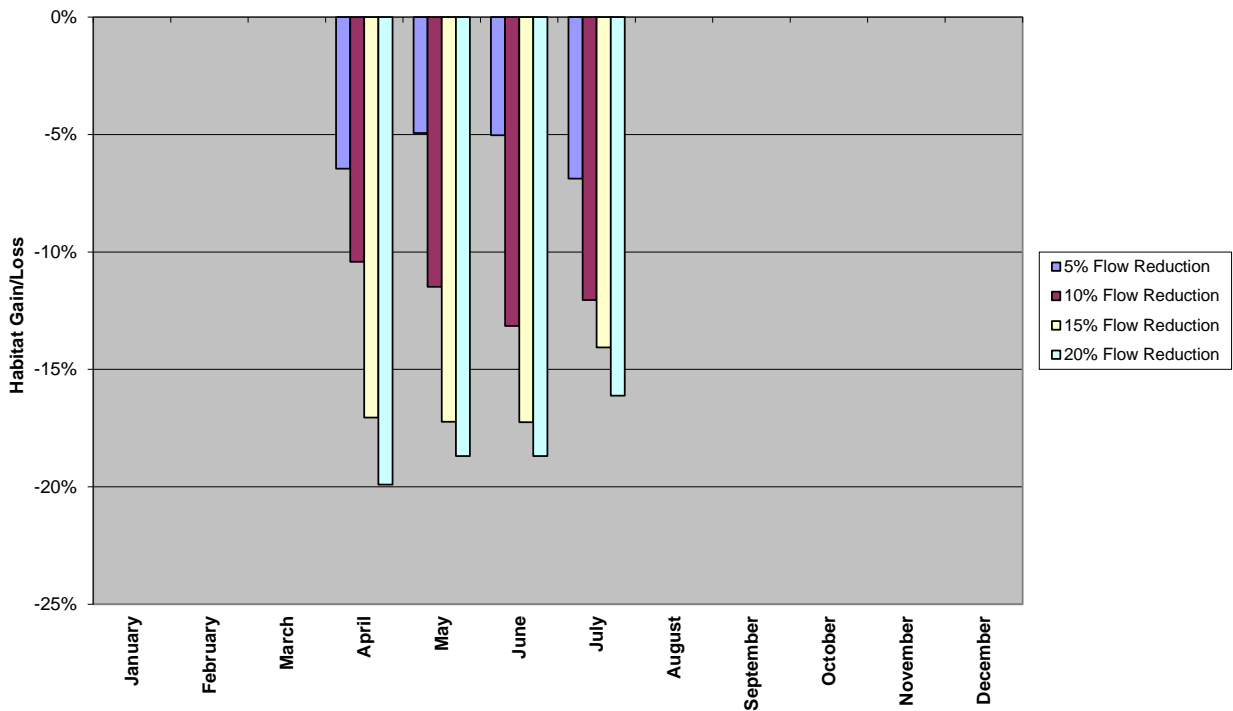
Largemouth Bass Spawning (1965-2014)
Medium Back Water (50%)
Rainbow River - PHABSIM1 Site



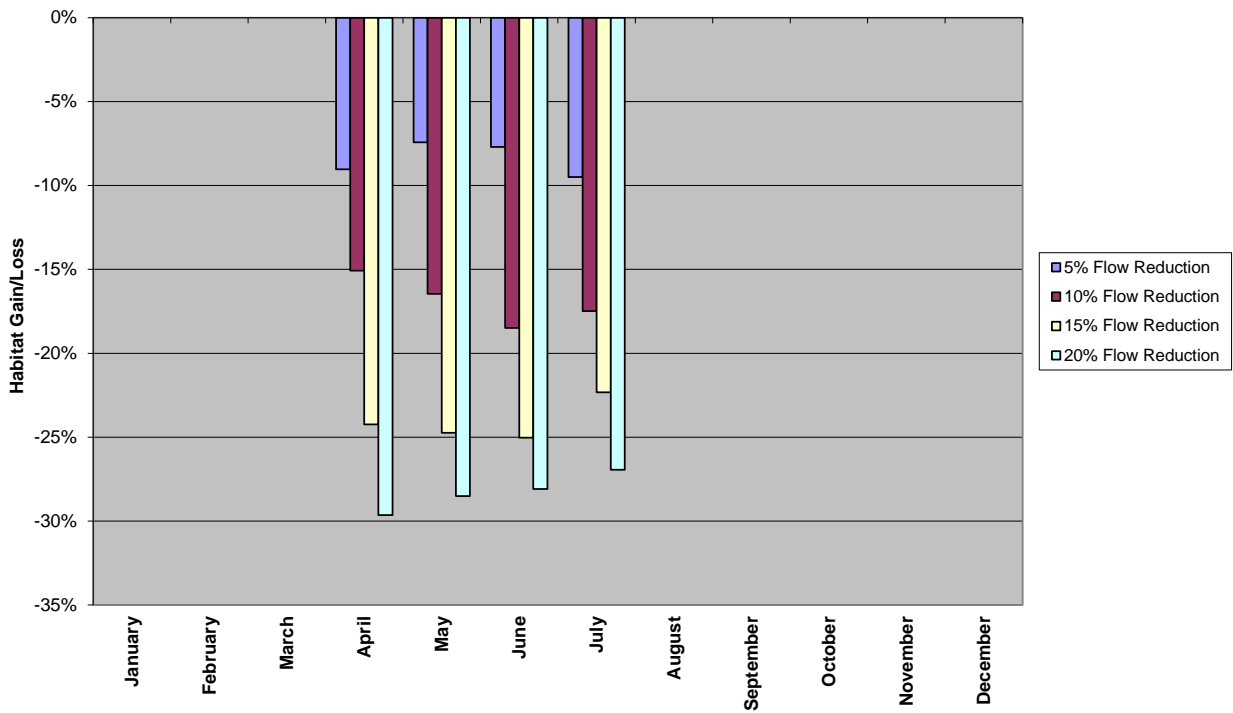
Largemouth Bass Spawning (1965-2014)
High Back Water (75%)
Rainbow River - PHABSIM1 Site



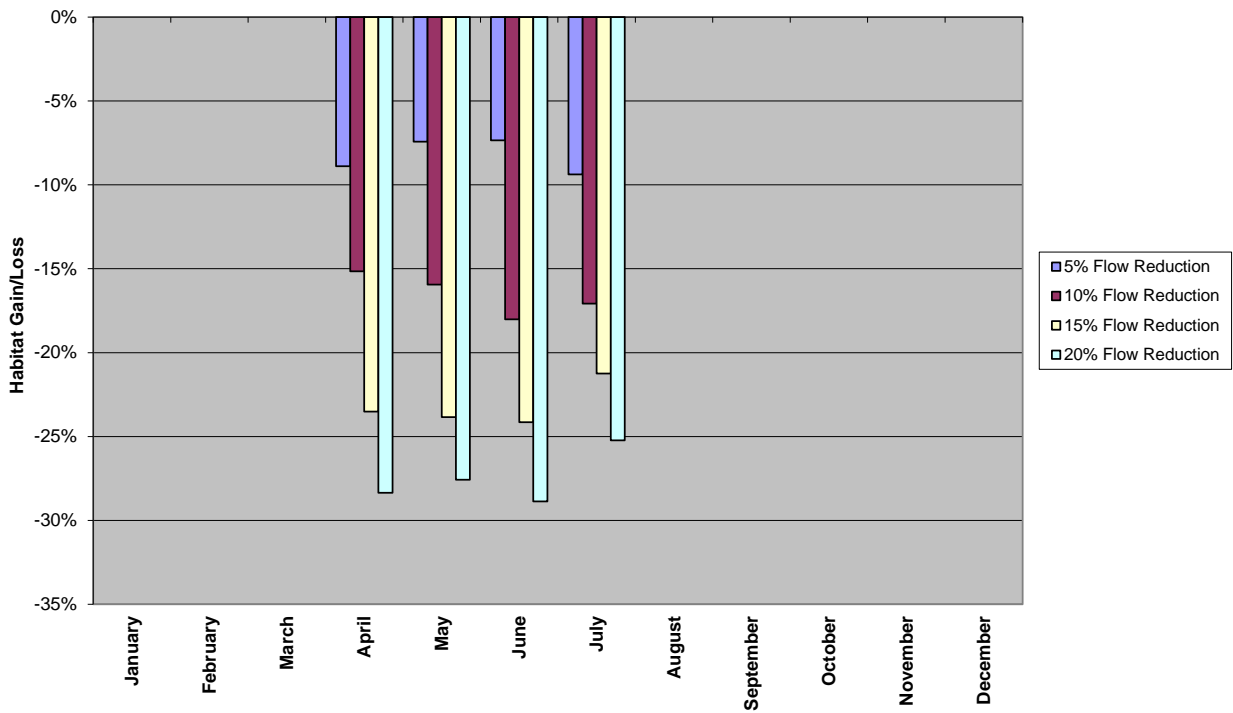
Largemouth Bass Fry (1965-2014)
Low Back Water (25%)
Rainbow River - PHABSIM1 Site



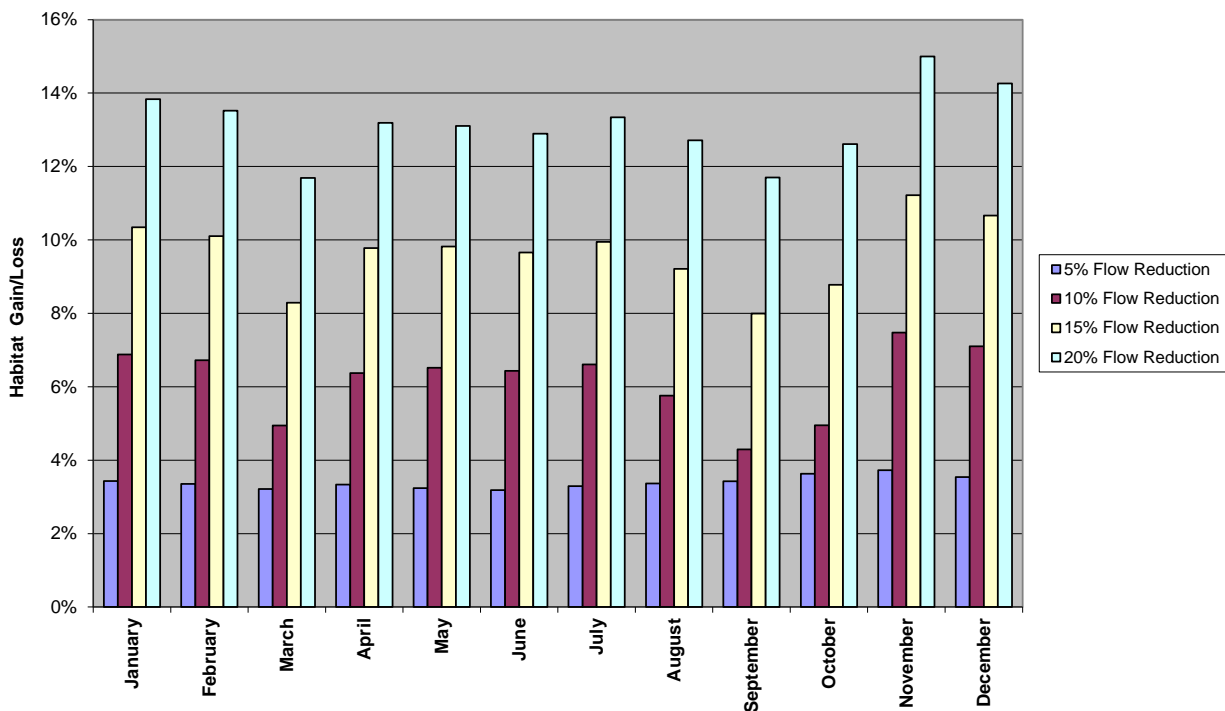
**Largemouth Bass Fry (1965-2014)
Medium Back Water (50%)
Rainbow River - PHABSIM1Site**



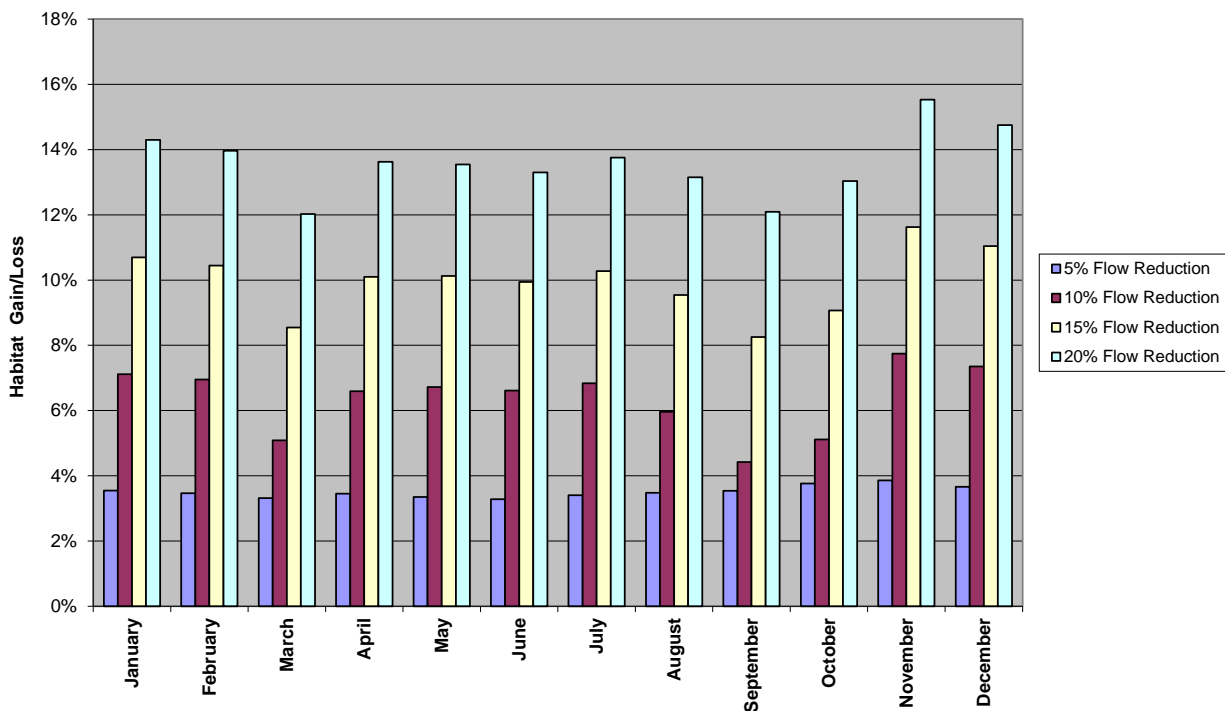
**Largemouth Bass Fry (1965-2014)
High Back Water (75%)
Rainbow River - PHABSIM1Site**



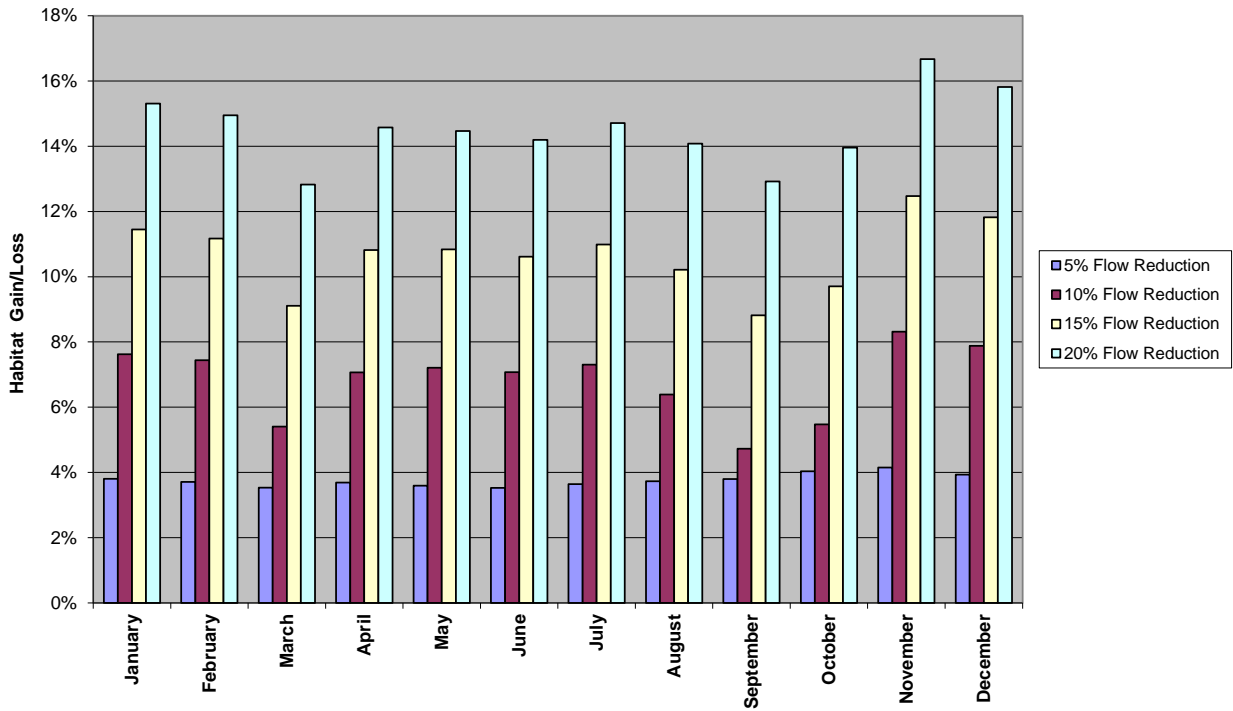
Bluegill Sunfish Adults (1965-2014)
Low Back Water (25%)
Rainbow River - PHABSIM1 Site



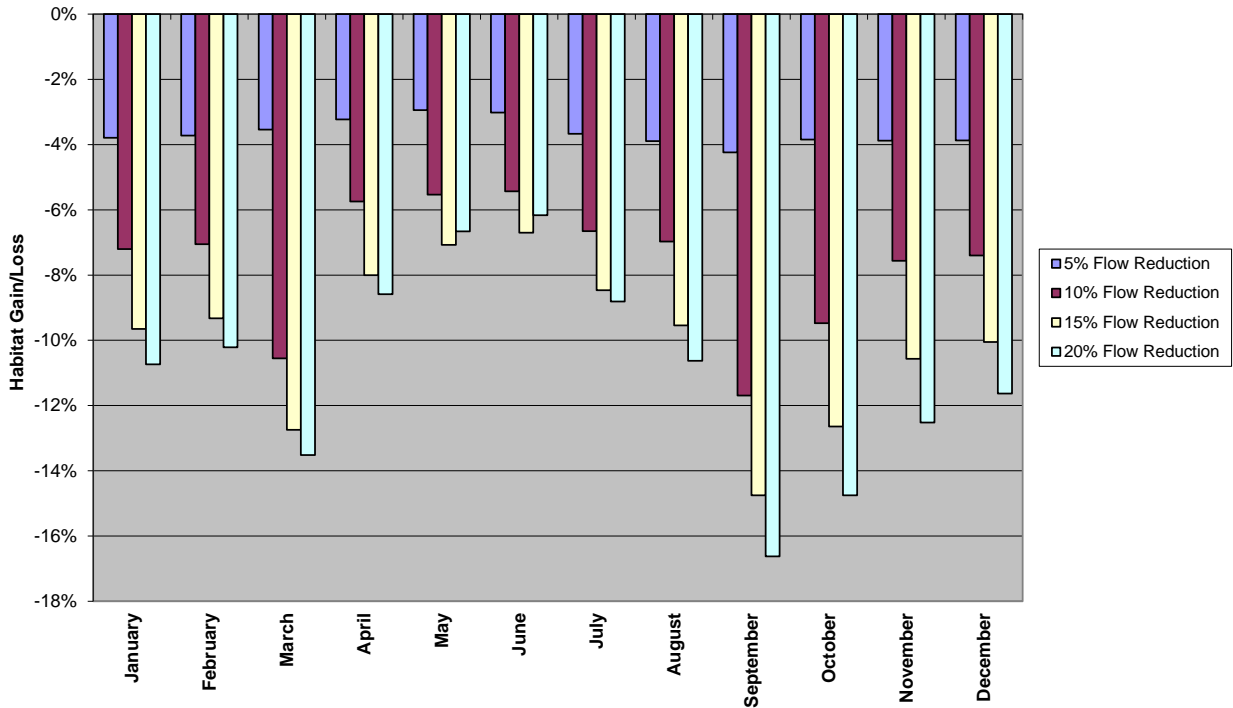
Bluegill Sunfish Adults (1965-2014)
Medium Back Water (50%)
Rainbow River - PHABSIM1 Site



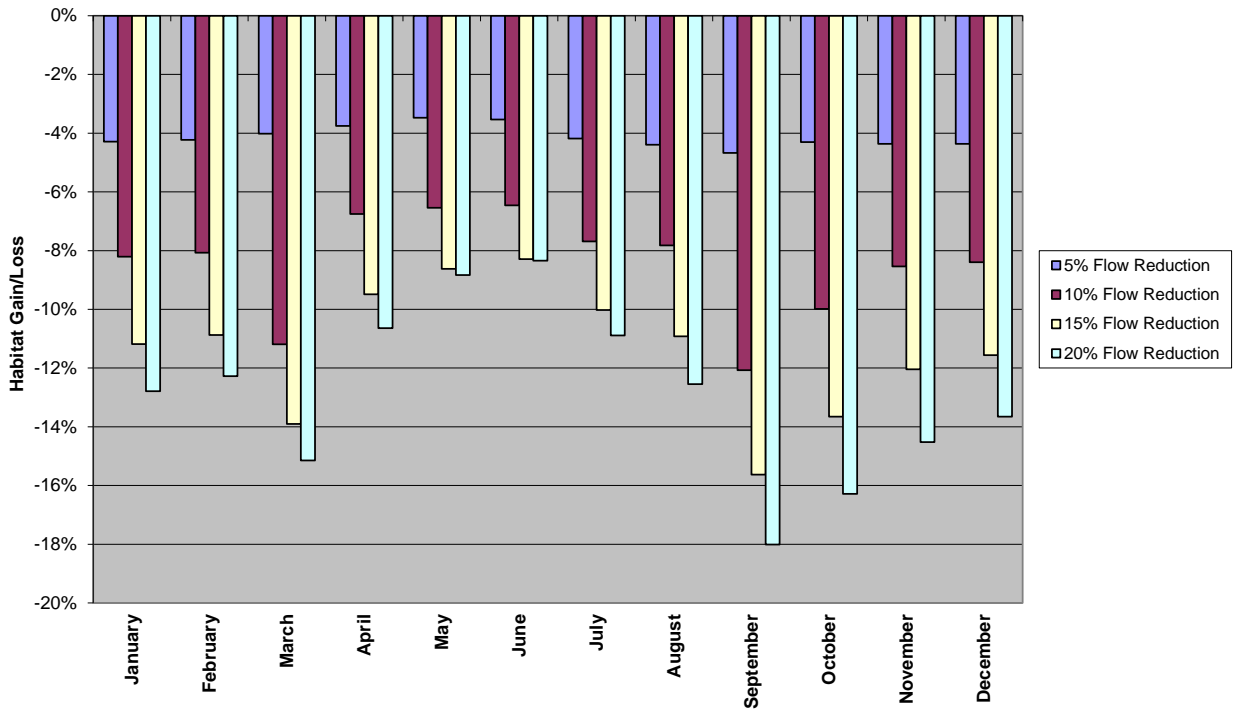
Bluegill Sunfish Adults (1965-2014)
High Back Water (75%)
Rainbow River - PHABSIM1 Site



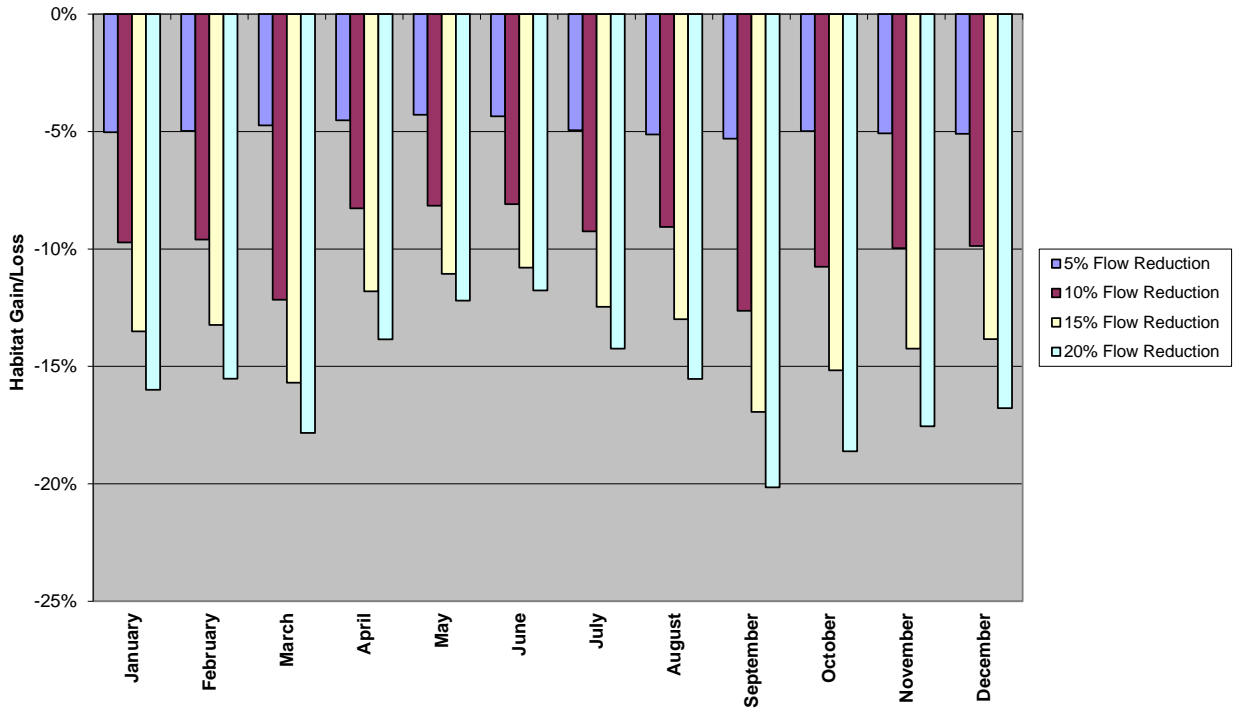
Bluegill Sunfish Juveniles (1965-2014)
Low Back Water (25%)
Rainbow River - PHABSIM1 Site



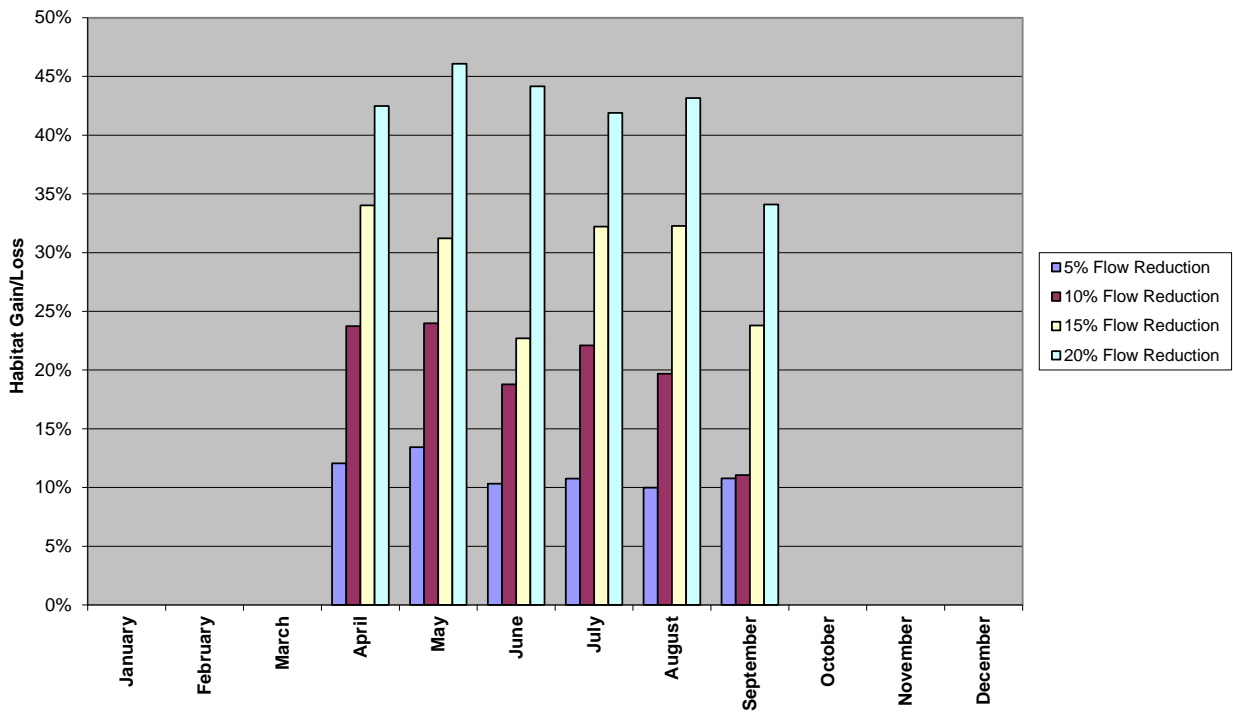
Bluegill Sunfish Juveniles (1965-2014)
Medium Back Water (50%)
Rainbow River - PHABSIM1 Site



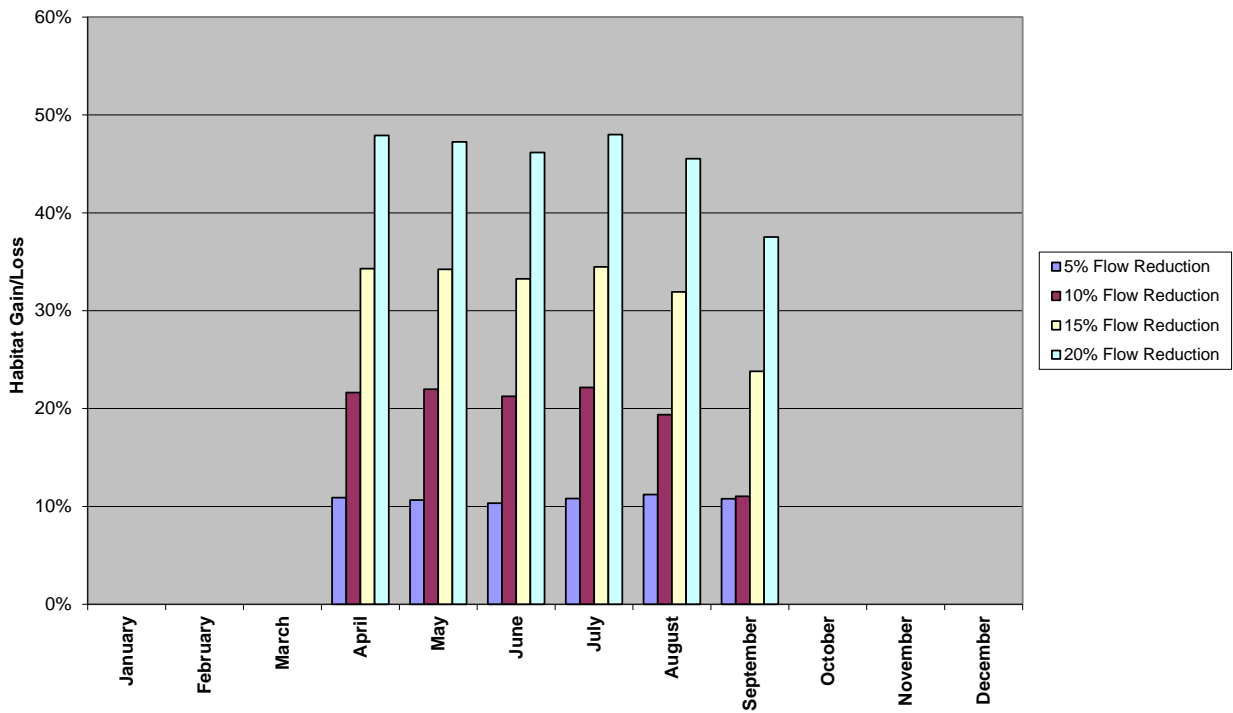
Bluegill Sunfish Juveniles (1965-2014)
High Back Water (75%)
Rainbow River - PHABSIM1 Site



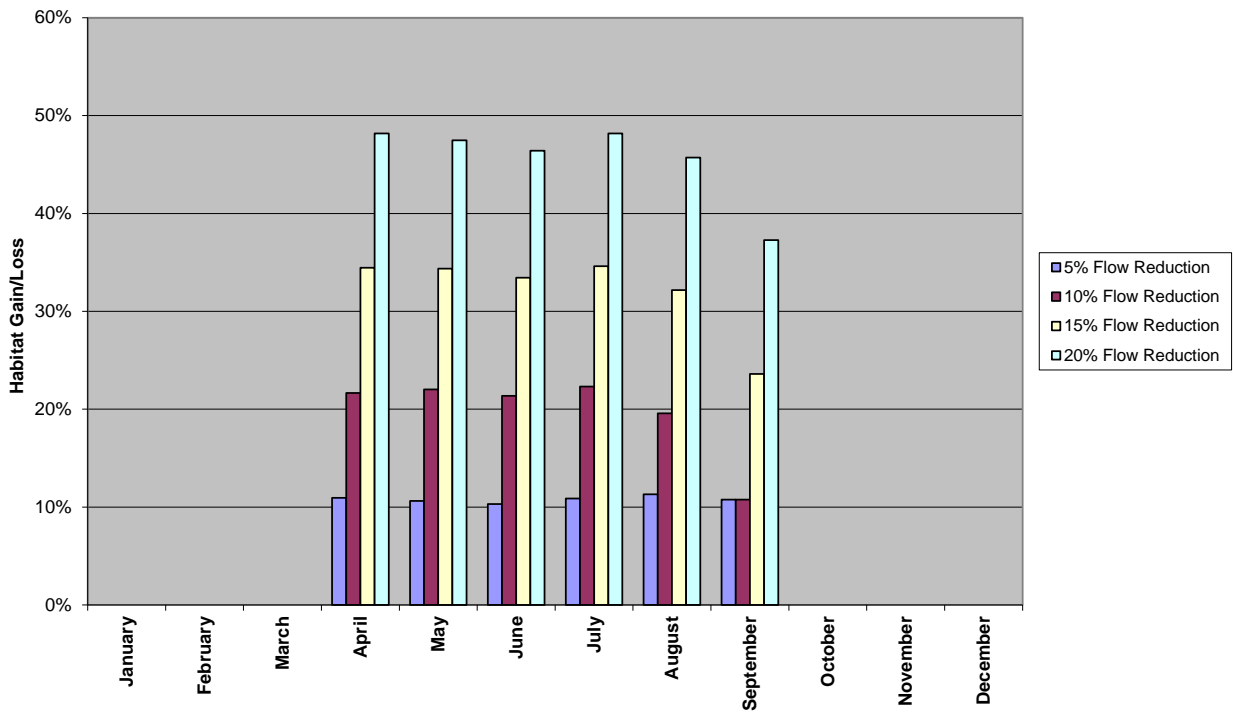
Bluegill Sunfish Spawning (1965-2014)
Low Back Water (25%)
Rainbow River - PHABSIM1Site



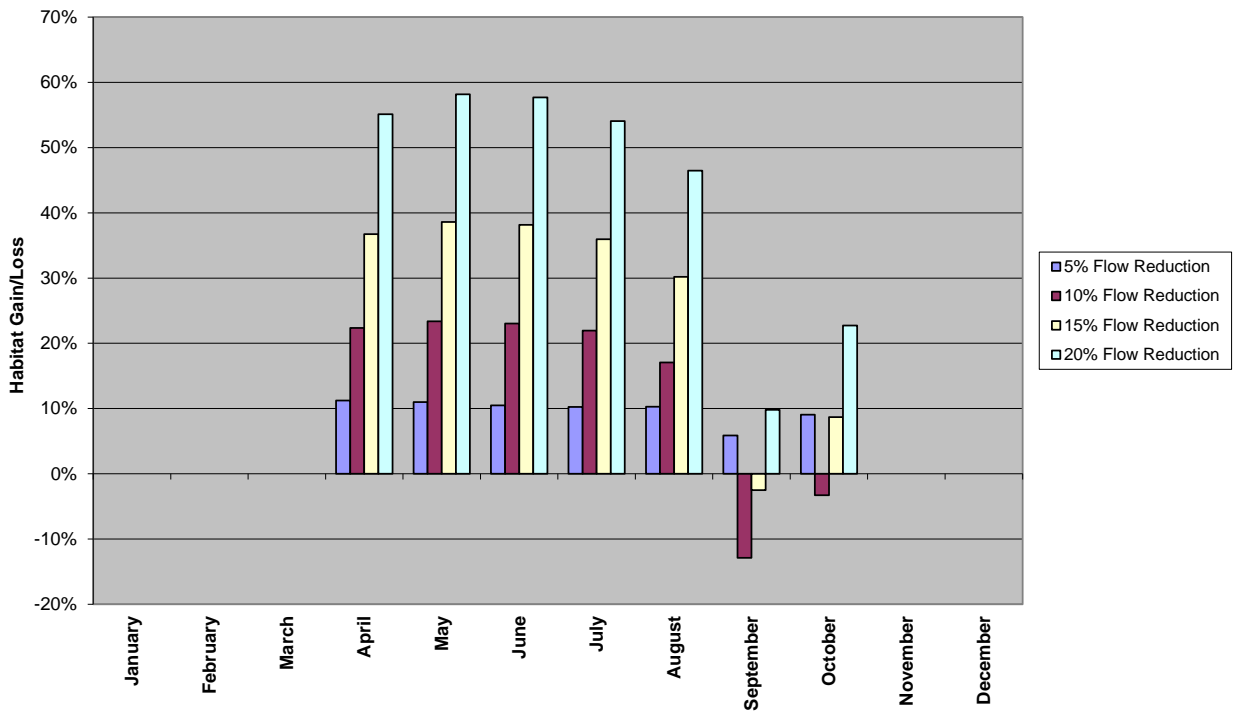
Bluegill Sunfish Spawning (1965-2014)
Medium Back Water (50%)
Rainbow River - PHABSIM1Site



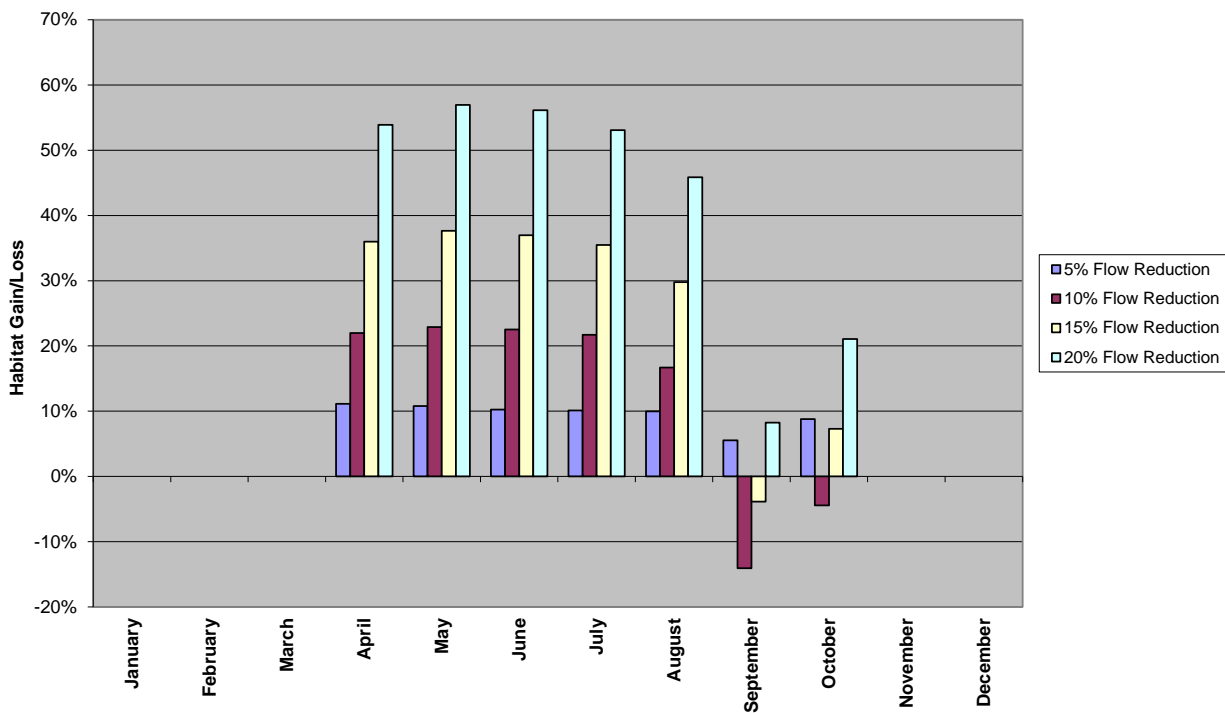
**Bluegill Sunfish Spawning (1965-2014)
High Back Water (75%)
Rainbow River - PHABSIM1 Site**



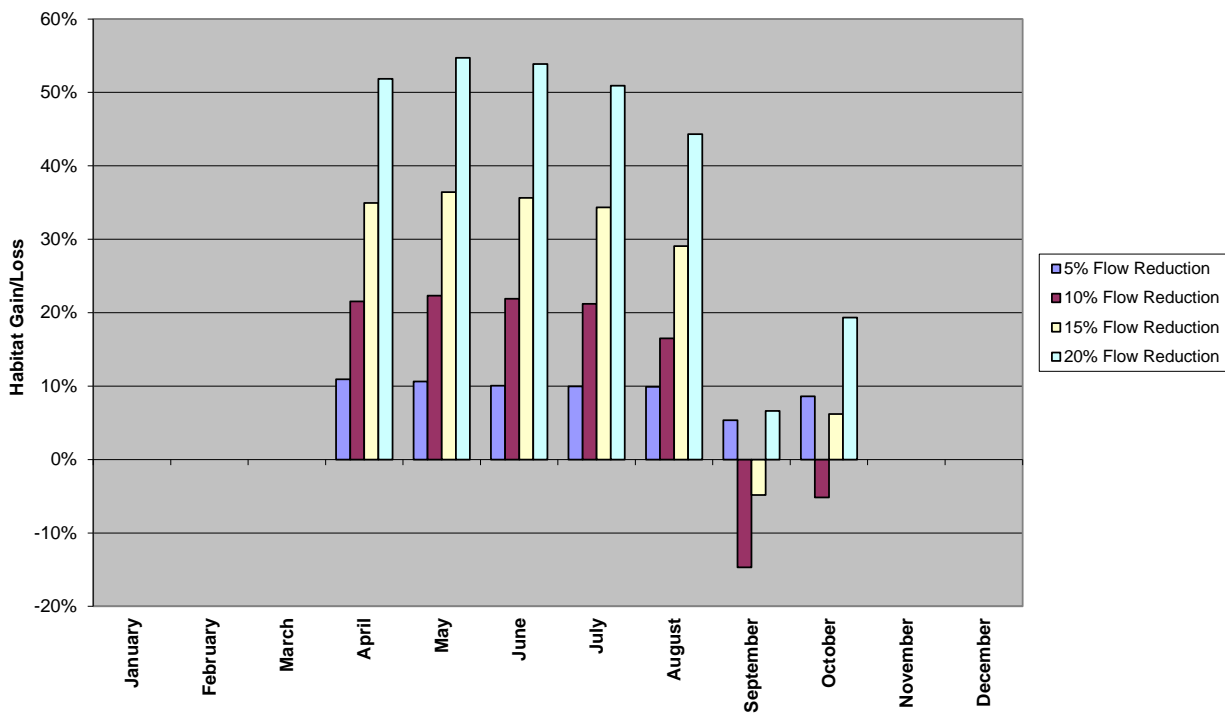
**Bluegill Sunfish Fry (1965-2014)
Low Back Water (25%)
Rainbow River - PHABSIM1 Site**

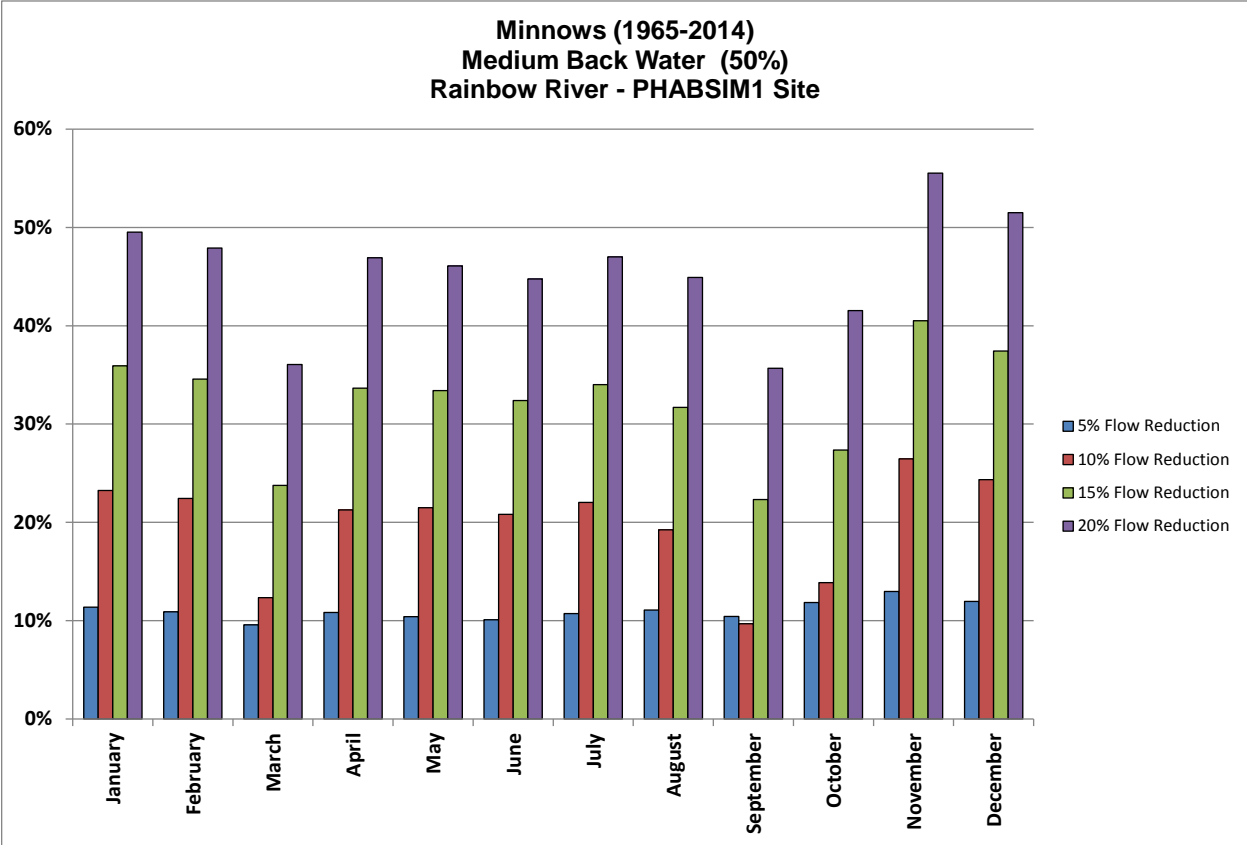
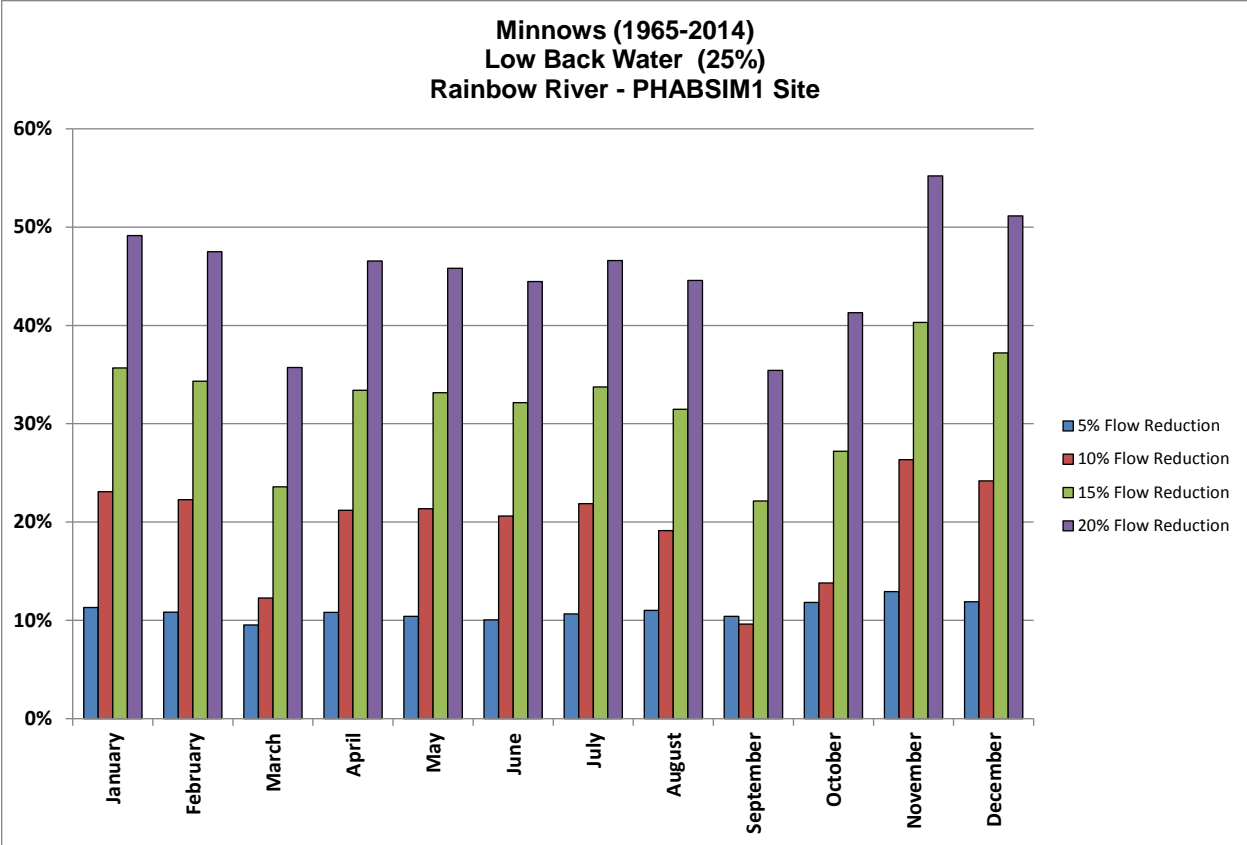


**Bluegill Sunfish Fry (1965-2014)
Medium Back Water (50%)
Rainbow River - PHABSIM1 Site**

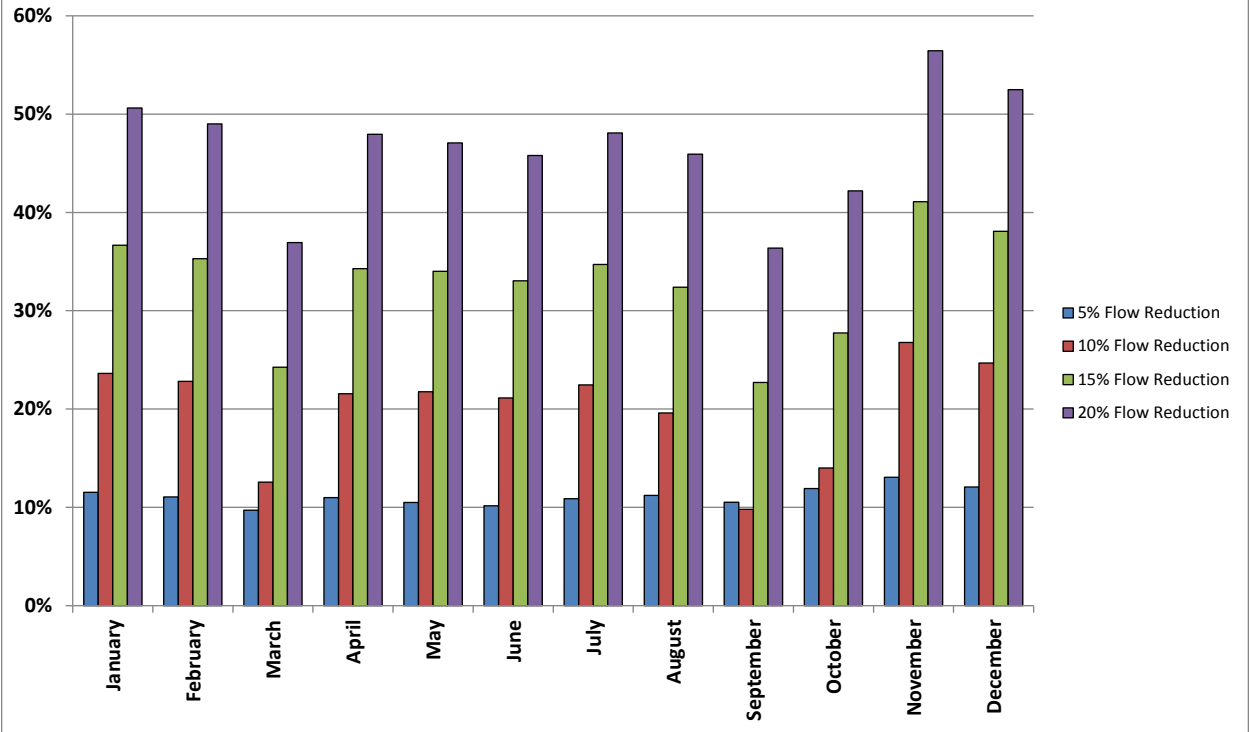


**Bluegill Sunfish Fry (1965-2014)
High Back Water (75%)
Rainbow River - PHABSIM1 Site**





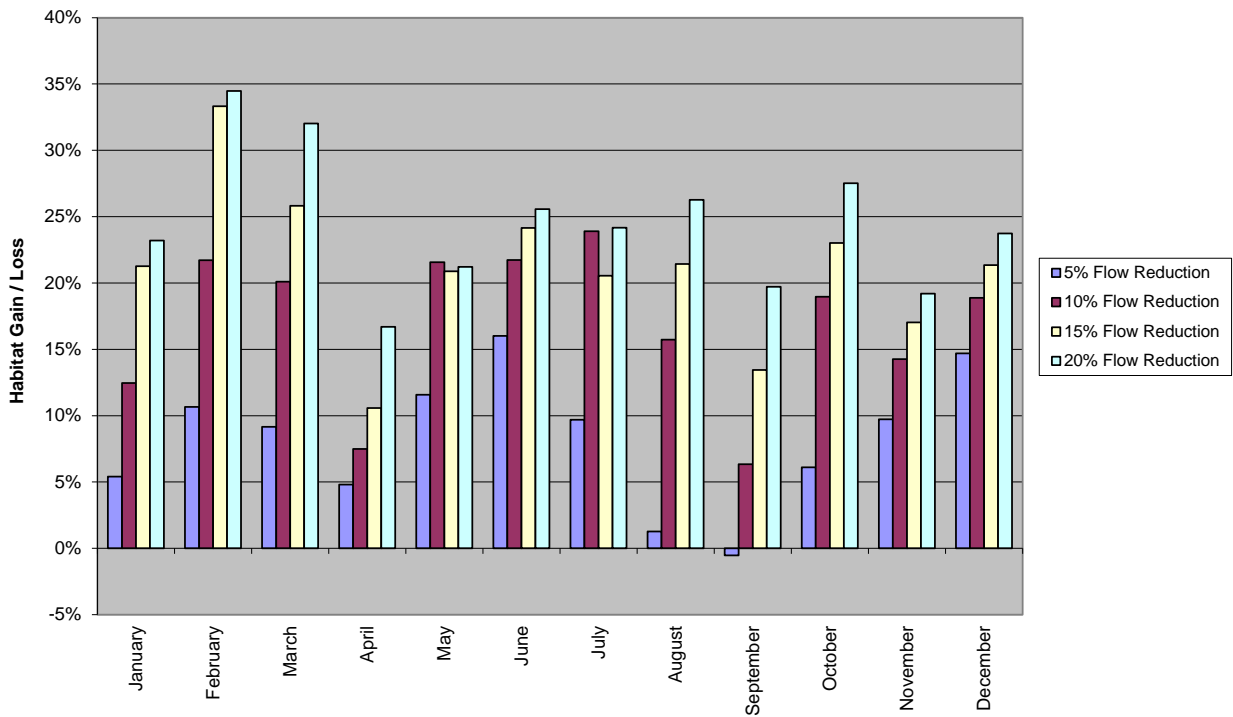
**Minnows (1965-2014)
High Back Water (75%)
Rainbow River - PHABSIM1 Site**



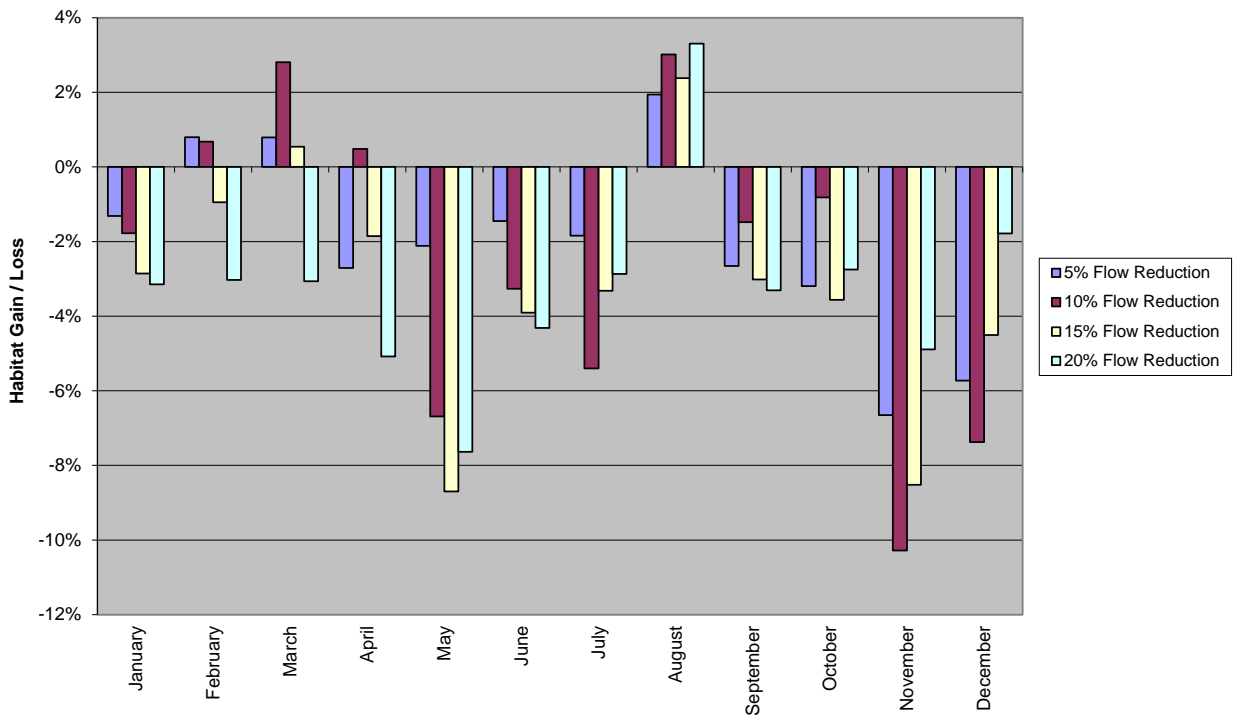
Section 3

Rainbow River System PHABSIM Modeling Results: Habitat Gain/Loss vs. 5, 10, 15, and 20% Flow Reduction Plots for PHABSIM 2

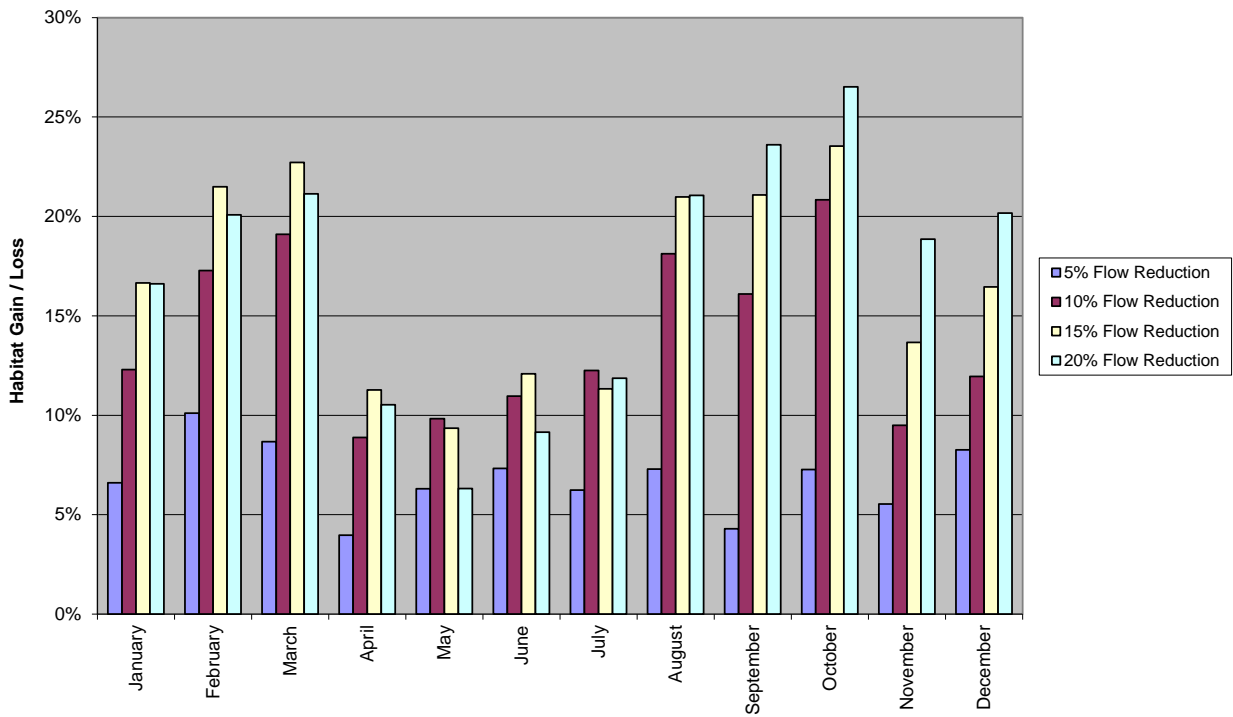
**Shallow-Slow Fish Habitat Guild (1965-2014)
Low Back Water (25%)
Rainbow River - PHABSIM2 Site**



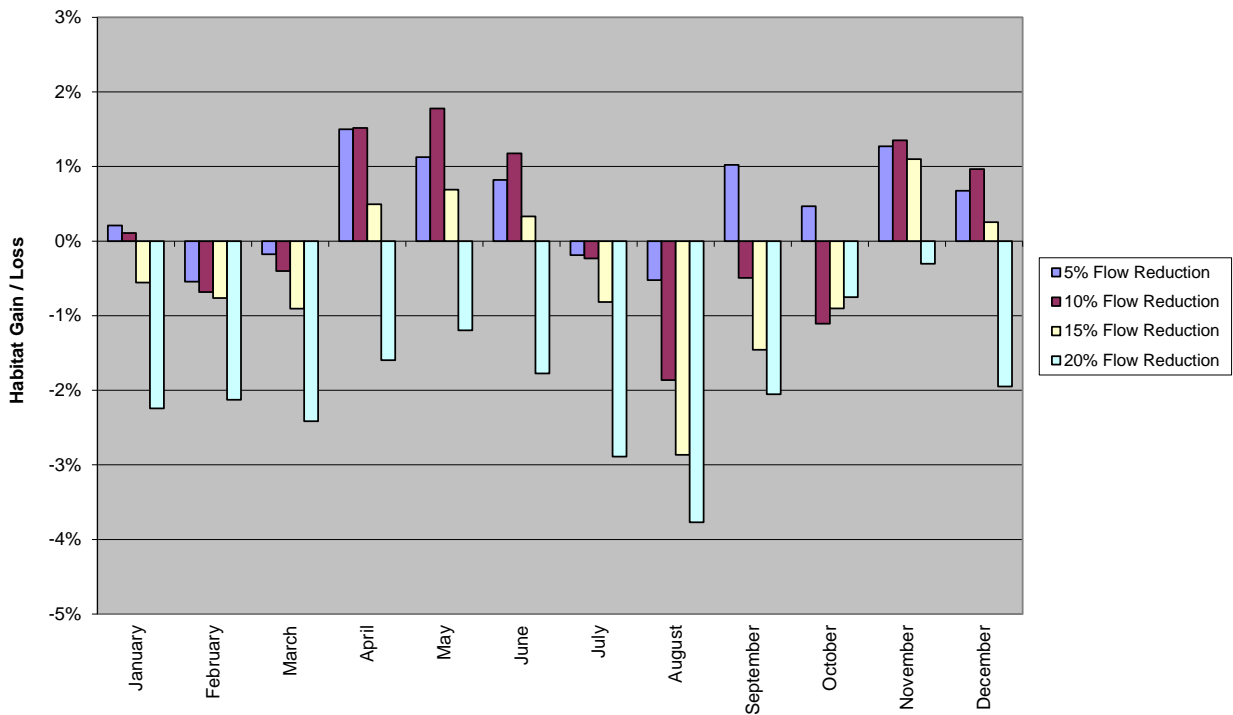
**Shallow-Slow Fish Habitat Guild (1965-2014)
Medium Back Water (50%)
Rainbow River - PHABSIM2 Site**



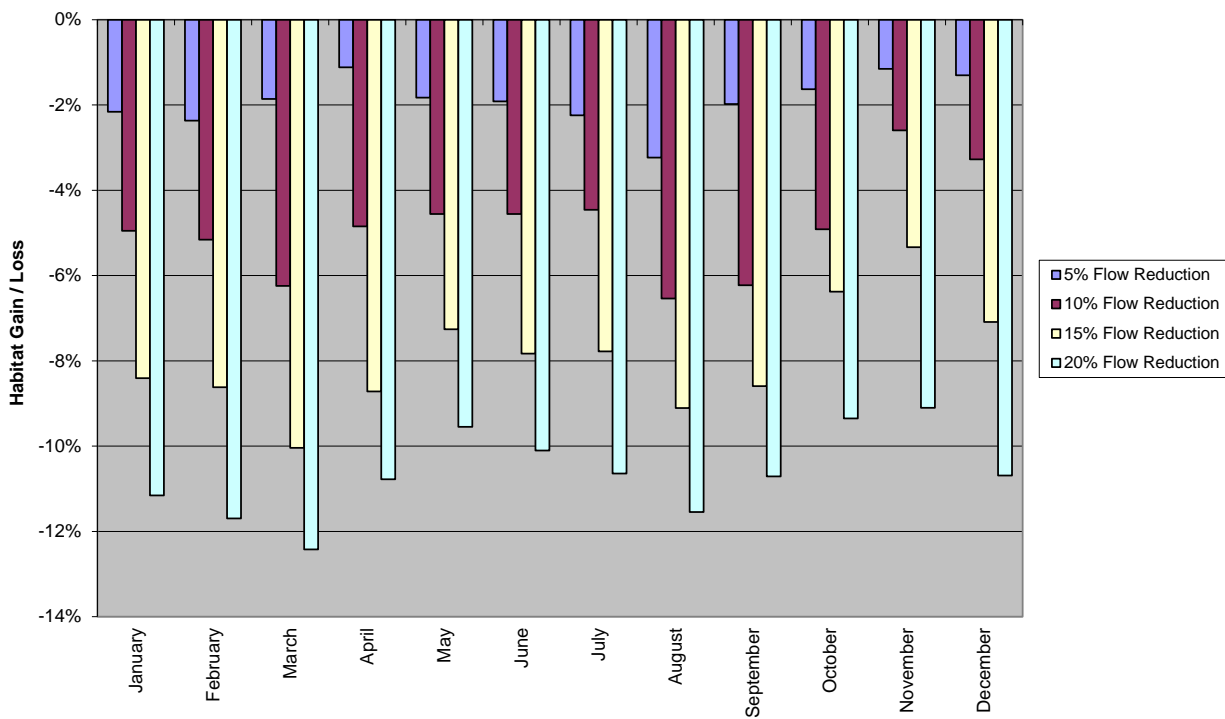
**Shallow-Slow Fish Habitat Guild (1965-2014)
High Back Water (75%)
Rainbow River - PHABSIM2 Site**



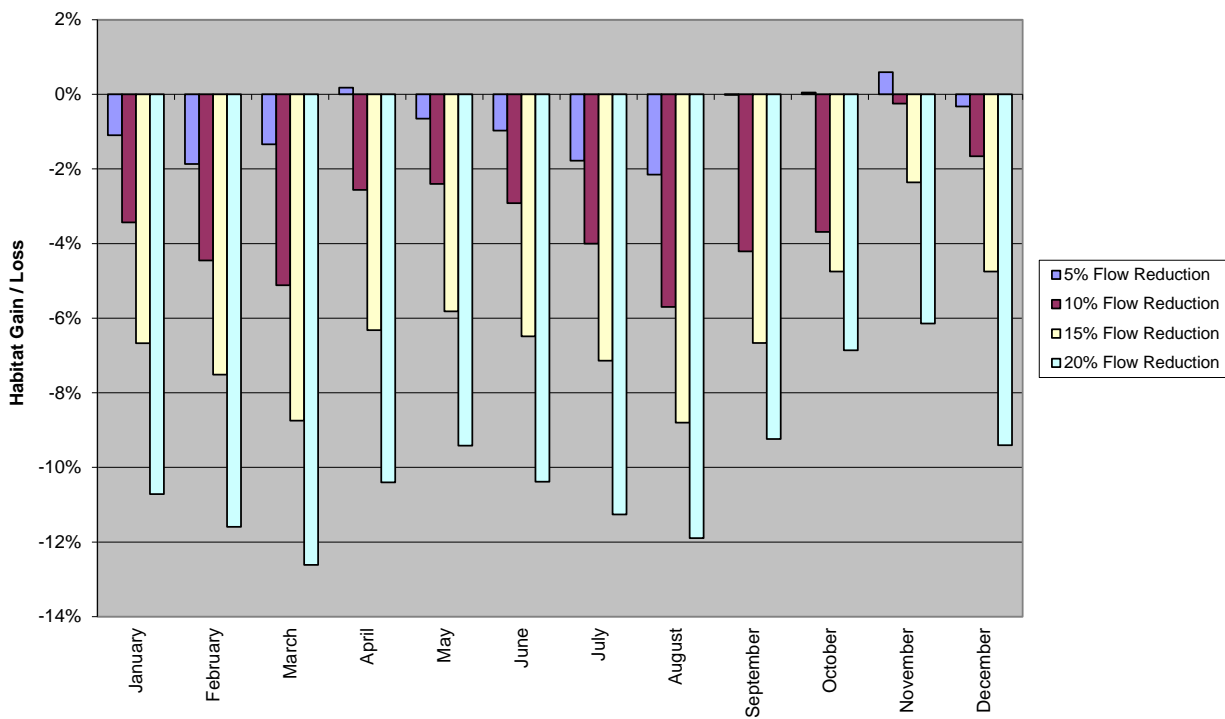
**Shallow-Fast Fish Habitat Guild (1965-2014)
Low Back Water (25%)
Rainbow River - PHABSIM2 Site**



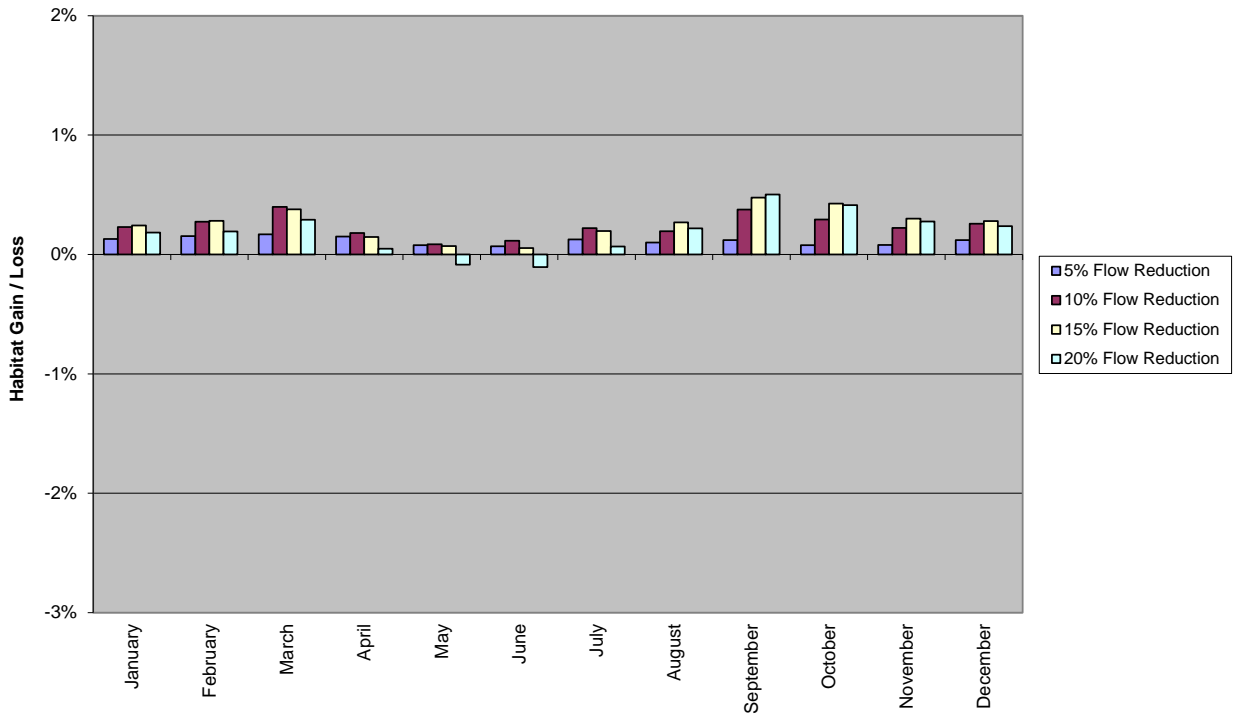
**Shallow-Fast Fish Habitat Guild (1965-2014)
Medium Back Water (50%)
Rainbow River - PHABSIM2 Site**



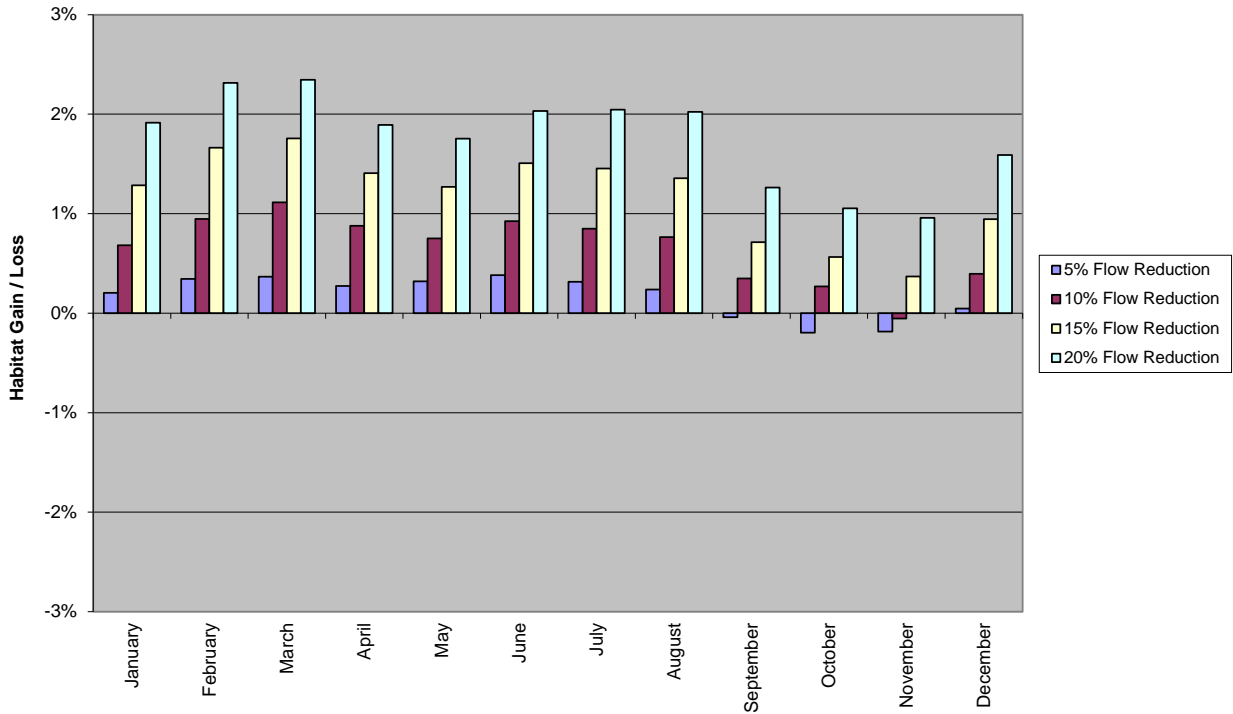
**Shallow-Fast Fish Habitat Guild (1965-2014)
High Back Water (75%)
Rainbow River - PHABSIM2 Site**



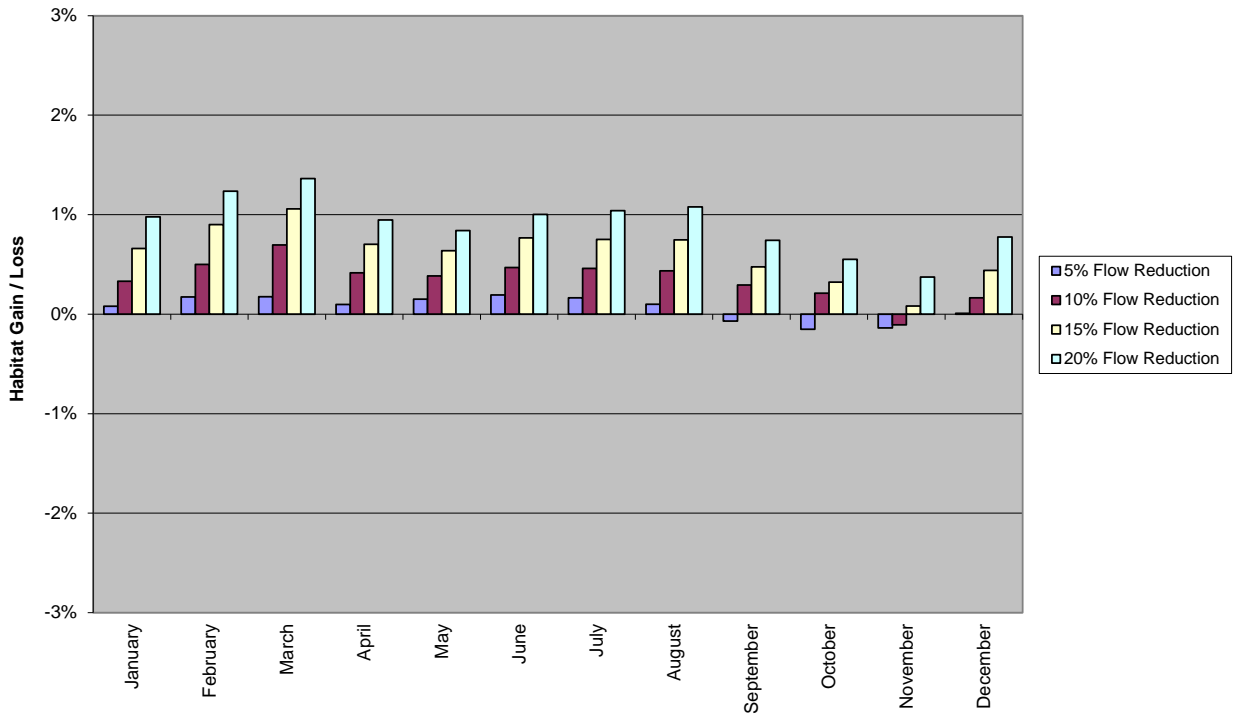
**Deep-Slow Fish Habitat Guild (1965-2014)
Low Back Water (25%)
Rainbow River - PHABSIM2 Site**



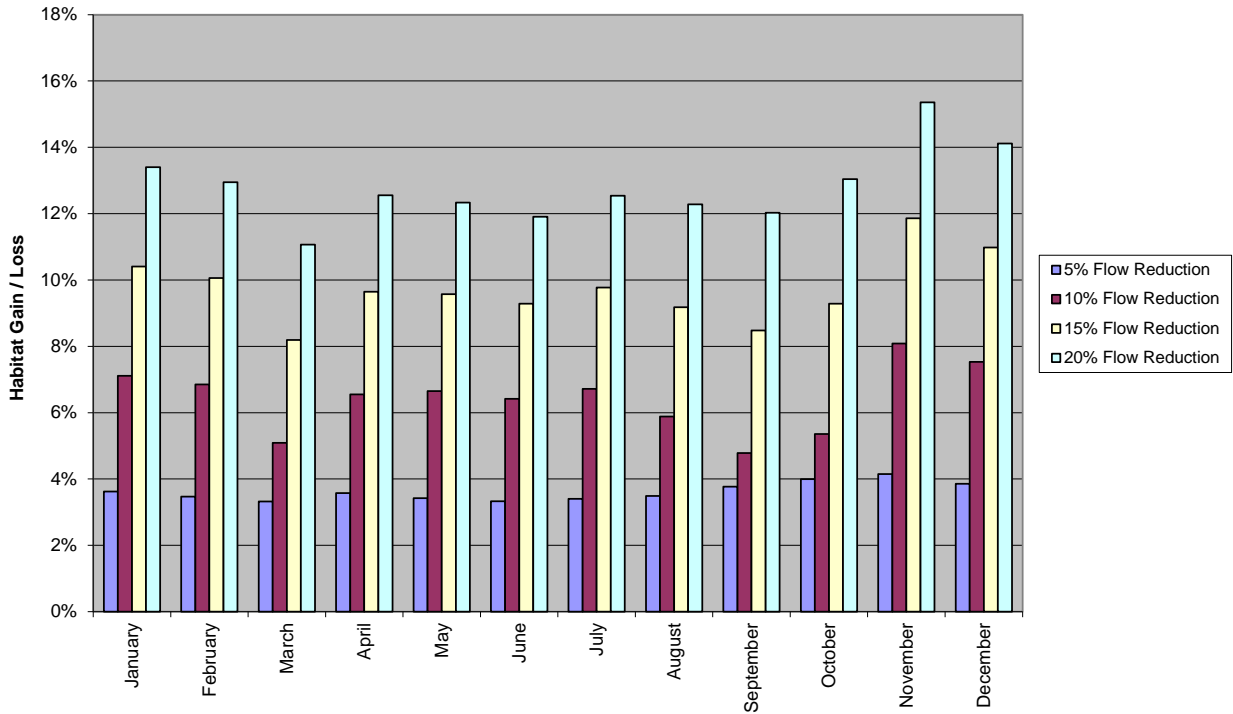
**Deep-Slow Fish Habitat Guild (1965-2014)
Medium Back Water (50%)
Rainbow River - PHABSIM2 Site**



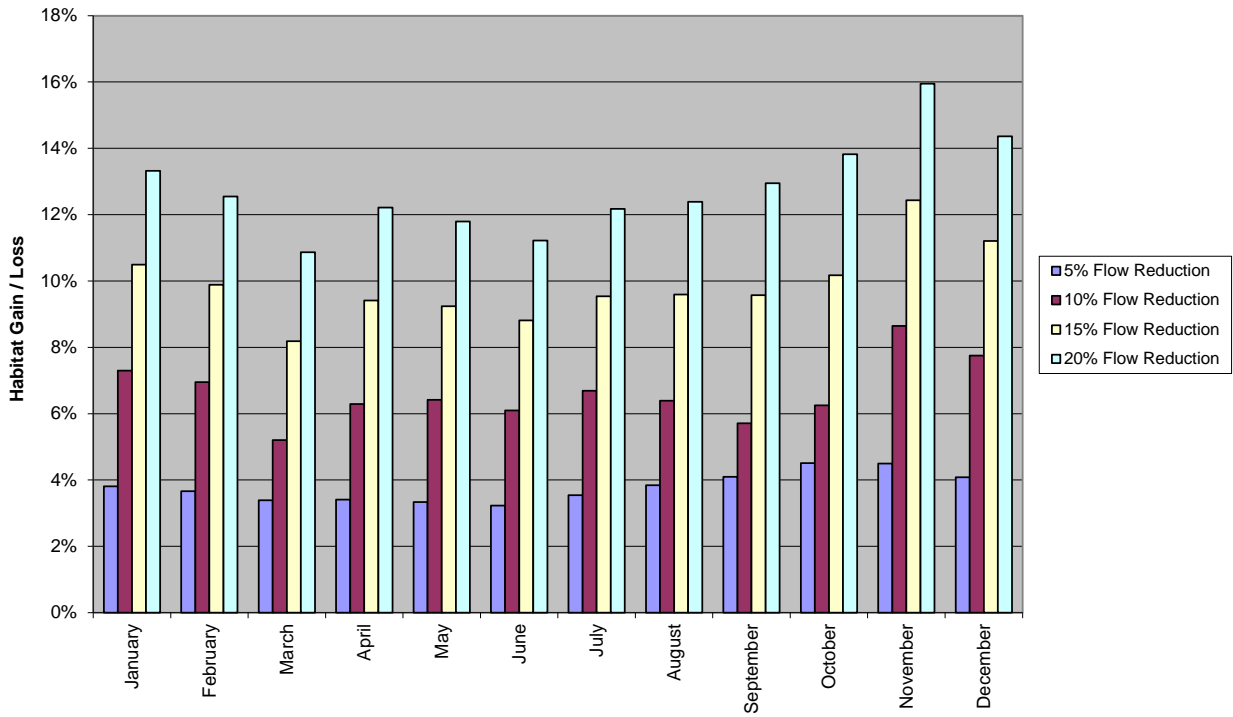
**Deep-Slow Fish Habitat Guild (1965-2014)
High Back Water (75%)
Rainbow River - PHABSIM2 Site**



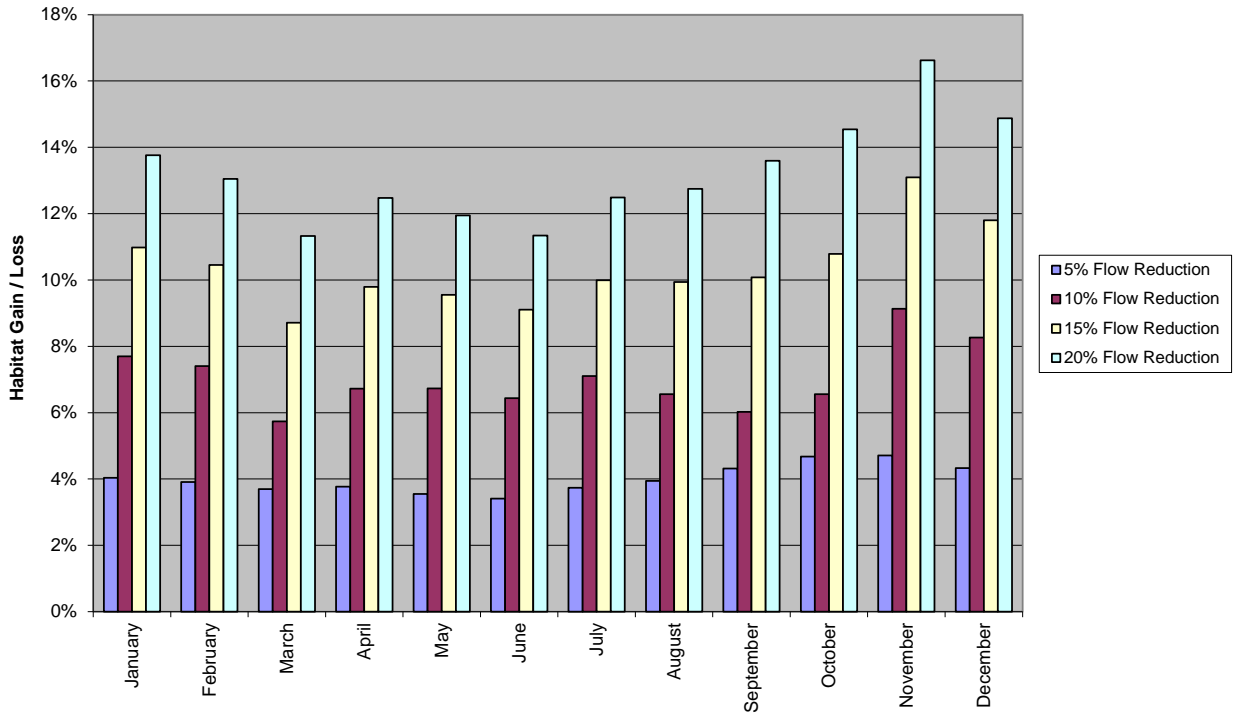
**Deep-Fast Fish Habitat Guild (1964-2015)
Low Back Water (25%)
Rainbow River - PHABSIM2 Site**



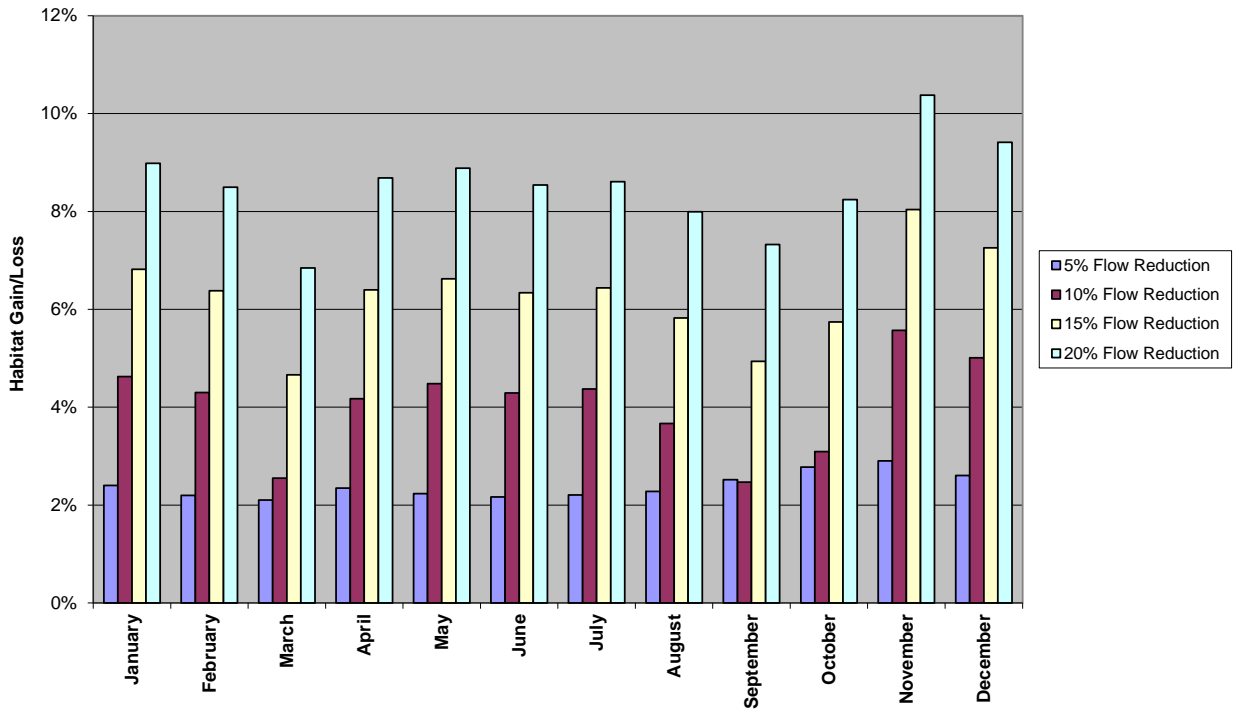
**Deep-Fast Fish Habitat Guild (1964-2015)
Medium Back Water (50%)
Rainbow River - PHABSIM2 Site**



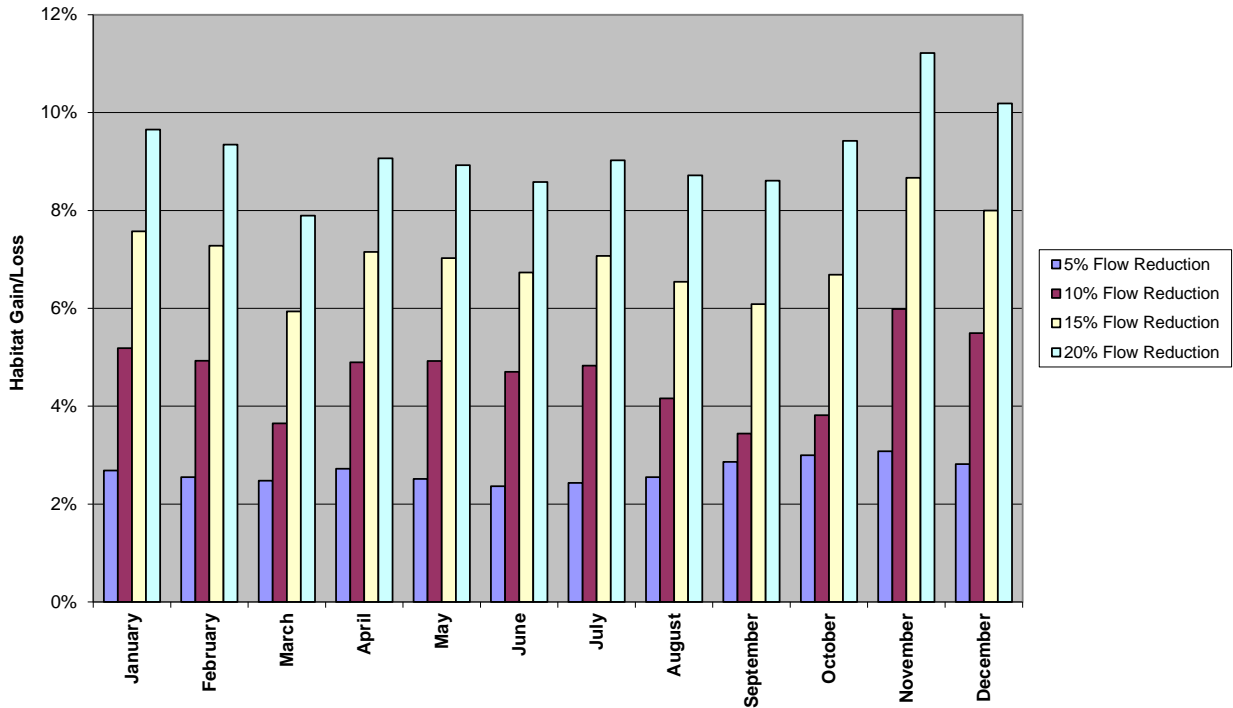
**Deep-Fast Fish Habitat Guild (1964-2015)
High Back Water (75%)
Rainbow River - PHABSIM2 Site**



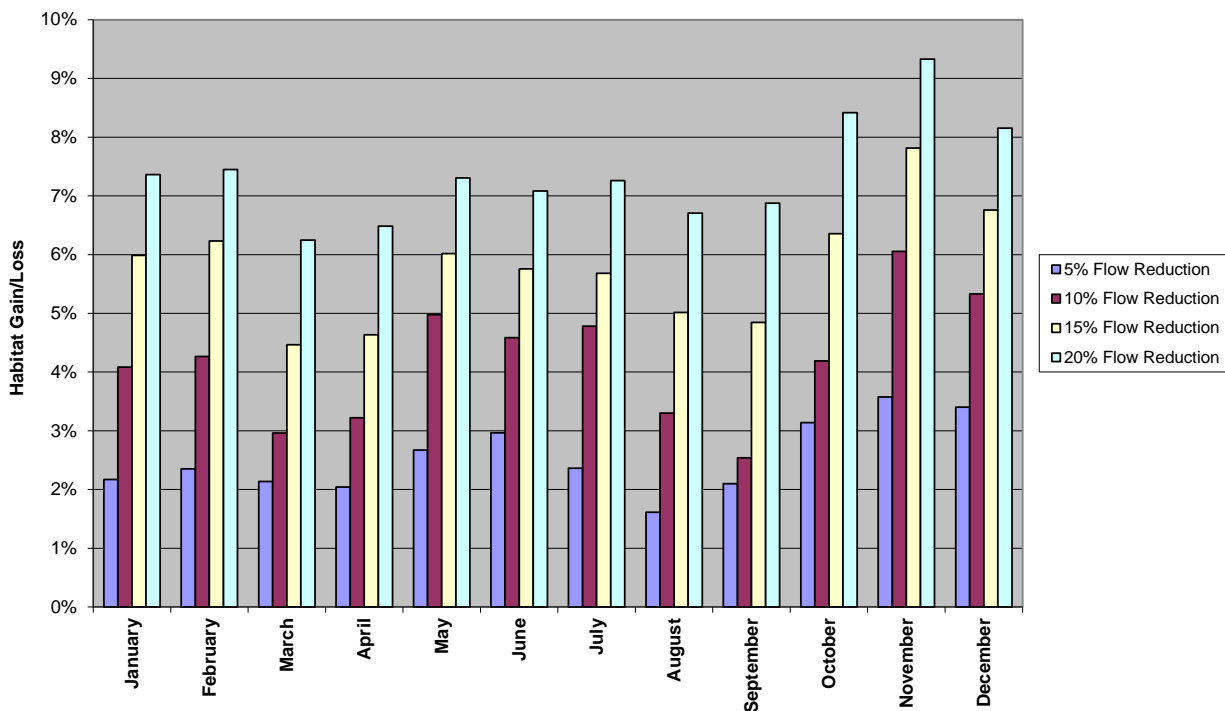
**Spotted Sunfish Adults (1965-2014)
Low Back Water (25%)
Rainbow River - PHABSIM2 Site**



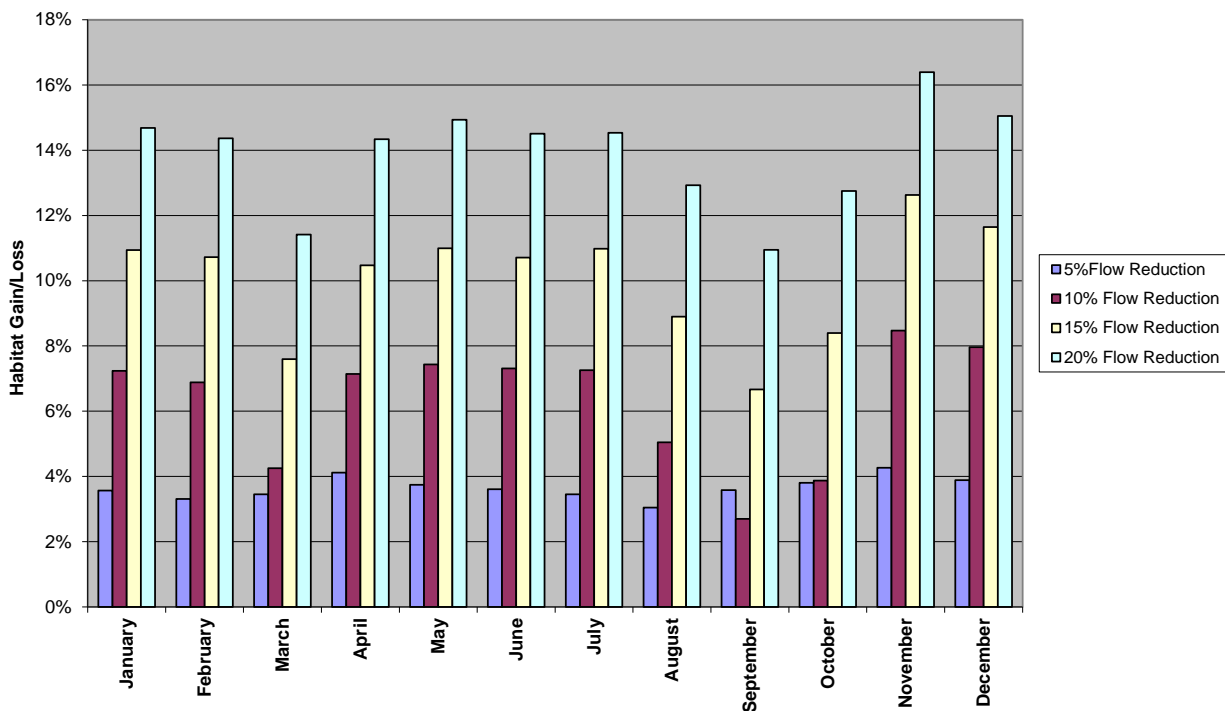
**Spotted Sunfish Adults (1965-2014)
Medium Back Water (50%)
Rainbow River - PHABSIM2 Site**



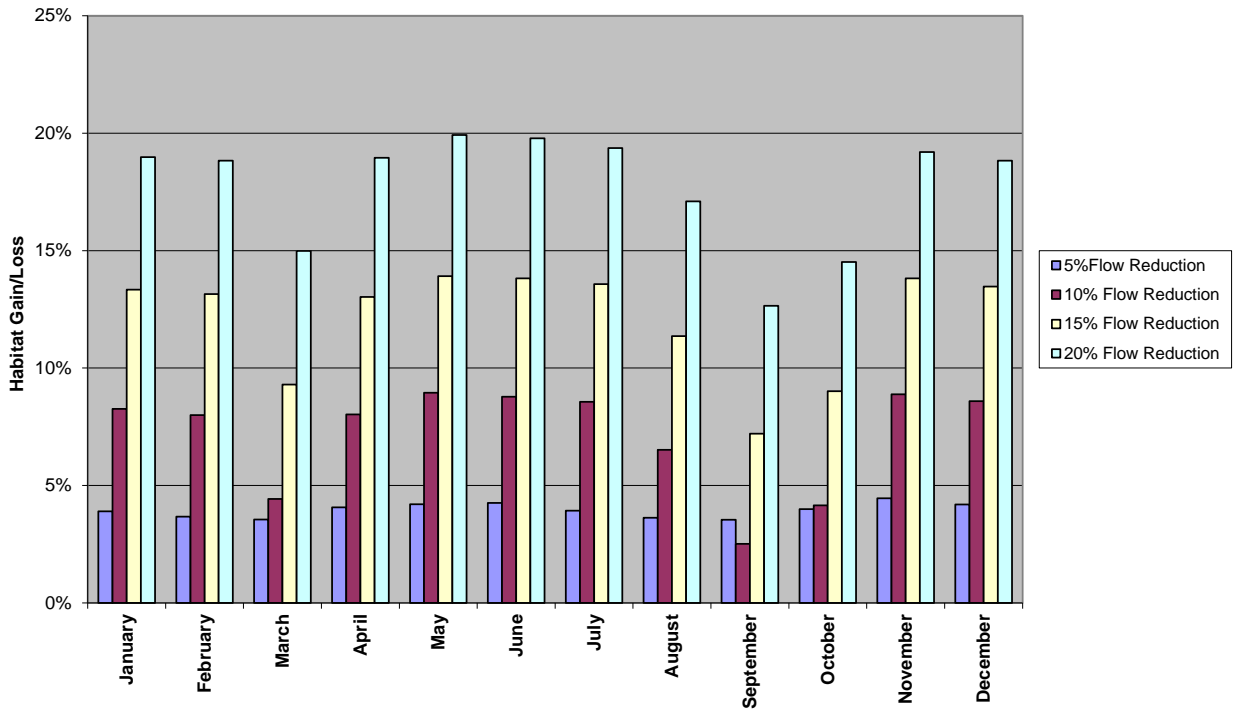
**Spotted Sunfish Adults (1965-2014)
High Back Water (75%)
Rainbow River - PHABSIM2 Site**



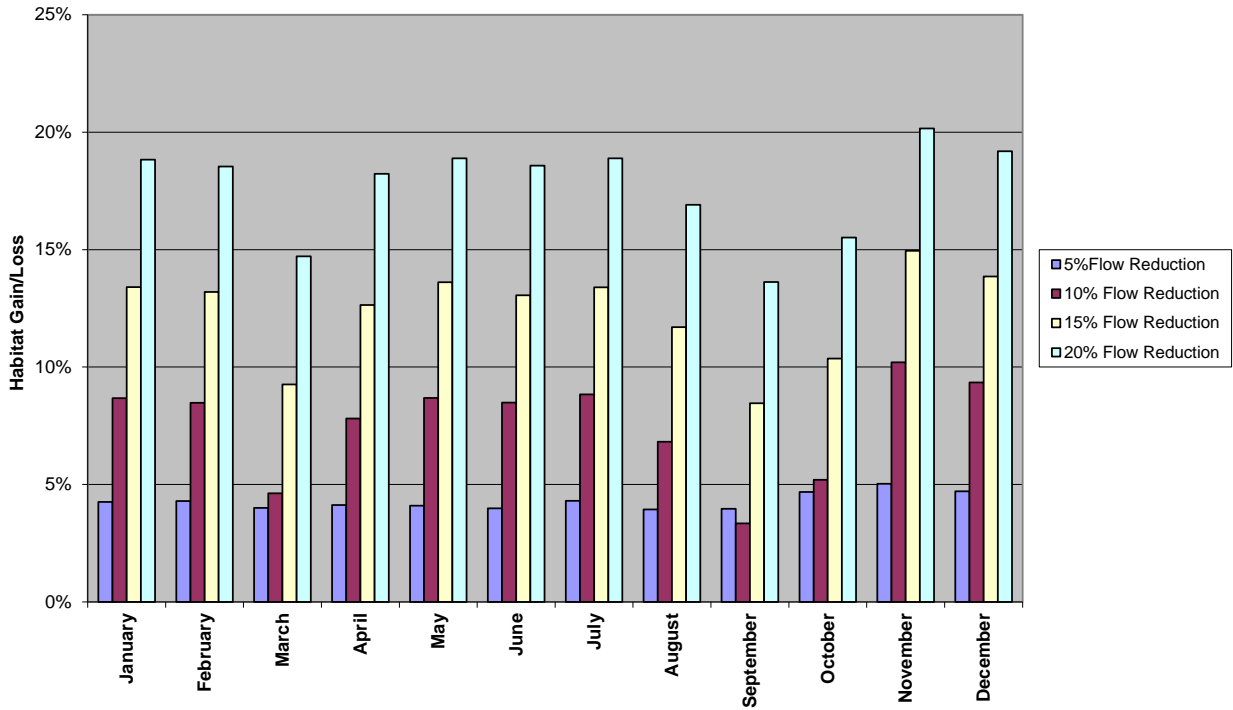
**Juvenile Spotted Sunfish (1965-2014)
Low Back Water (25%)
Rainbow River - PHABSIM2 Site**



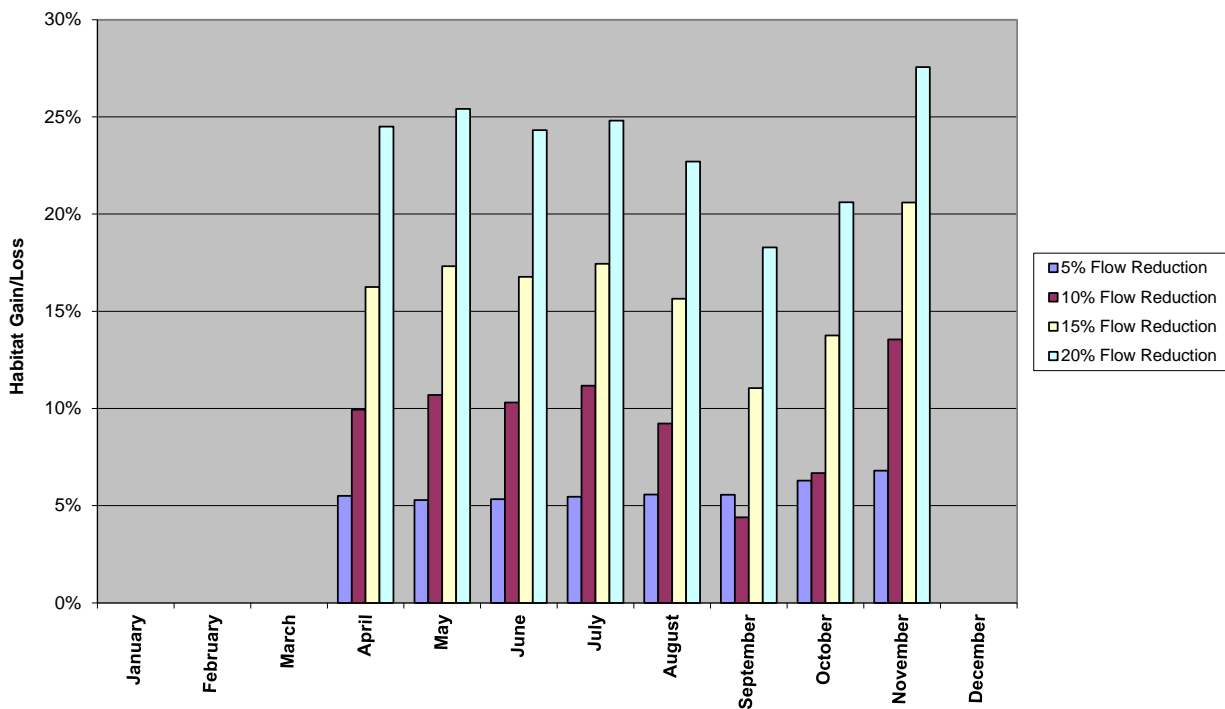
**Juvenile Spotted Sunfish (1965-2014)
Medium Back Water (50%)
Rainbow River - PHABSIM2 Site**



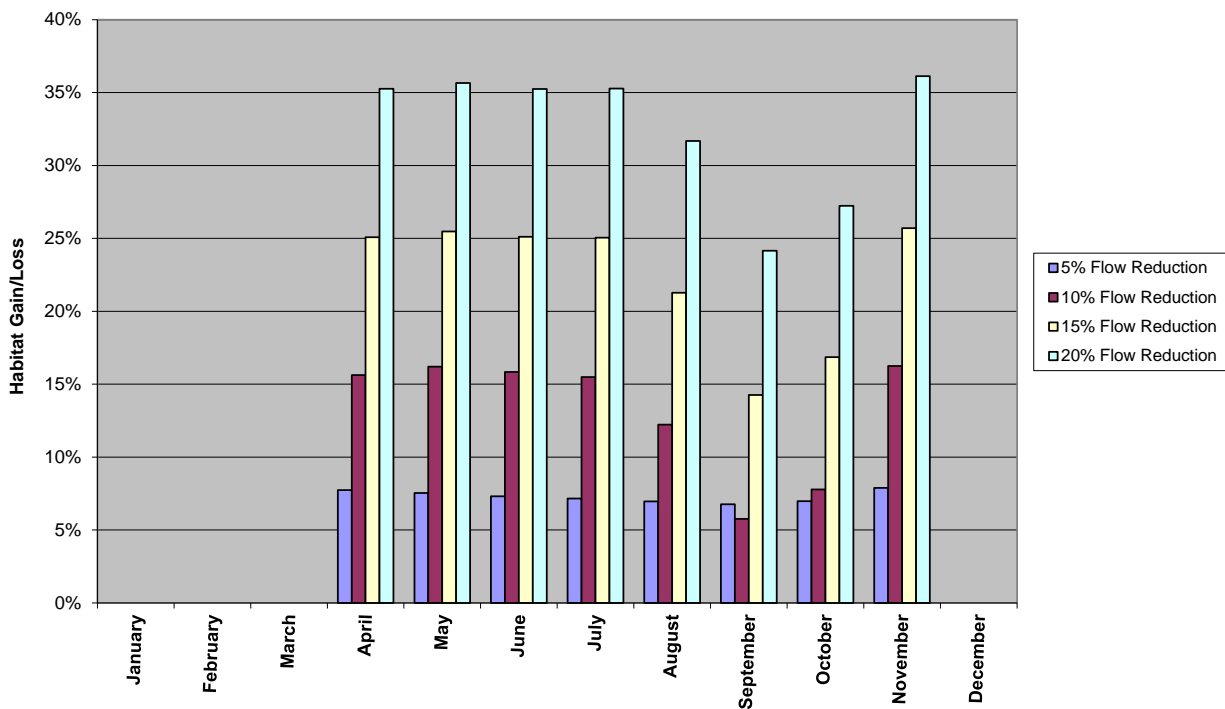
**Juvenile Spotted Sunfish (1965-2014)
High Back Water (75%)
Rainbow River - PHABSIM2 Site**



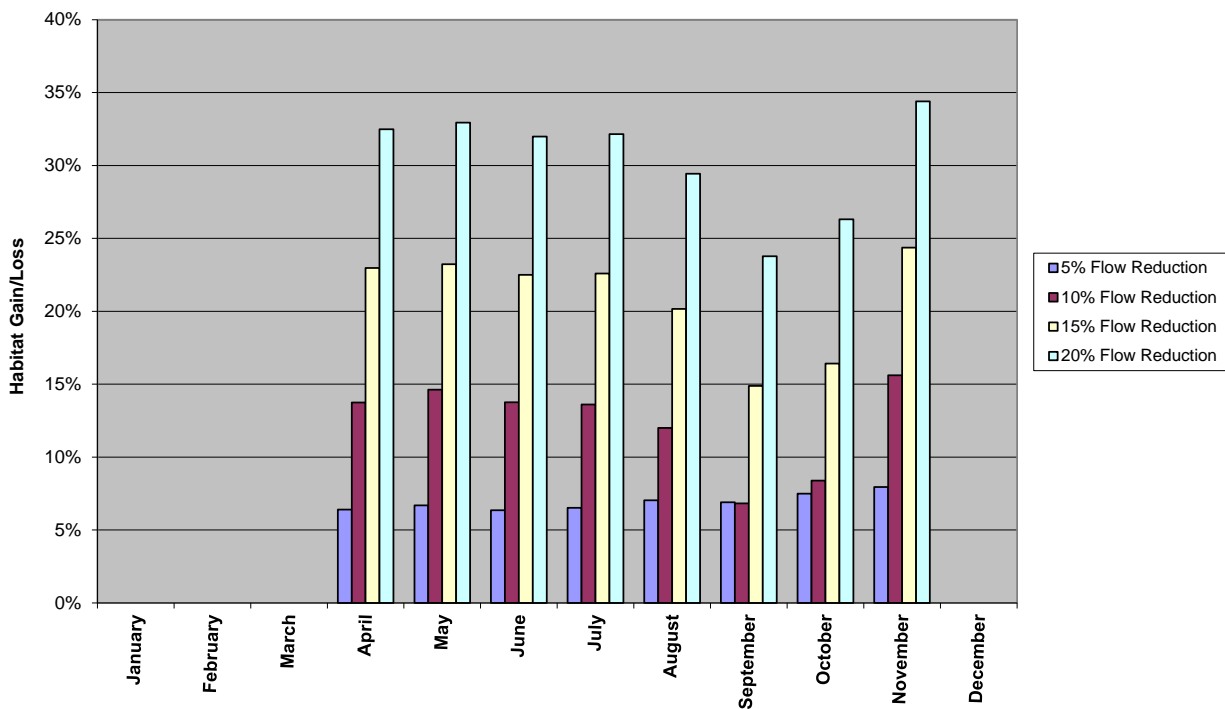
**Spawning Spotted Sunfish (1965-2014)
Low Back Water (25%)
Rainbow River - PHABSIM2 Site**



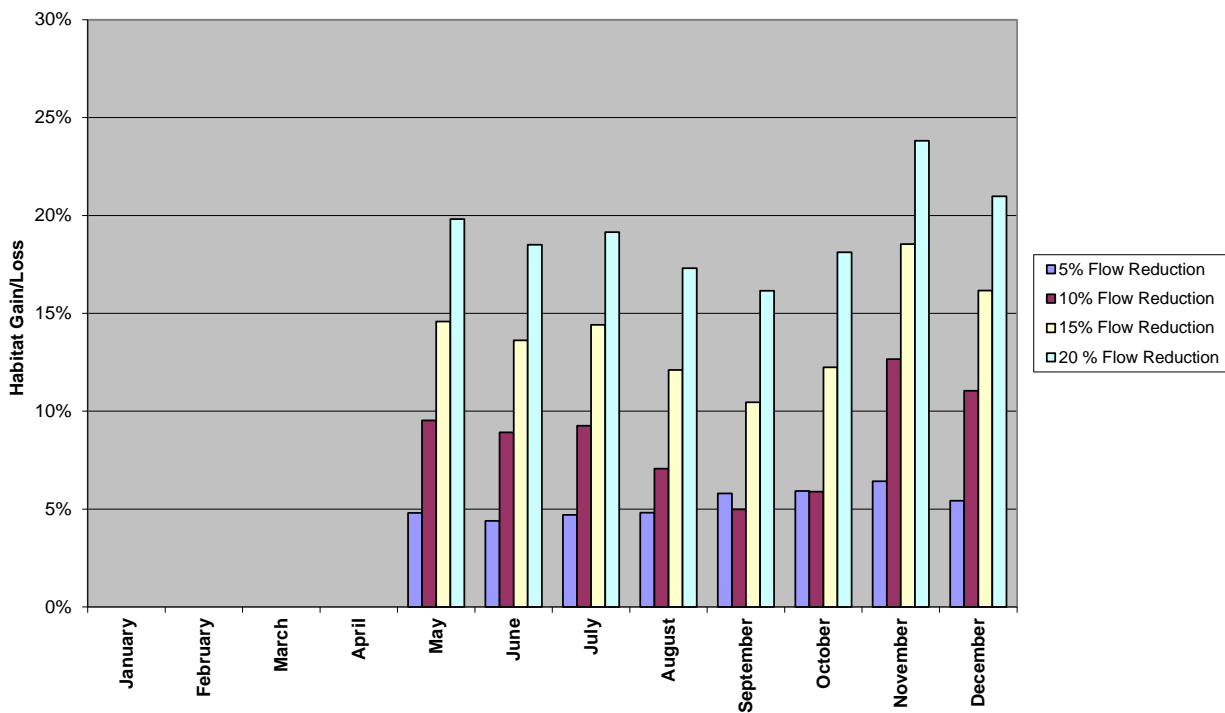
**Spawning Spotted Sunfish (1965-2014)
Medium Back Water (50%)
Rainbow River - PHABSIM2 Site**



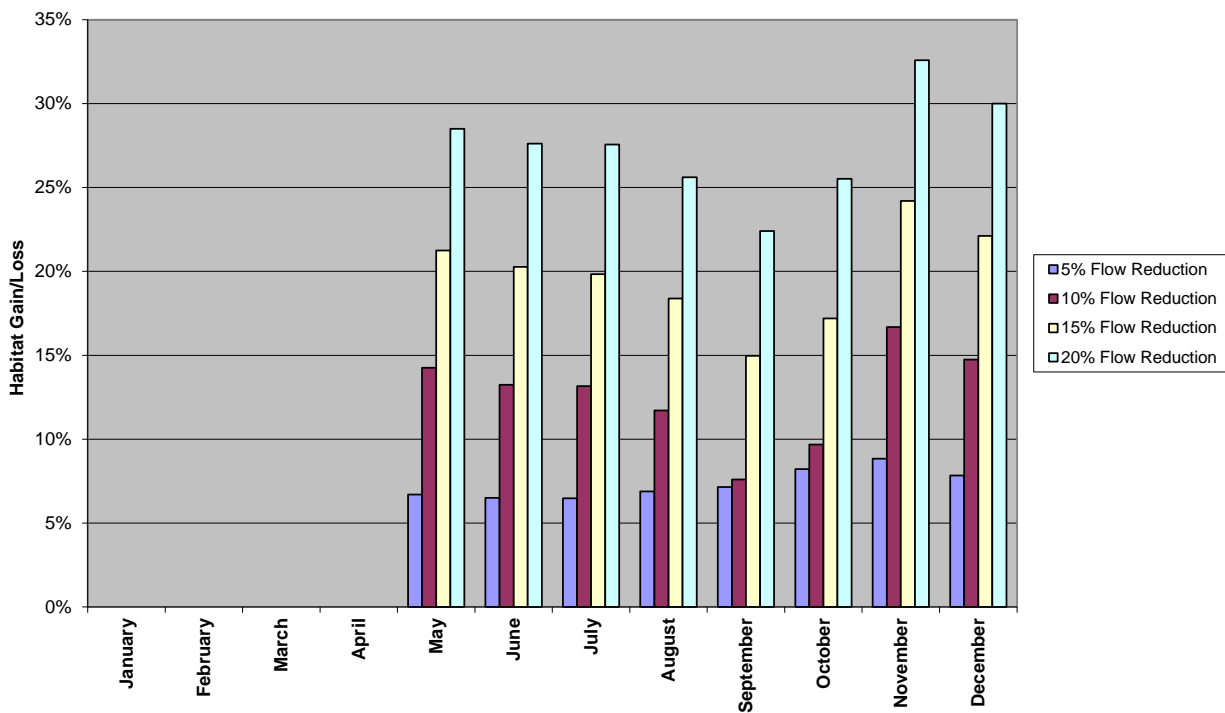
**Spawning Spotted Sunfish (1965-2014)
High Back Water (75%)
Rainbow River - PHABSIM2 Site**



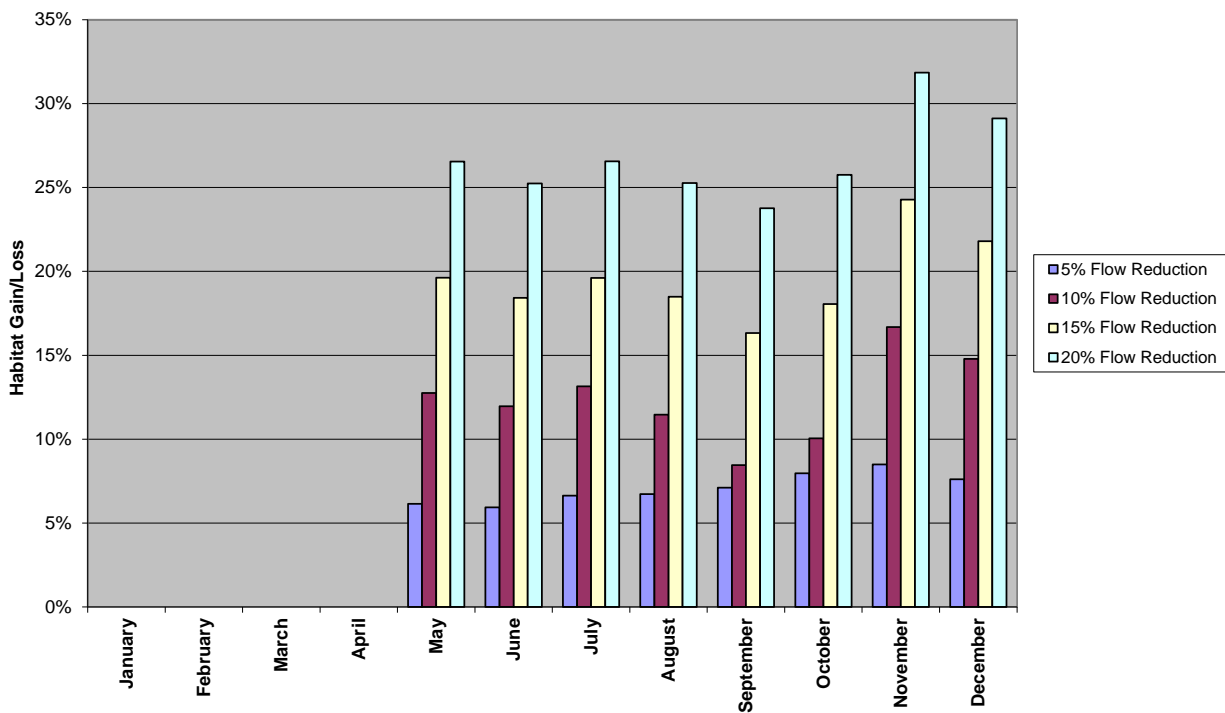
**Spotted Sunfish Fry (1965-2014)
Low Back Water (25%)
Rainbow River - PHABSIM2 Site**



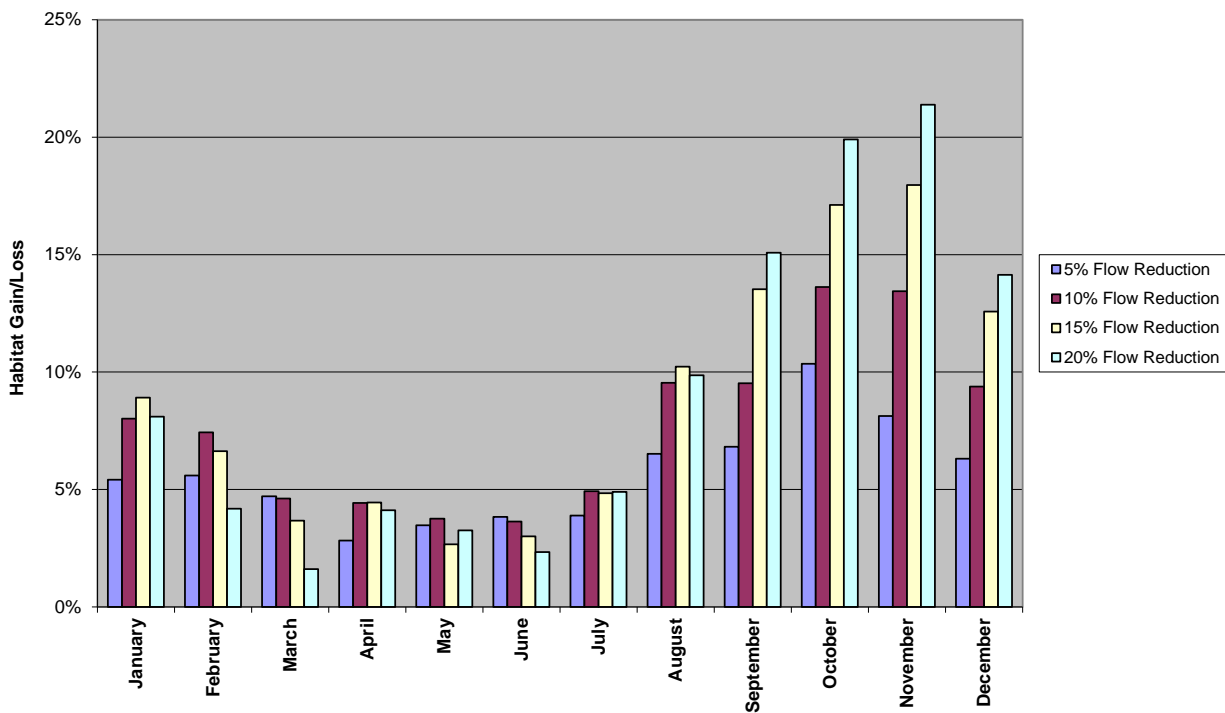
Spotted Sunfish Fry (1965-2014)
Medium Back Water (50%)
Rainbow River - PHABSIM2 Site



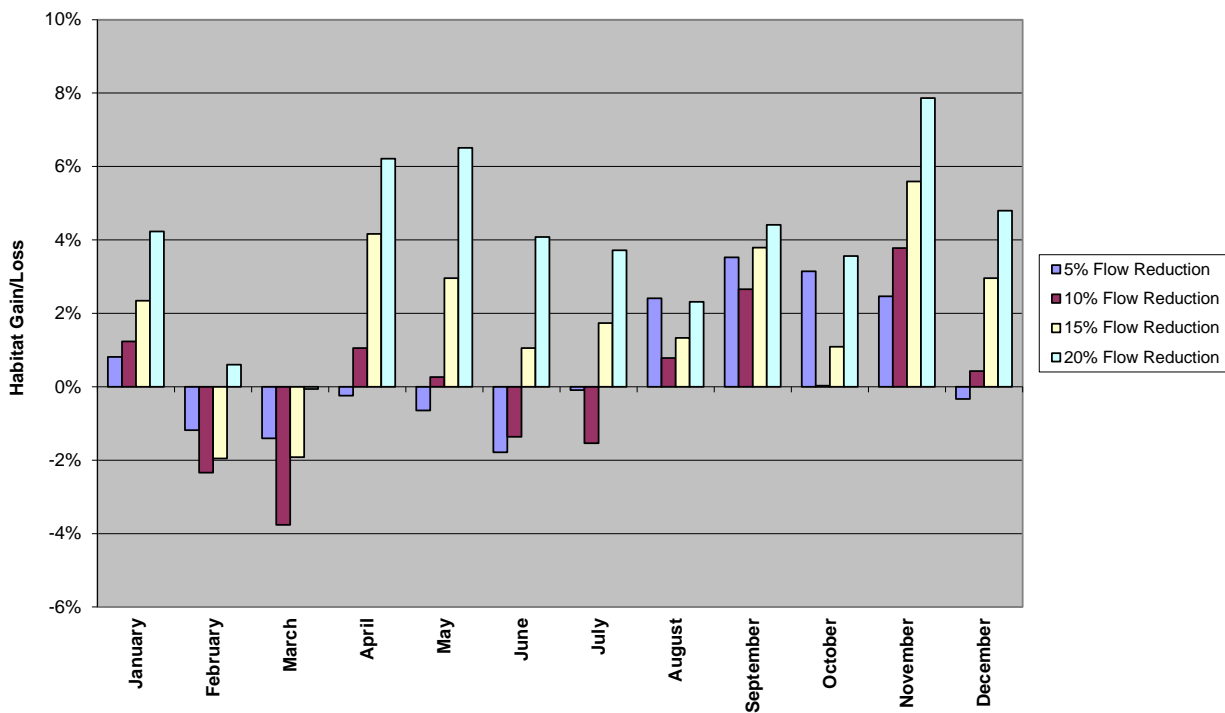
Spotted Sunfish Fry (1965-2014)
High Back Water (75%)
Rainbow River - PHABSIM2 Site



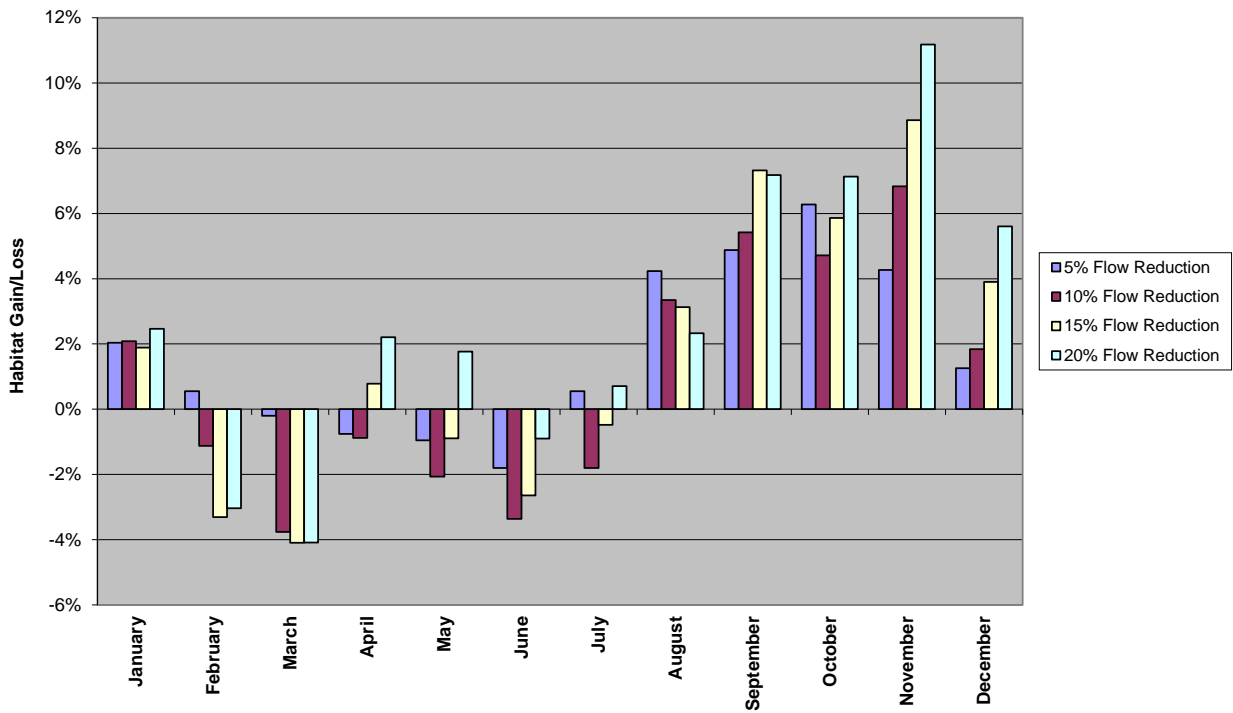
Benthic Macroinvertebrates (1965-2014)
Low Back Water (25%)
Rainbow River - PHABSIM2 Site



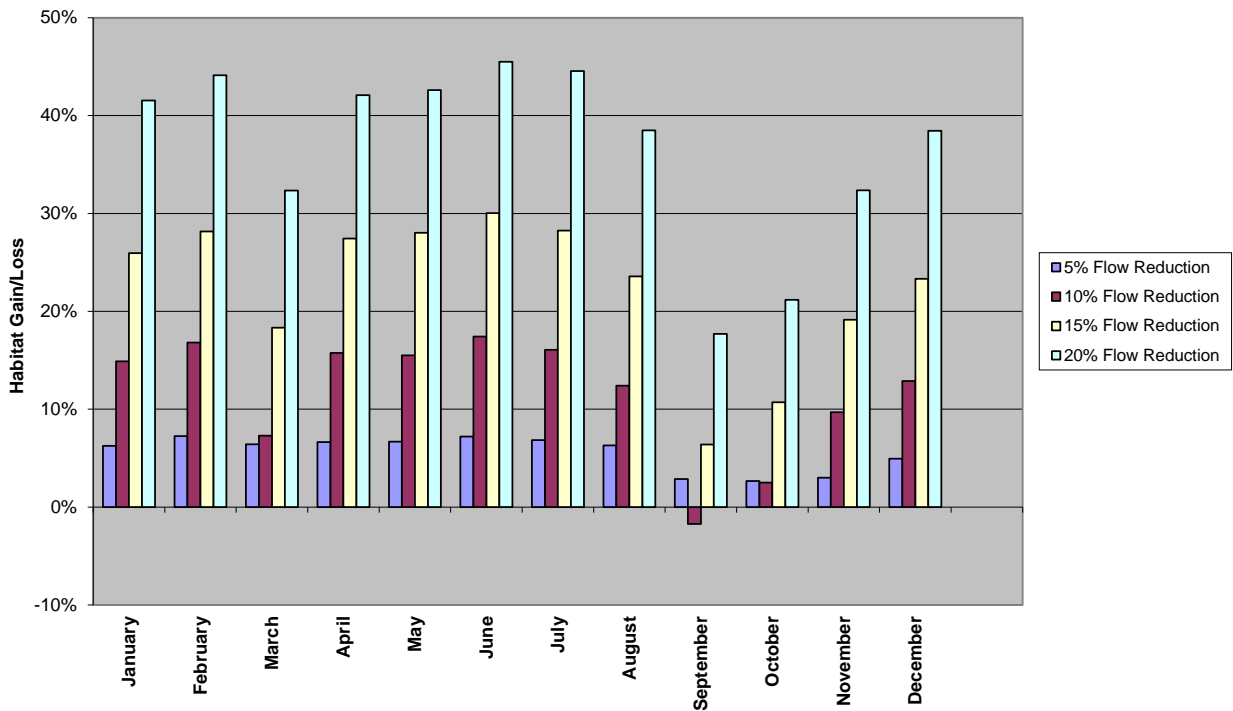
Benthic Macroinvertebrates (1965-2014)
Medium Back Water (50%)
Rainbow River - PHABSIM2 Site



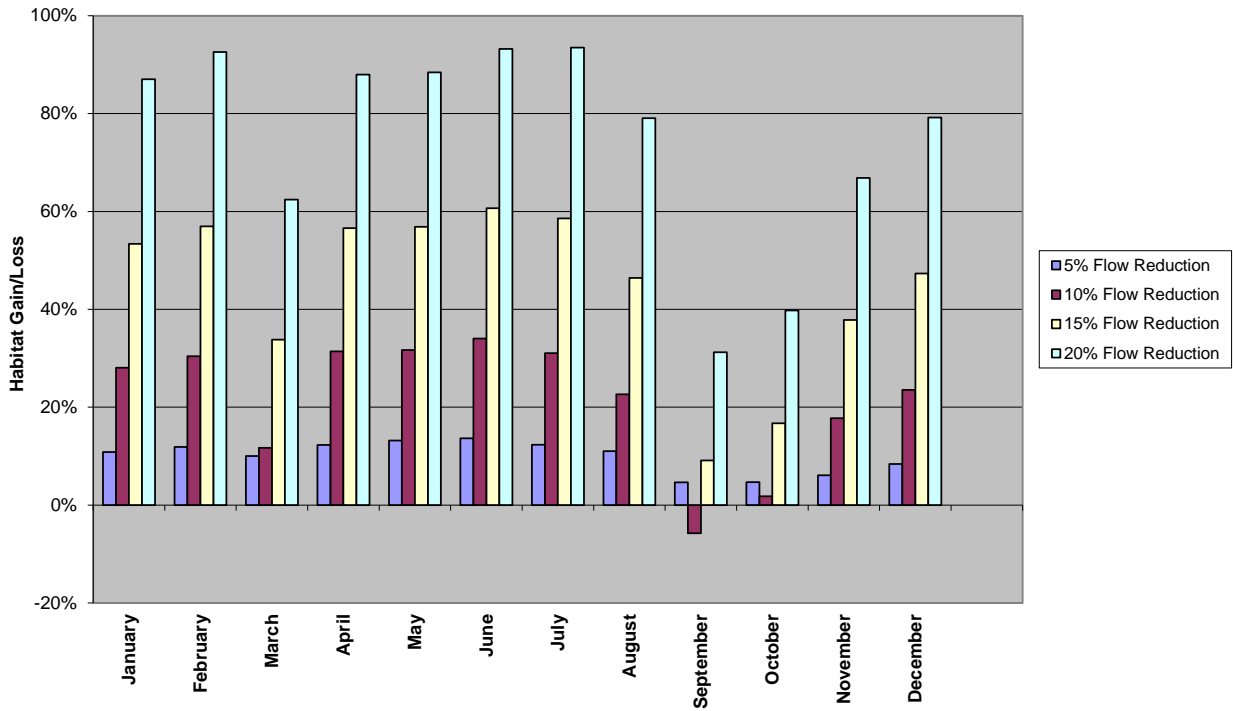
Benthic Macroinvertebrates (1965-2014)
High Back Water (75%)
Rainbow River - PHABSIM2 Site



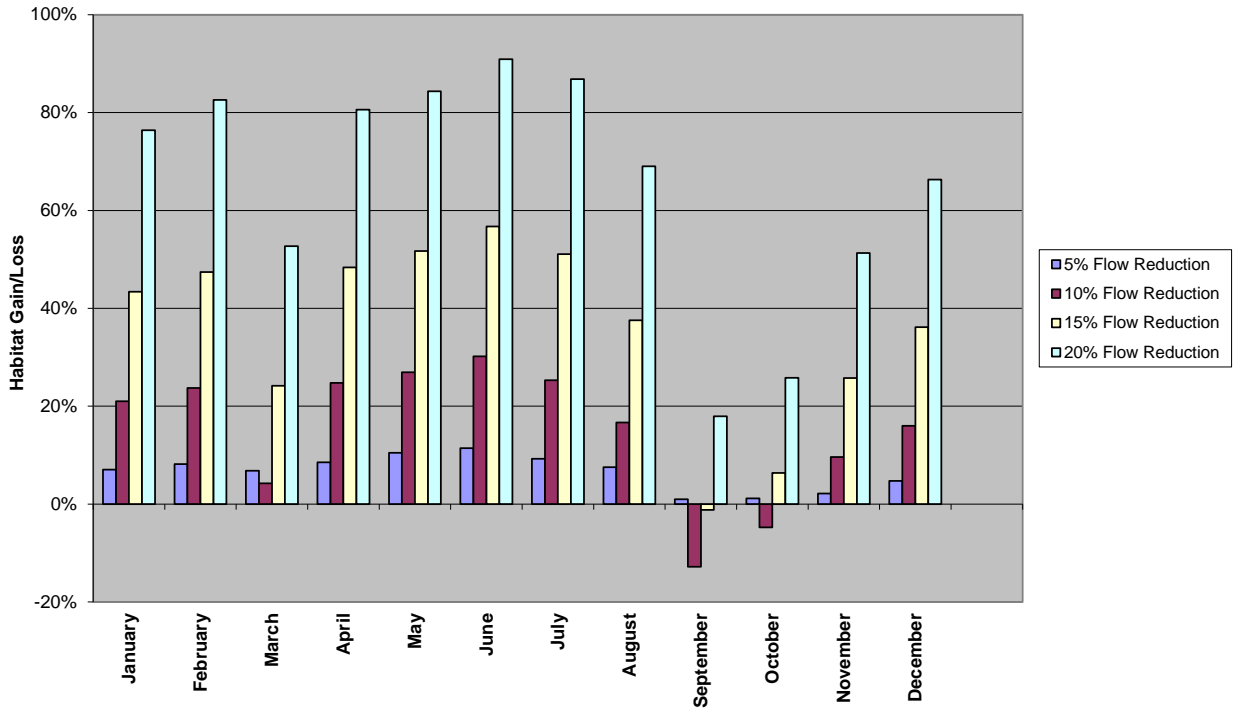
Largemouth Bass Adults (1965-2014)
Low Back Water (25%)
Rainbow River - PHABSIM2 Site



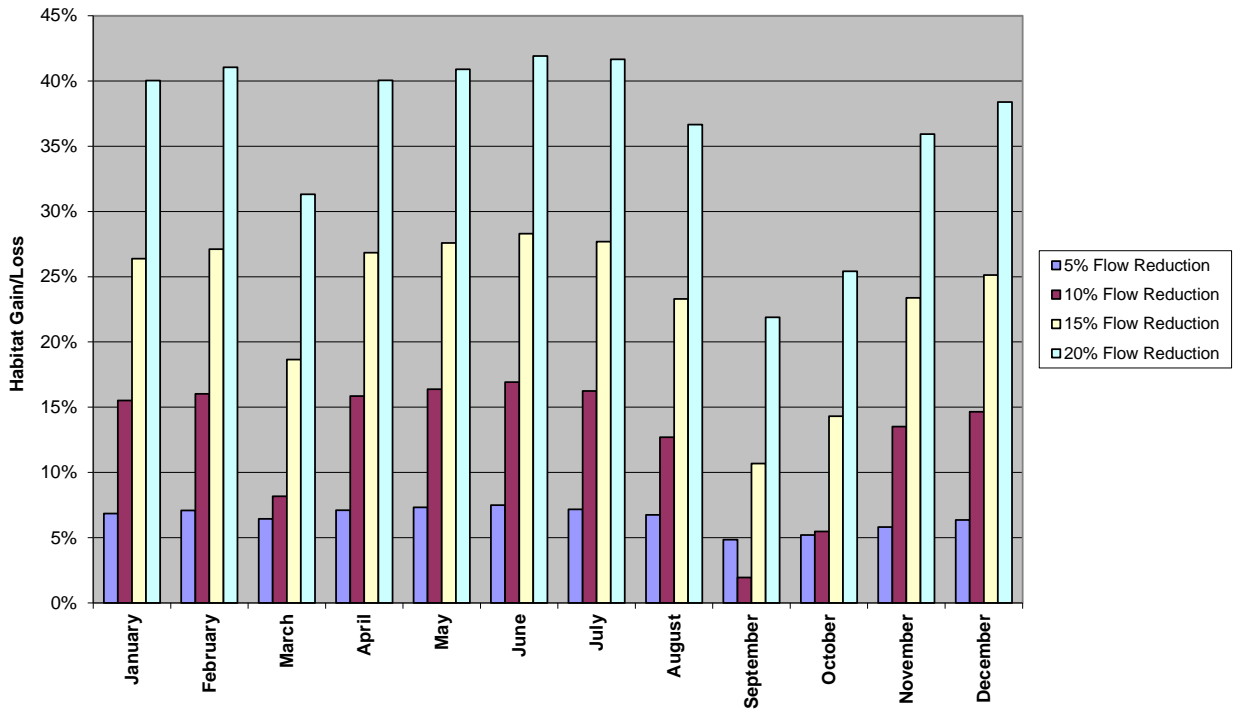
**Largemouth Bass Adults (1965-2014)
Medium Back Water (50%)
Rainbow River - PHABSIM2 Site**



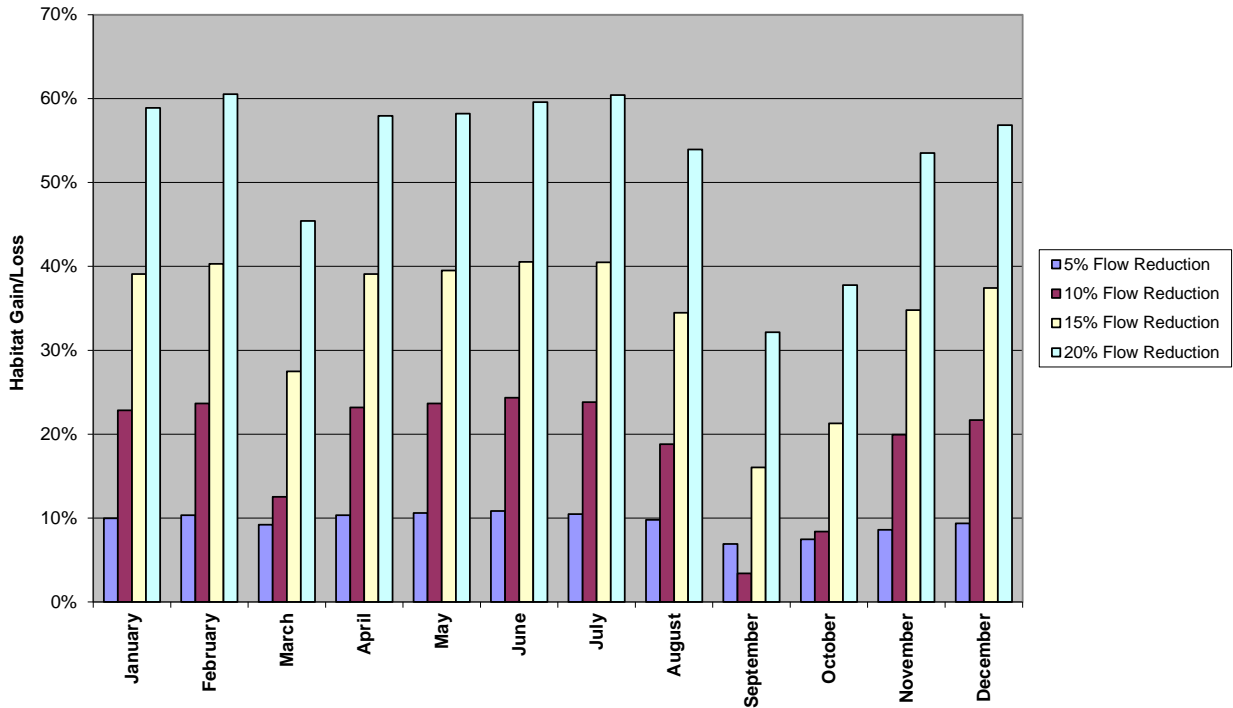
**Largemouth Bass Adults (1965-2014)
High Back Water (75%)
Rainbow River - PHABSIM2 Site**



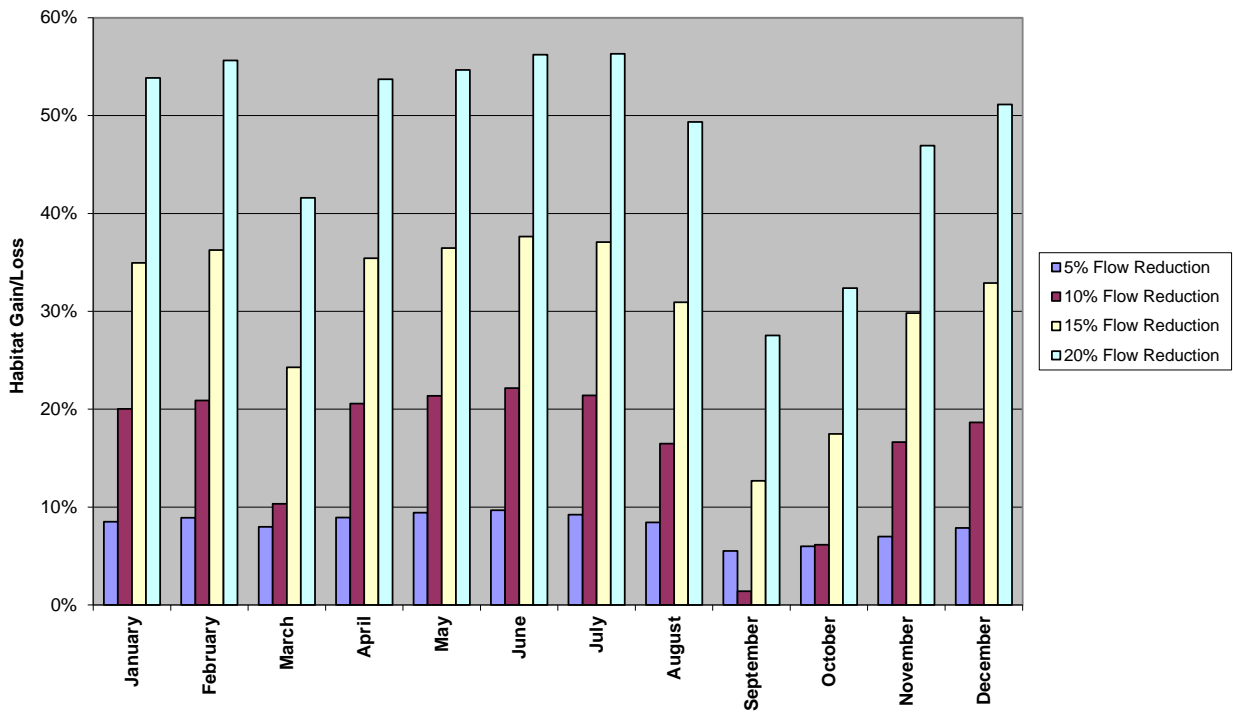
Largemouth Bass Juvenile (1965-2014)
Low Back Water (25%)
Rainbow River - PHABSIM2 Site



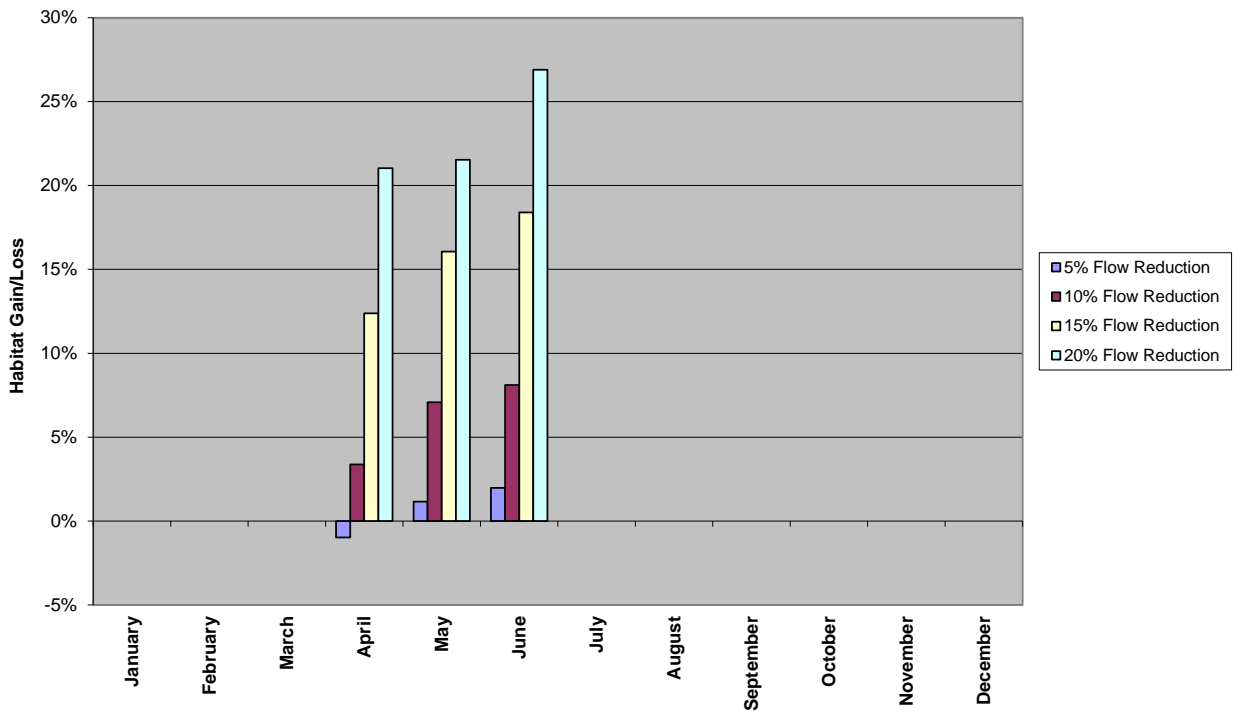
Largemouth Bass Juvenile (1965-2014)
Medium Back Water (50%)
Rainbow River - PHABSIM2 Site



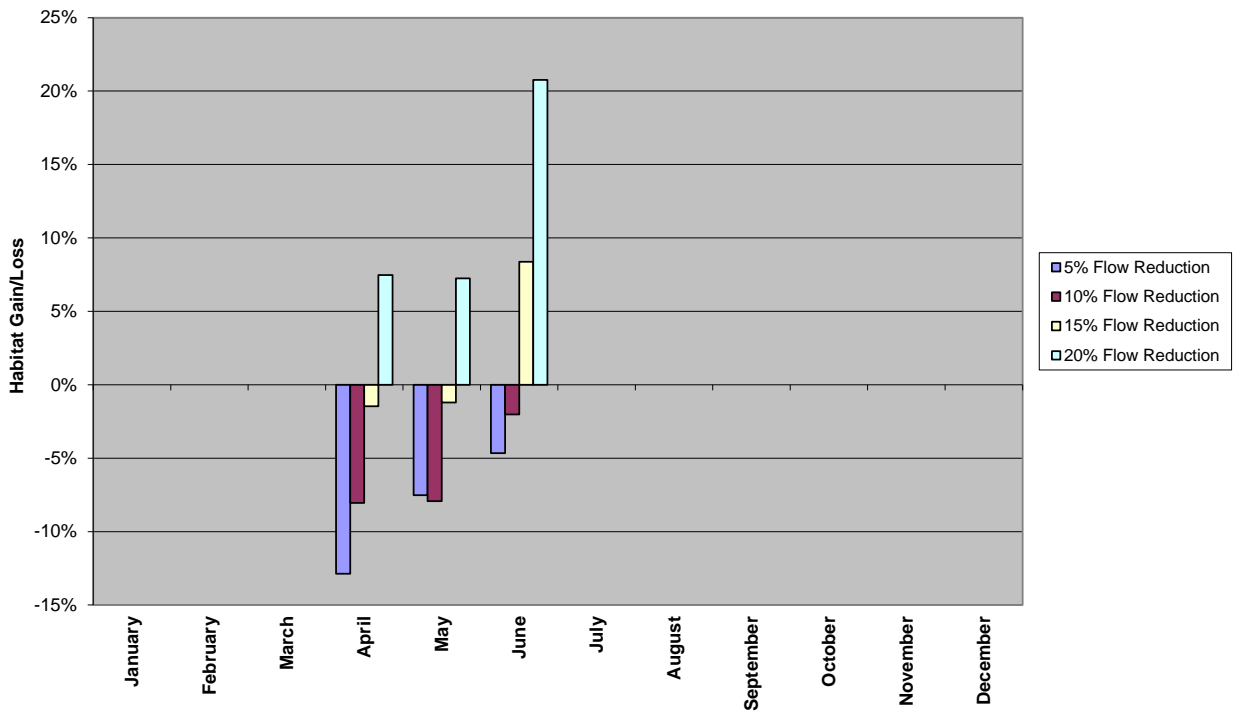
**Largemouth Bass Juvenile (1965-2014)
High Back Water (75%)
Rainbow River - PHABSIM2 Site**



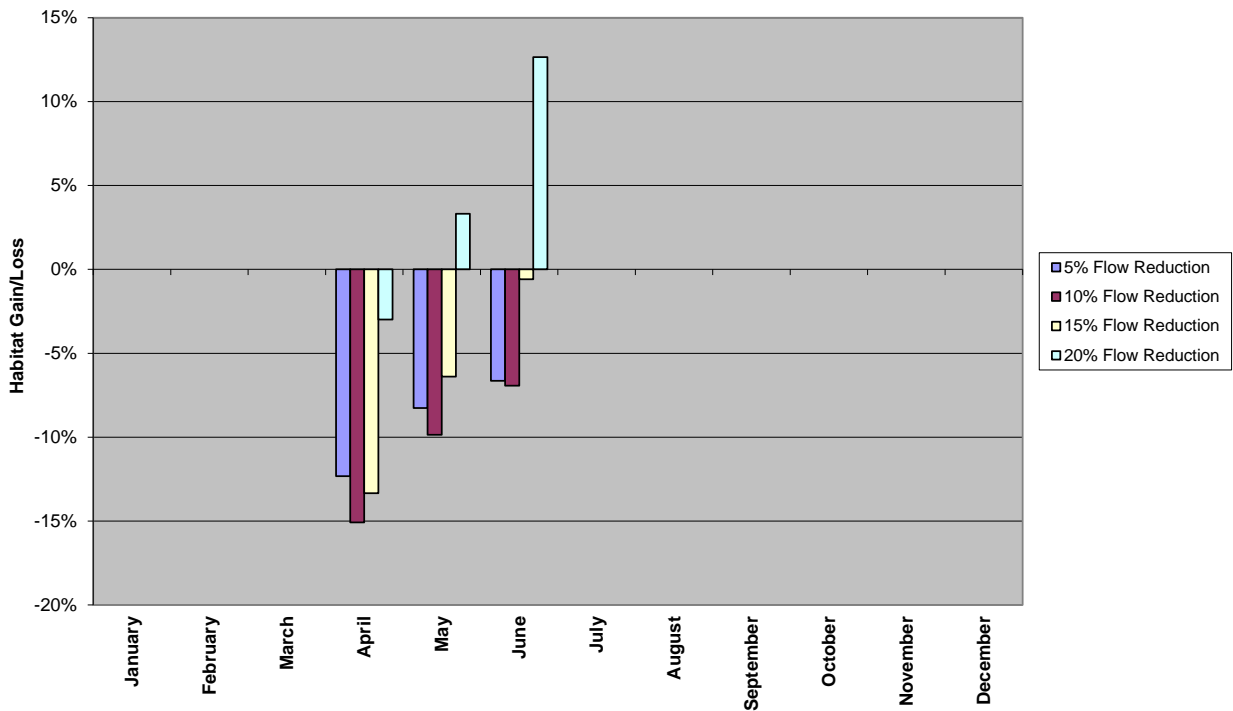
**Largemouth Bass Spawning (1965-2014)
Low Back Water (25%)
Rainbow River - PHABSIM2 Site**



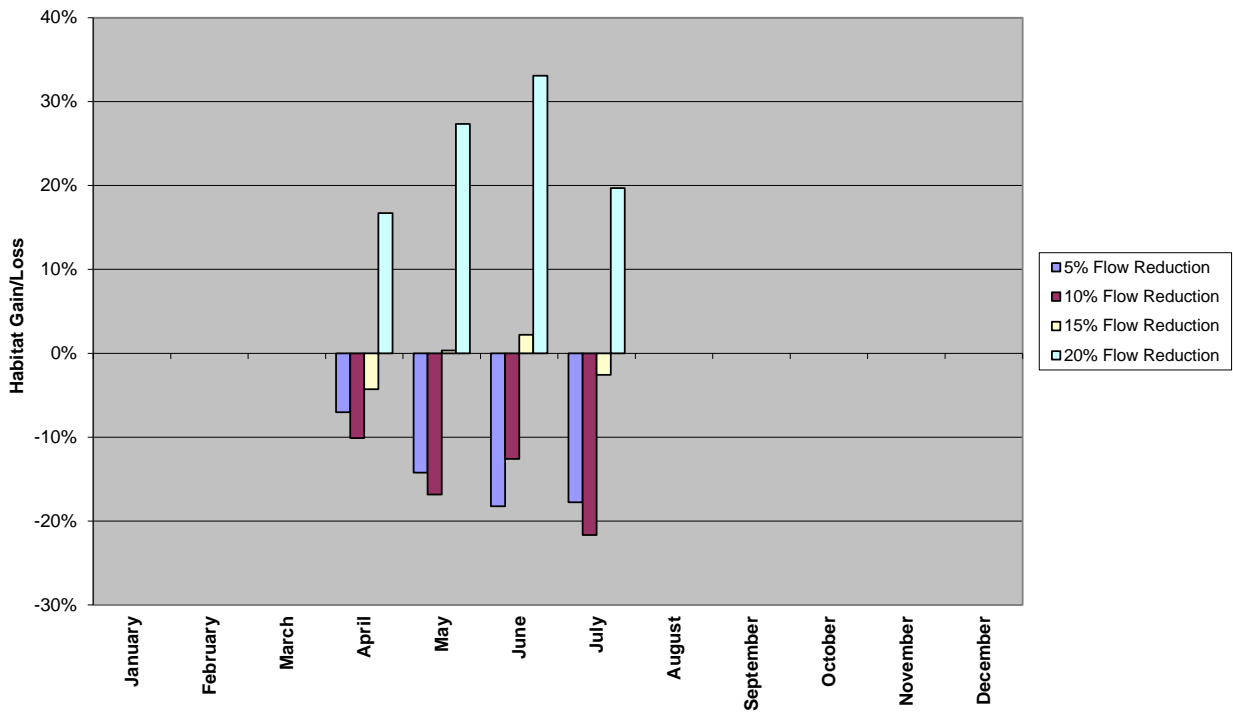
**Largemouth Bass Spawning (1965-2014)
Medium Back Water (50%)
Rainbow River - PHABSIM2 Site**



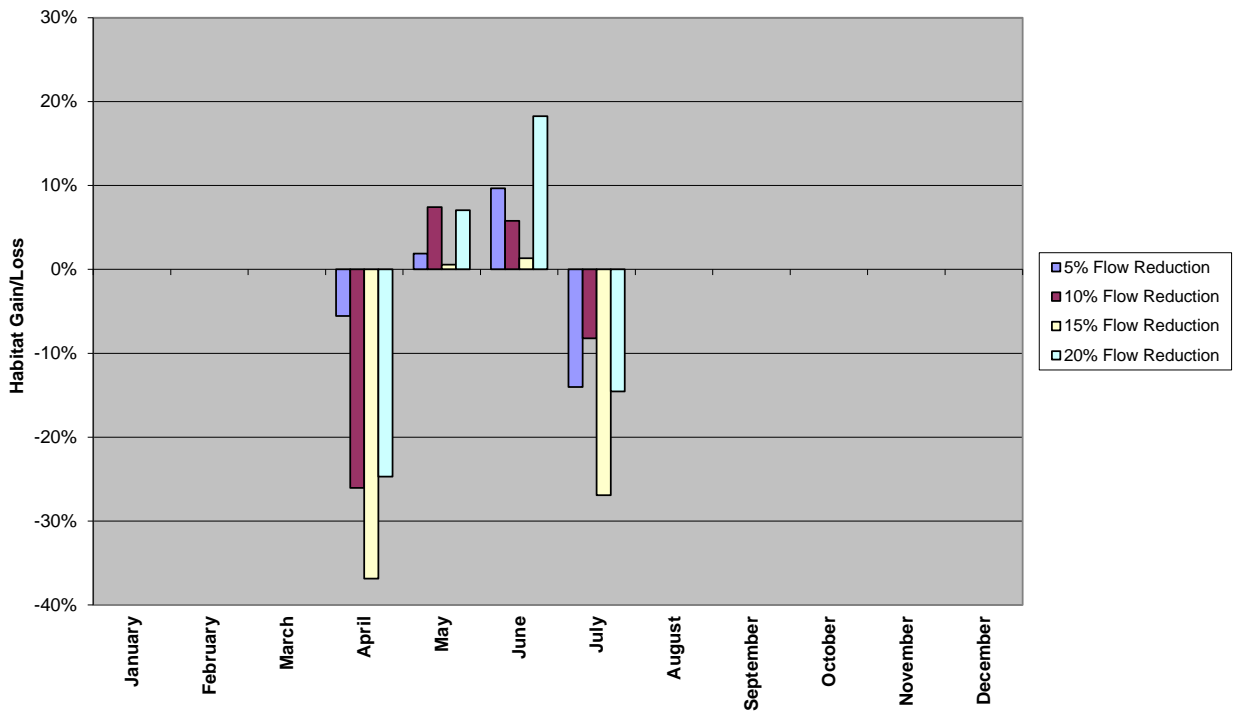
**Largemouth Bass Spawning (1965-2014)
High Back Water (75%)
Rainbow River - PHABSIM2 Site**



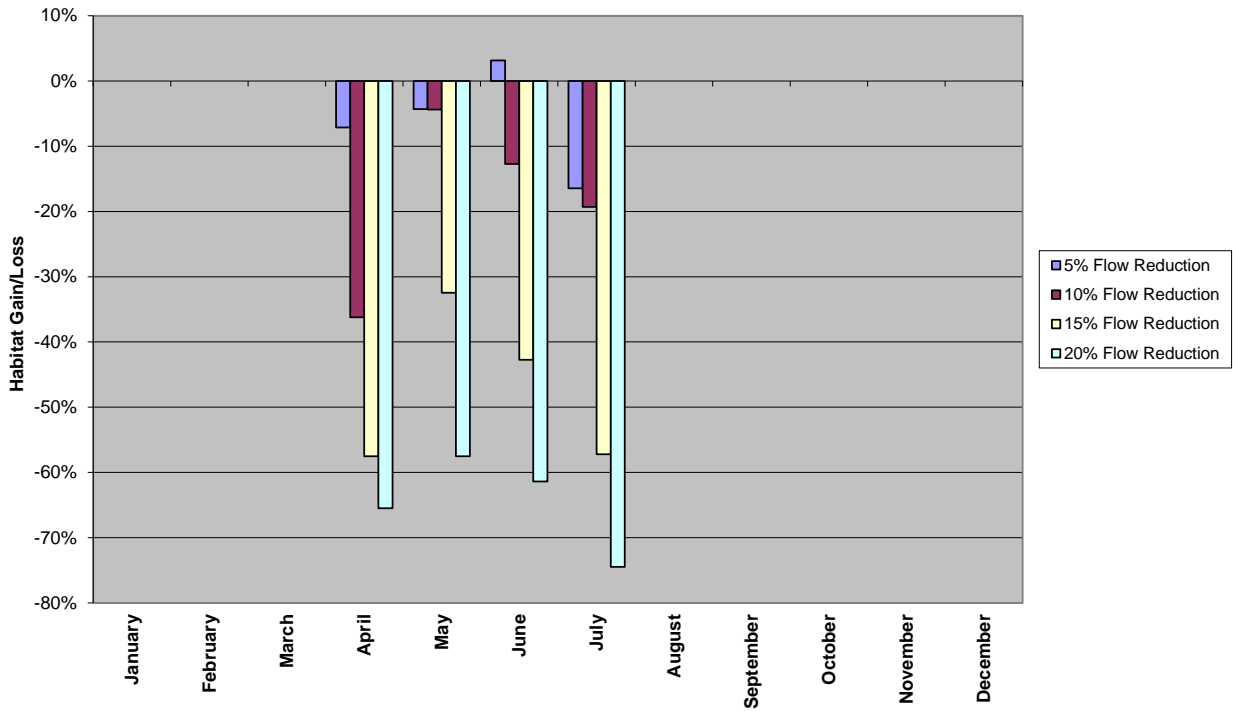
Largemouth Bass Fry (1965-2014)
Low Back Water (25%)
Rainbow River - PHABSIM2 Site



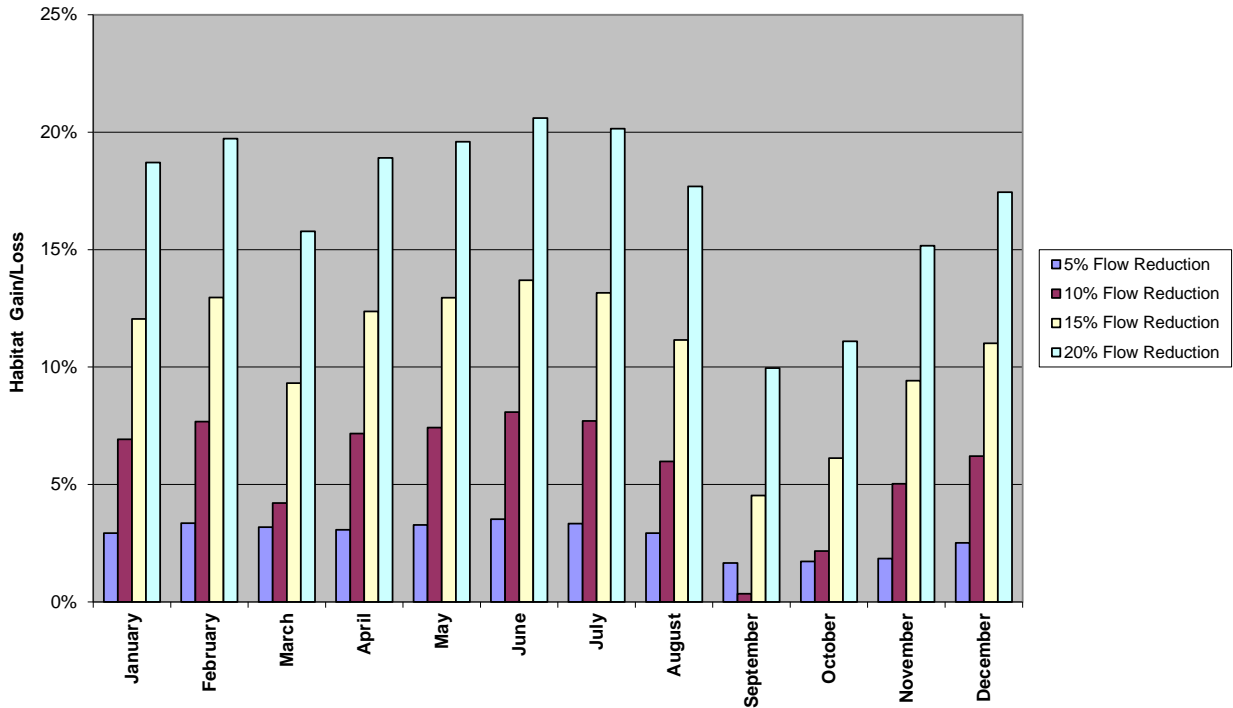
Largemouth Bass Fry (1965-2014)
Medium Back Water (50%)
Rainbow River - PHABSIM2 Site



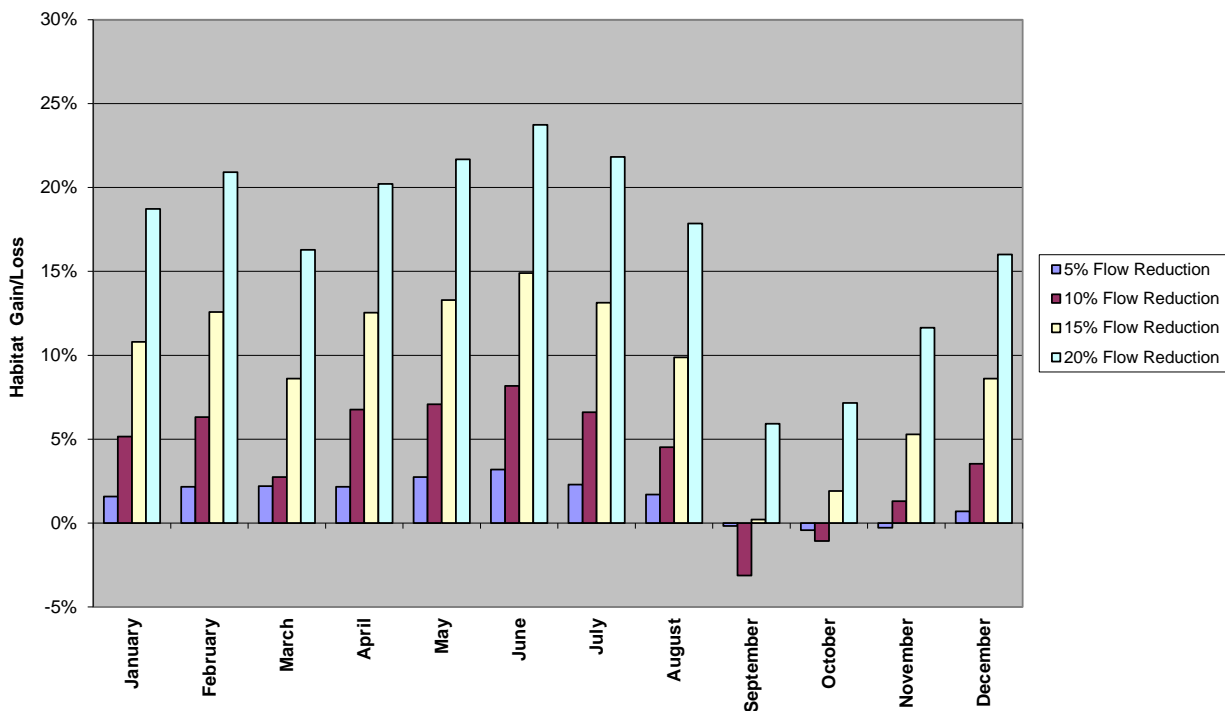
Largemouth Bass Fry (1965-2014)
High Back Water (75%)
Rainbow River - PHABSIM2 Site



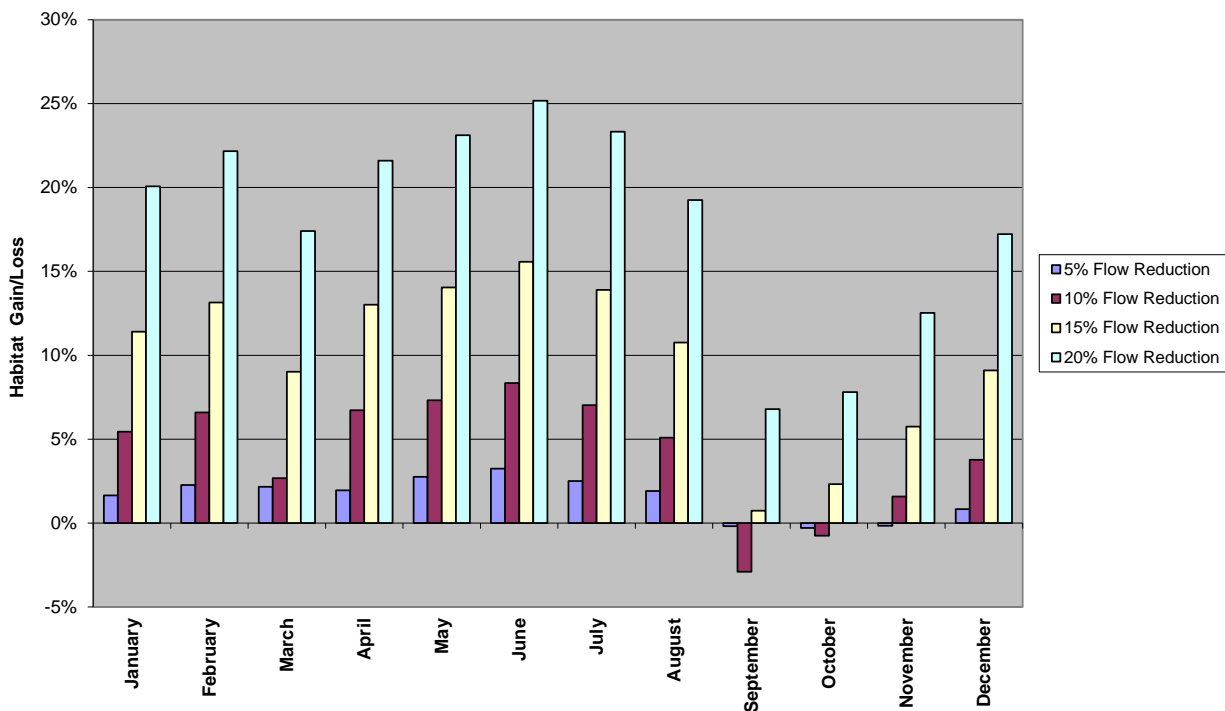
Bluegill Sunfish Adults (1965-2014)
Low Back Water (25%)
Rainbow River - PHABSIM2 Site



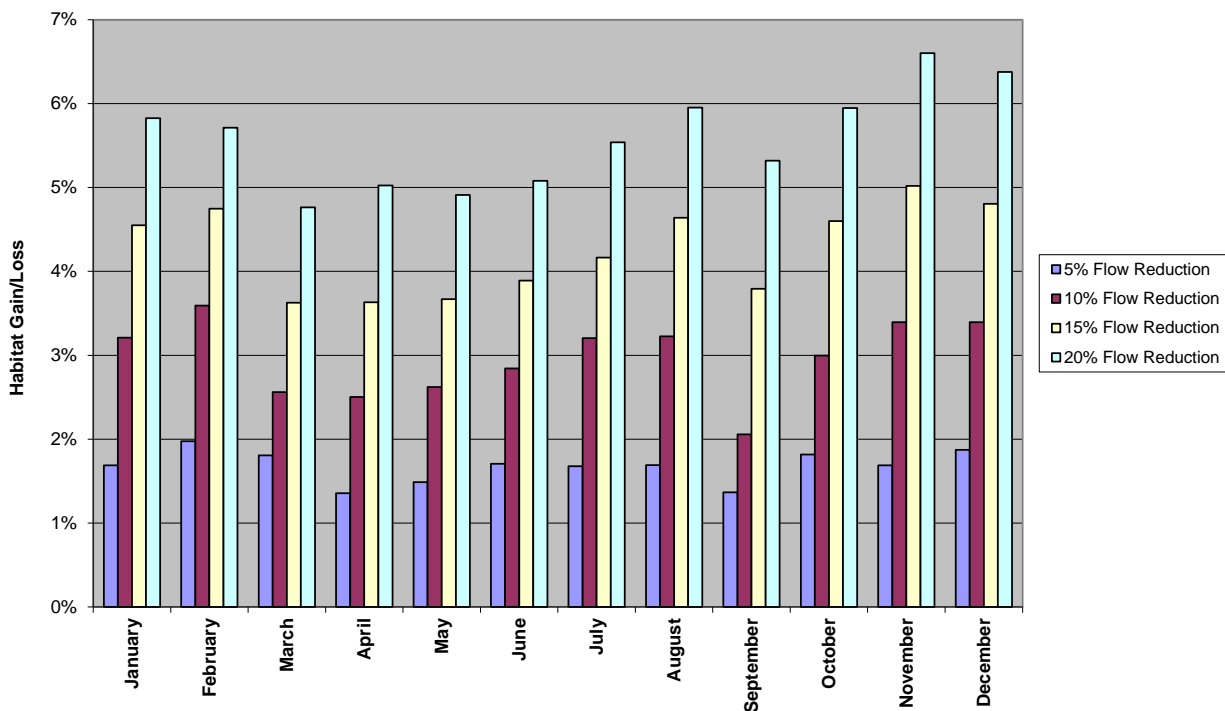
**Bluegill Sunfish Adults (1965-2014)
Medium Back Water (50%)
Rainbow River - PHABSIM2 Site**



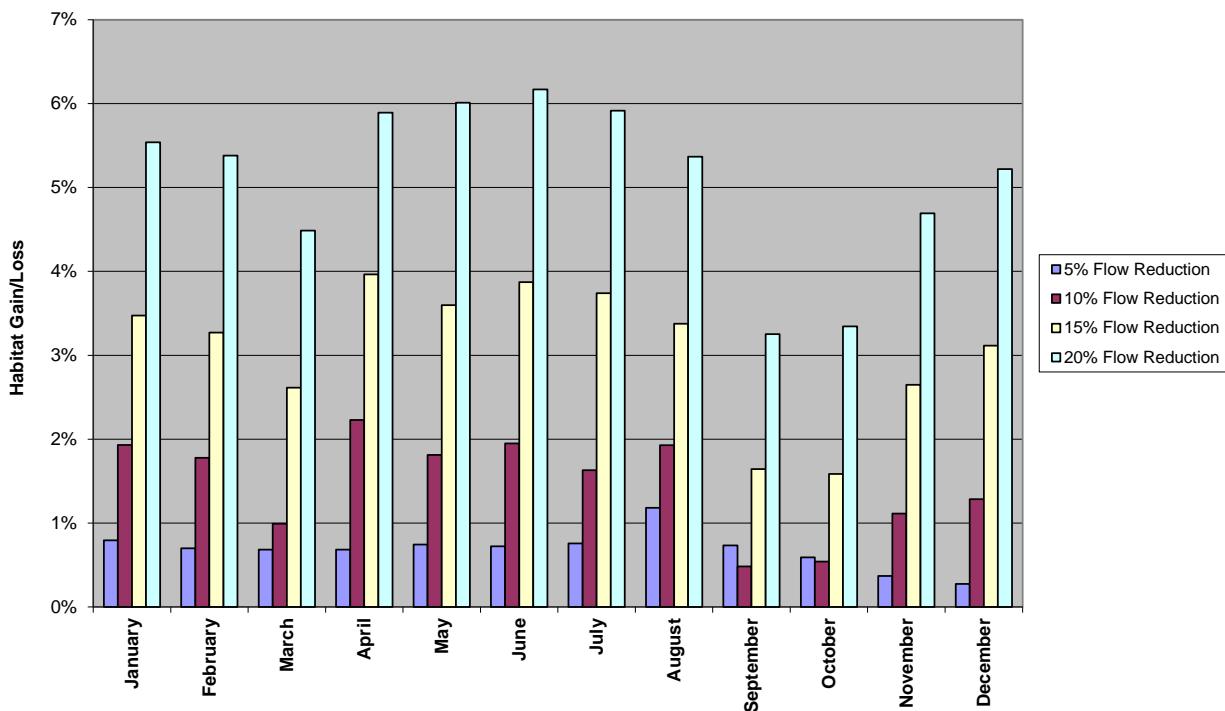
**Bluegill Sunfish Adults (1965-2014)
High Back Water (75%)
Rainbow River - PHABSIM2 Site**



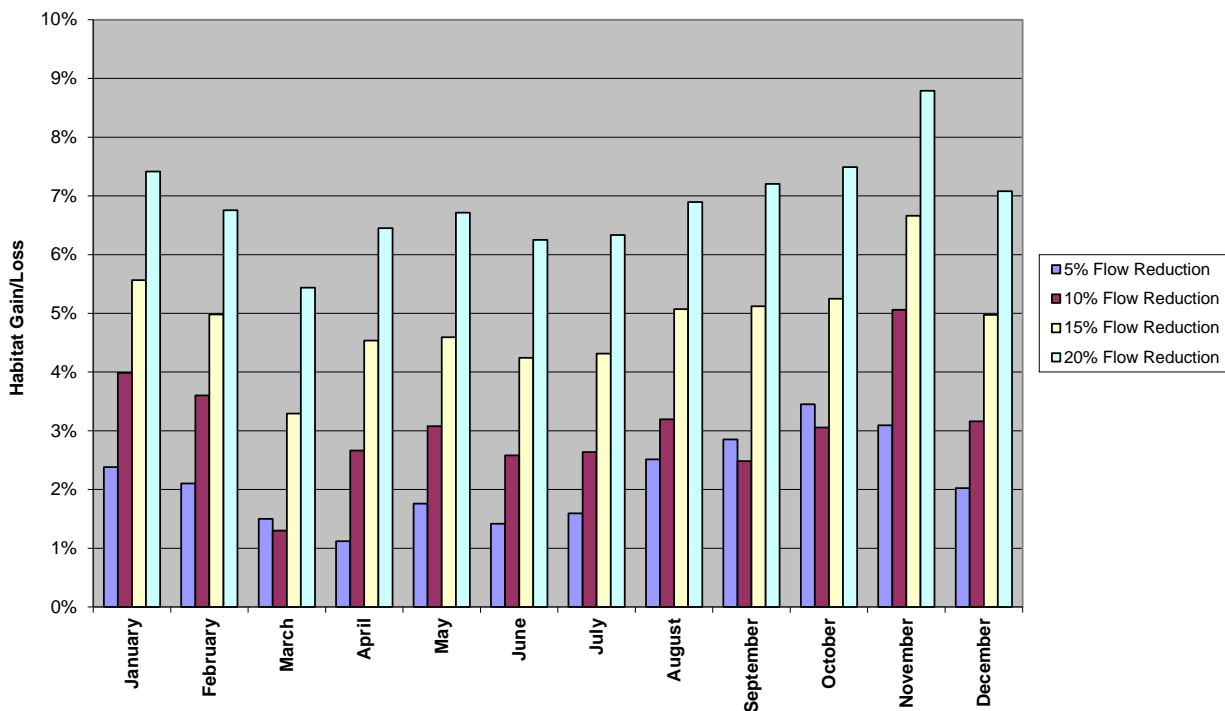
Bluegill Sunfish Juveniles (1965-2014)
Low Back Water (25%)
Rainbow River - PHABSIM2 Site



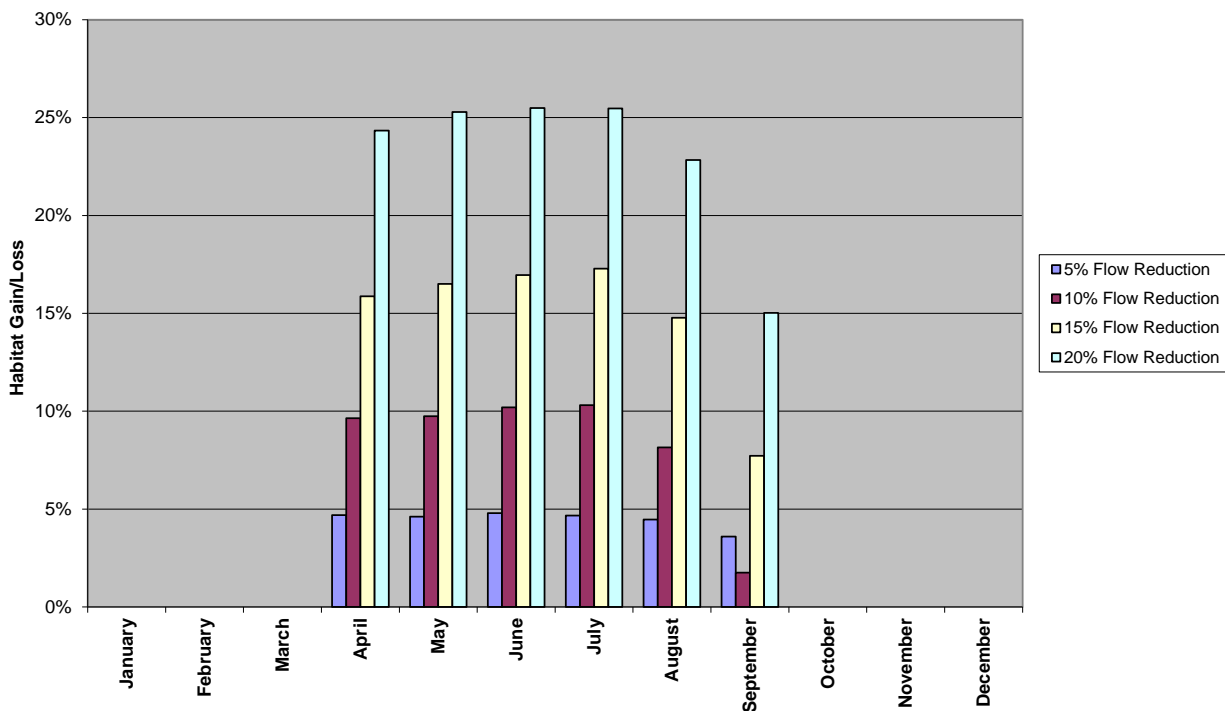
Bluegill Sunfish Juveniles (1965-2014)
Medium Back Water (50%)
Rainbow River - PHABSIM2 Site



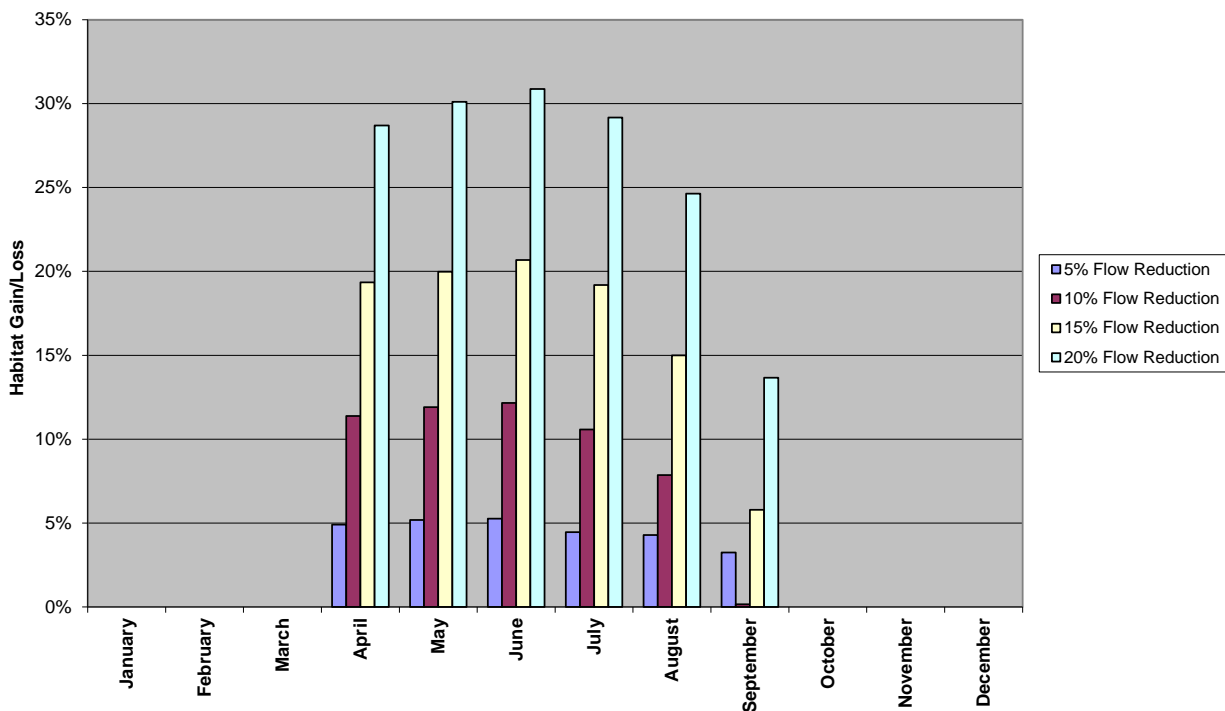
Bluegill Sunfish Juveniles (1965-2014)
High Back Water (75%)
Rainbow River - PHABSIM2 Site



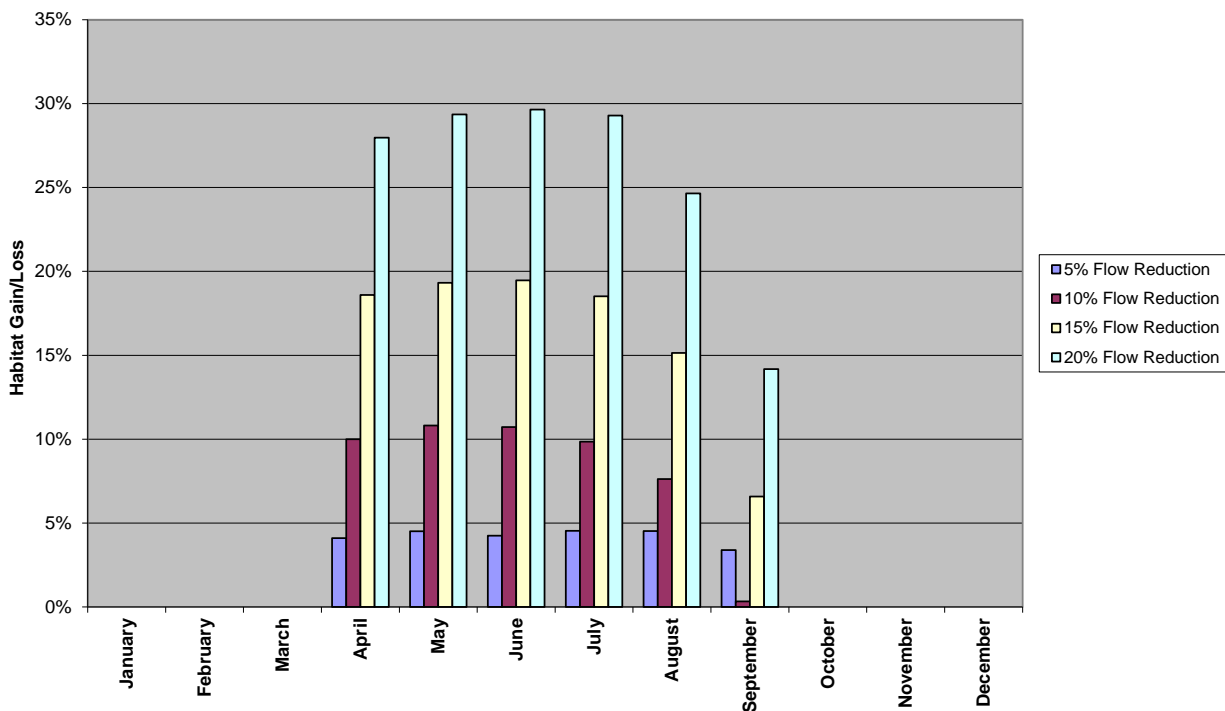
Bluegill Sunfish Spawning (1965-2014)
Low Back Water (25%)
Rainbow River - PHABSIM2 Site



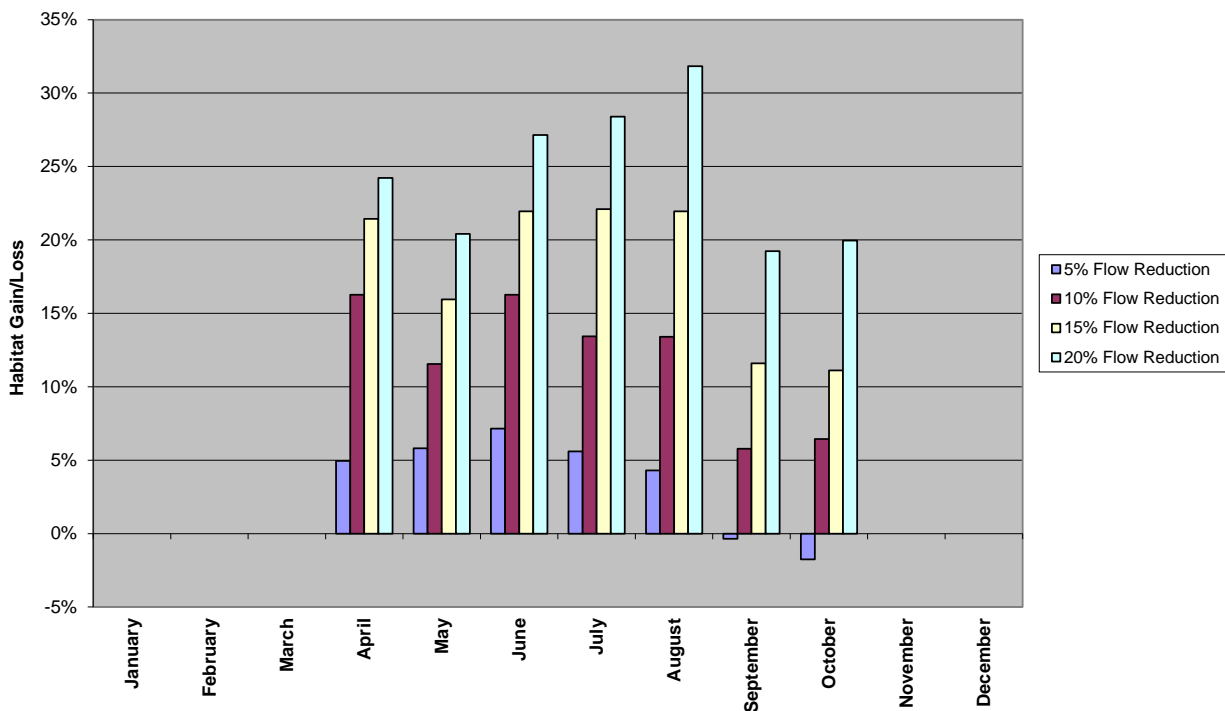
**Bluegill Sunfish Spawning (1965-2014)
Medium Back Water (50%)
Rainbow River - PHABSIM2 Site**



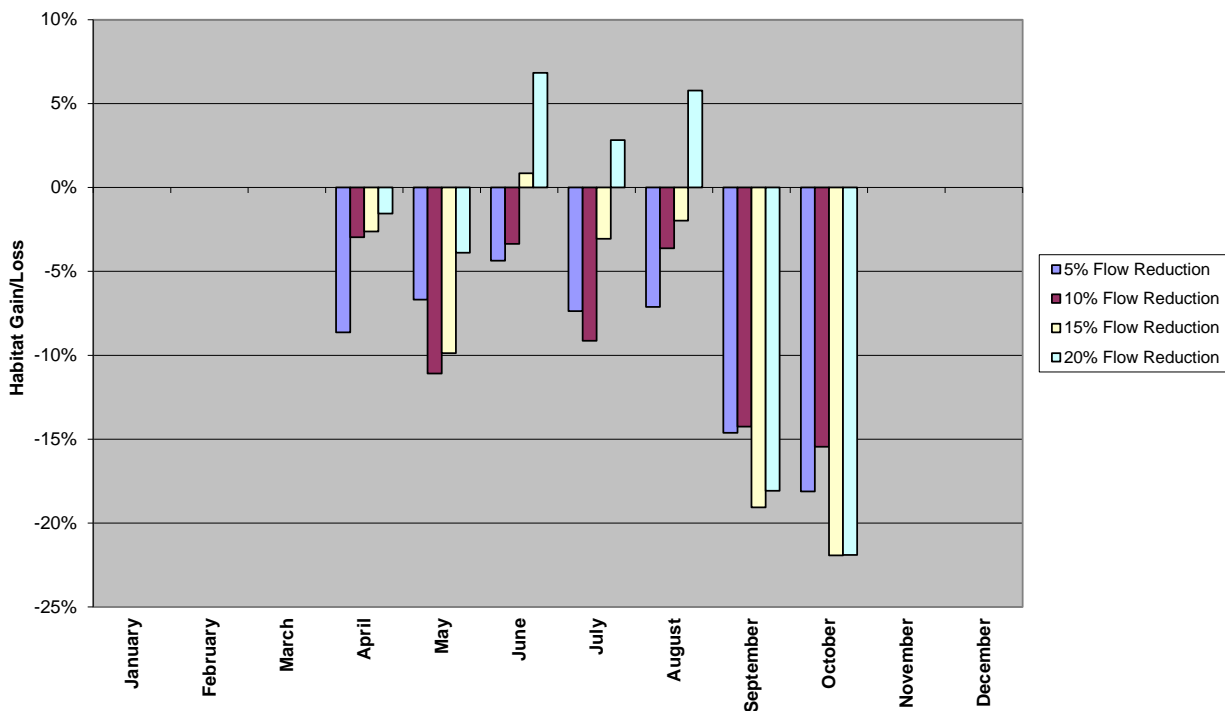
**Bluegill Sunfish Spawning (1965-2014)
High Back Water (75%)
Rainbow River - PHABSIM2 Site**



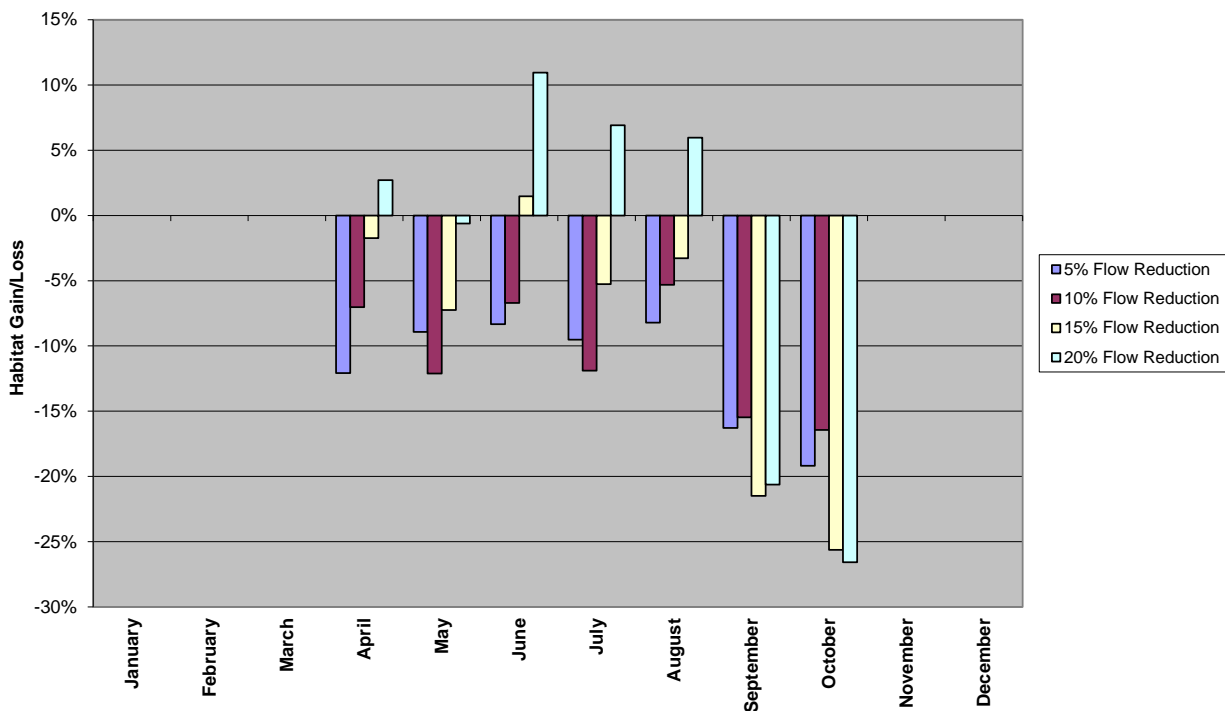
Bluegill Sunfish Fry (1965-2014)
Low Back Water (25%)
Rainbow River - PHABSIM2 Site



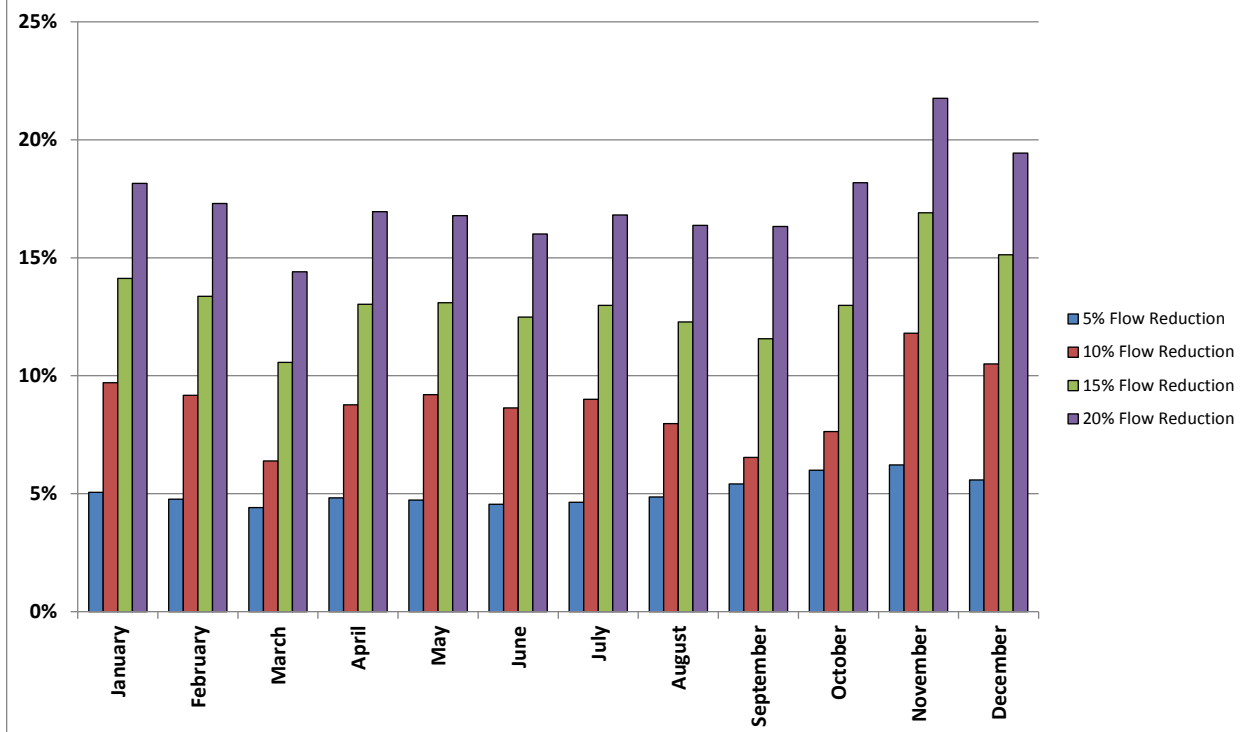
Bluegill Sunfish Fry (1965-2014)
Medium Back Water (50%)
Rainbow River - PHABSIM2 Site

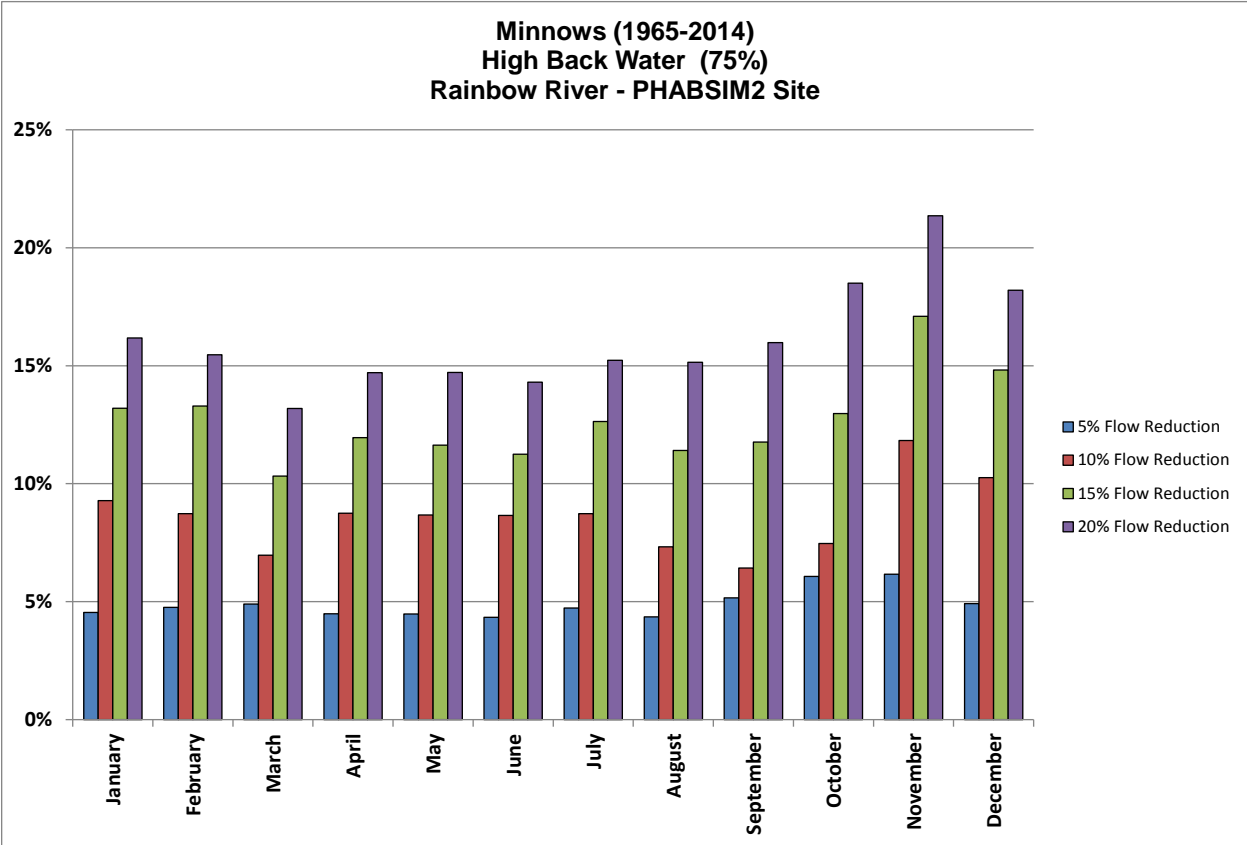
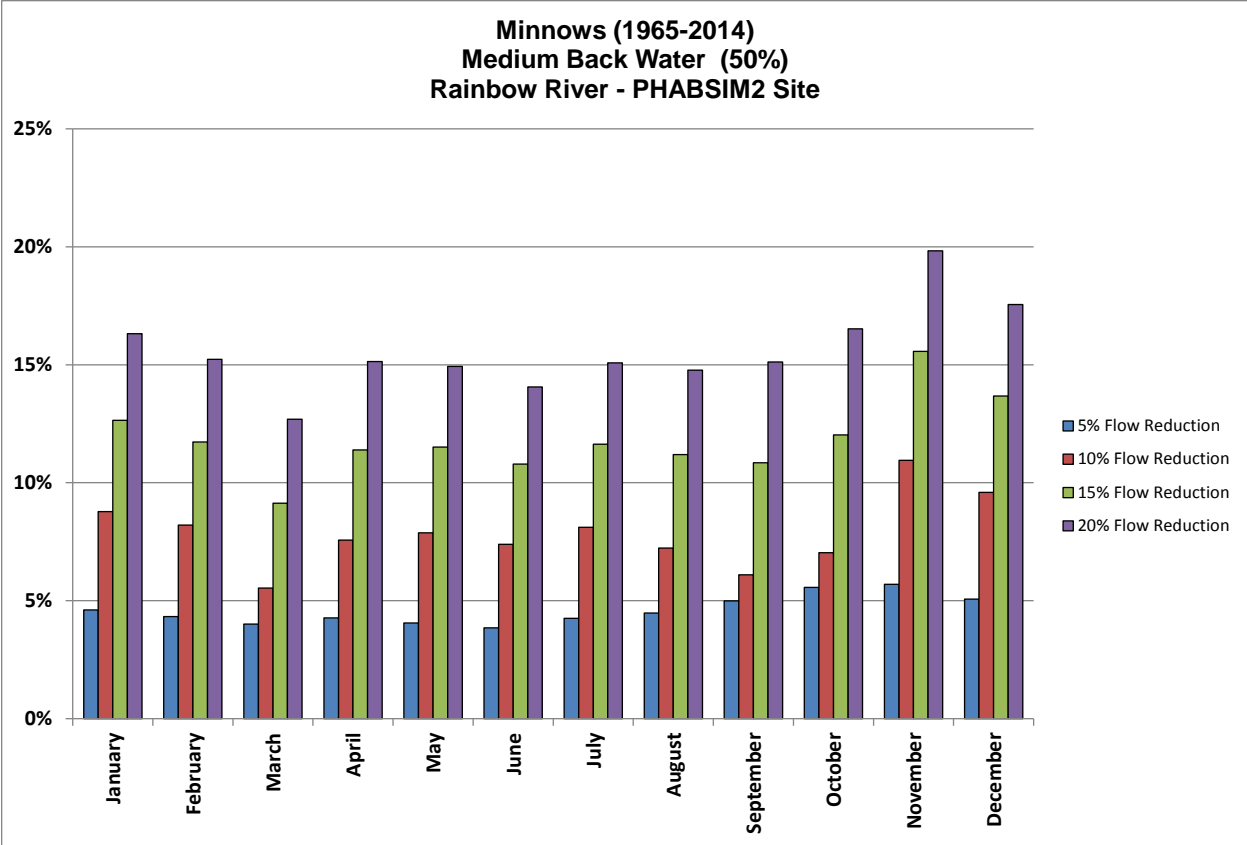


Bluegill Sunfish Fry (1965-2014)
High Back Water (75%)
Rainbow River - PHABSIM2 Site



Minnows (1965-2014)
Low Back Water (25%)
Rainbow River - PHABSIM2 Site

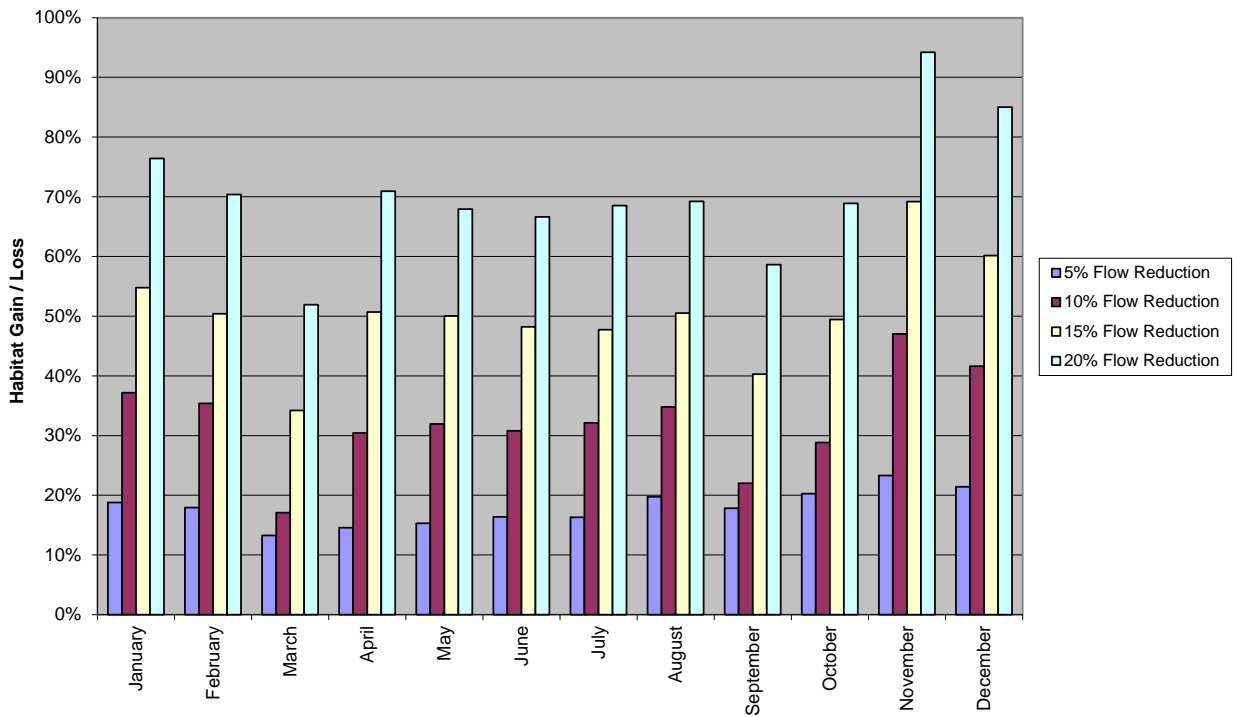




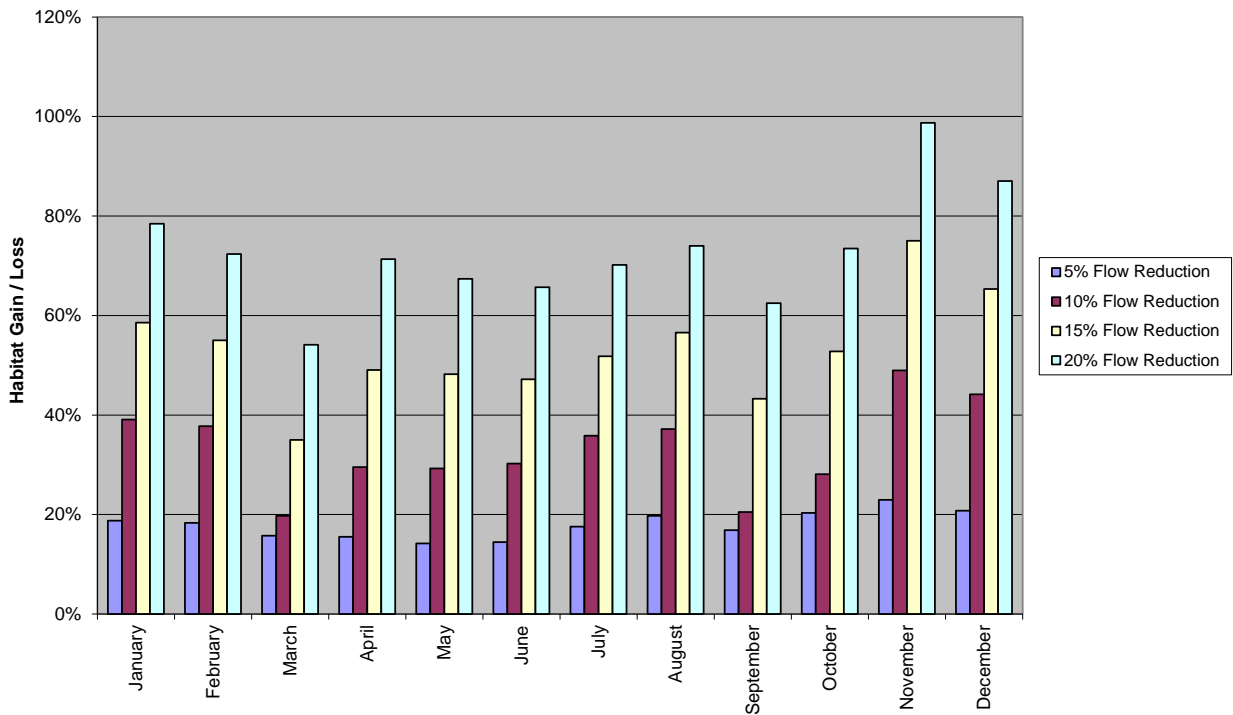
Section 3

Rainbow River System PHABSIM Modeling Results: Habitat Gain/Loss vs. 5, 10, 15, and 20% Flow Reduction Plots for Pool Site

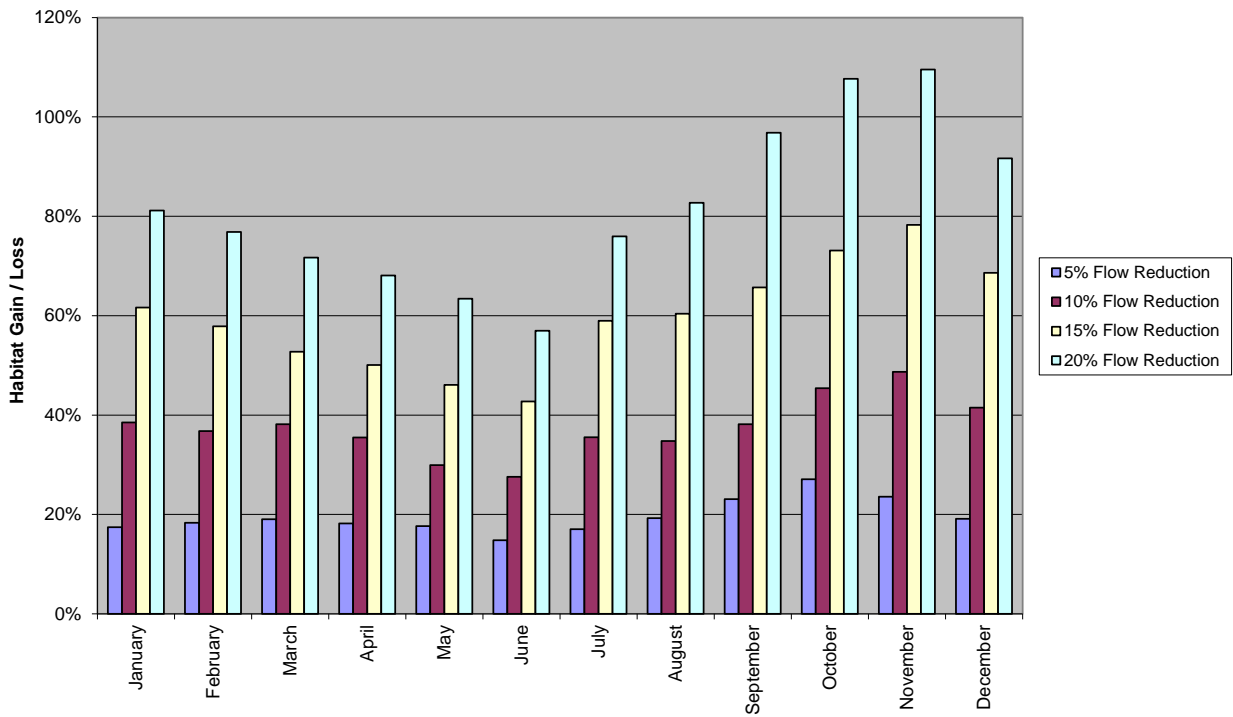
**Shallow-Slow Fish Habitat Guild (1965-2014)
Low Back Water (25%)
Rainbow River - Pool Site**



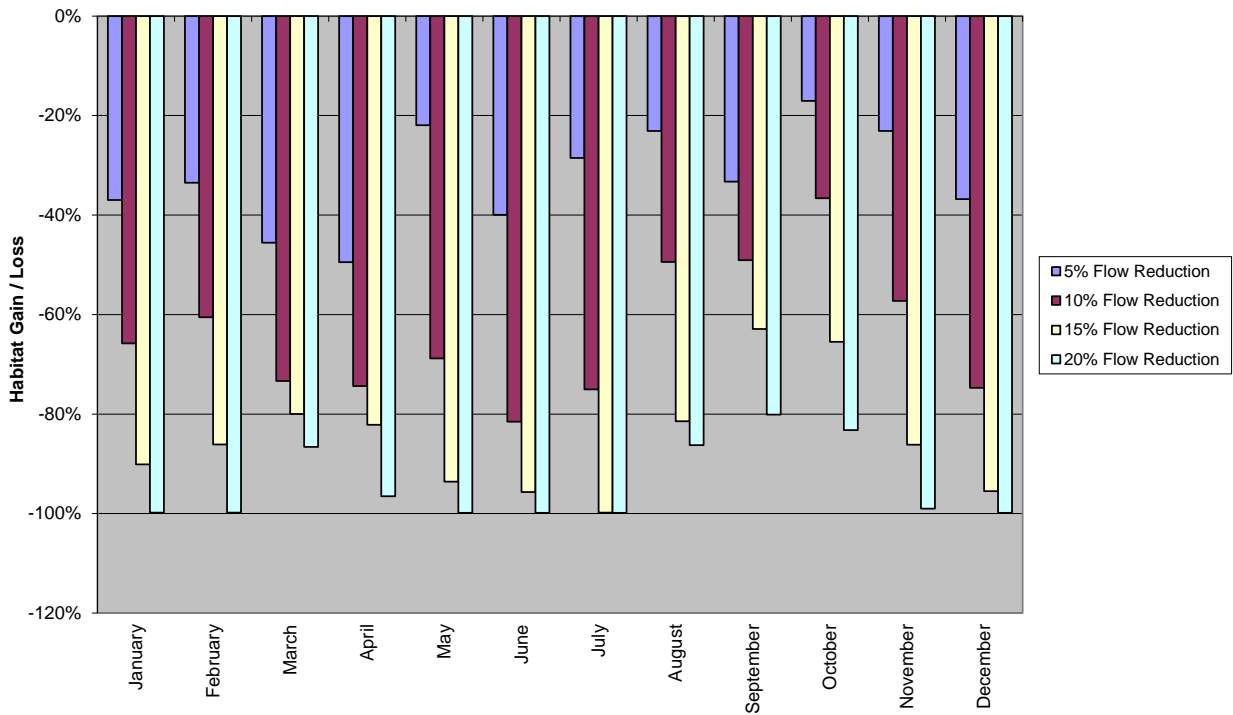
**Shallow-Slow Fish Habitat Guild (1965-2014)
Medium Back Water (50%)
Rainbow River - Pool Site**



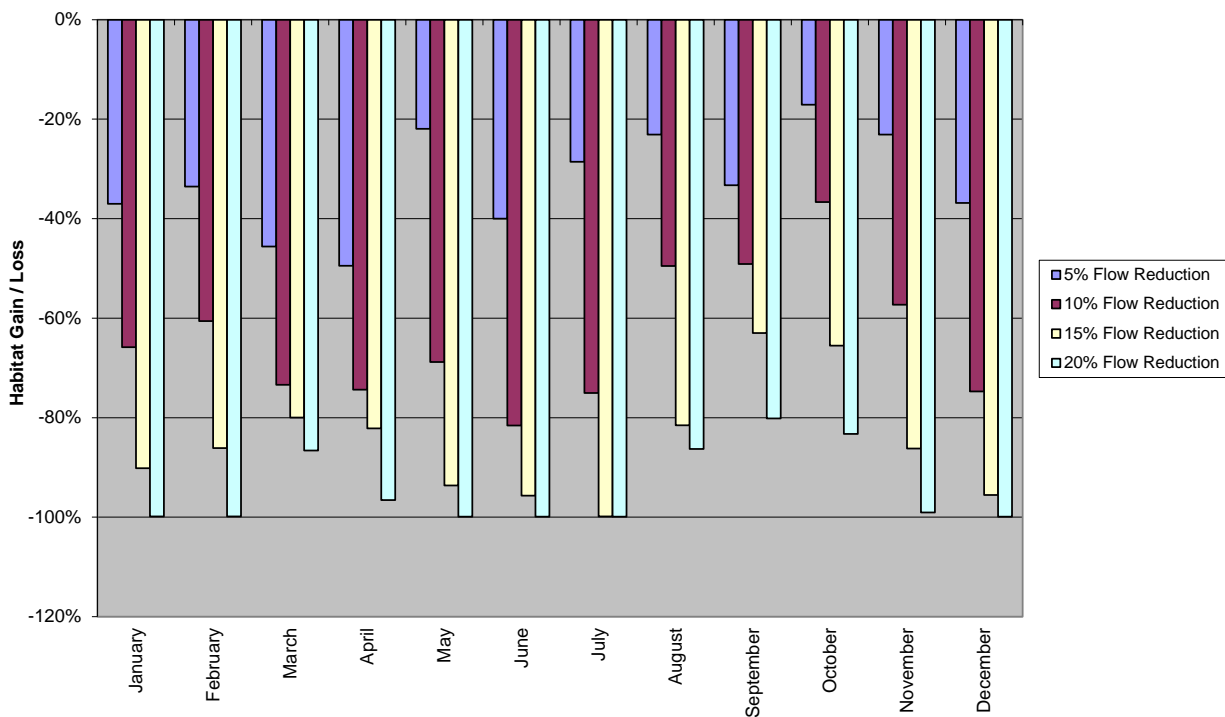
**Shallow-Slow Fish Habitat Guild (1965-2014)
High Back Water (75%)
Rainbow River - Pool Site**



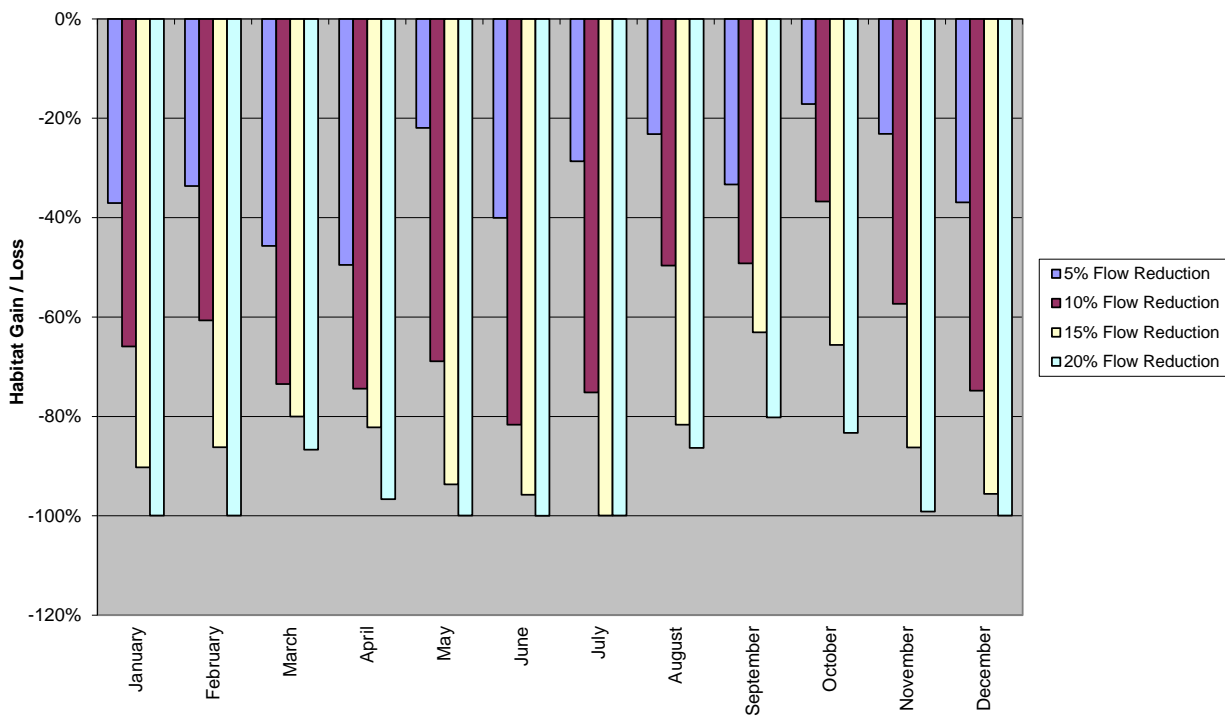
**Shallow-Fast Fish Habitat Guild (1965-2014)
Low Back Water (25%)
Rainbow River - Pool Site**



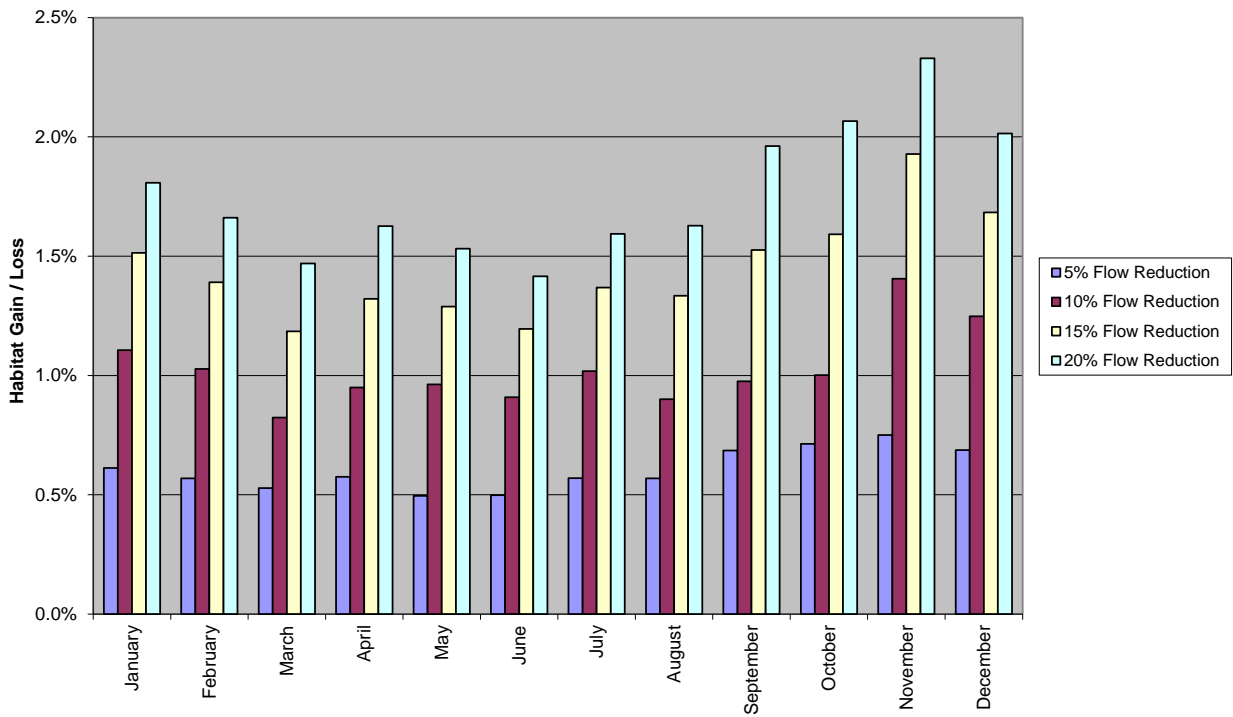
**Shallow-Fast Fish Habitat Guild (1965-2014)
Medium Back Water (50%)
Rainbow River - Pool Site**



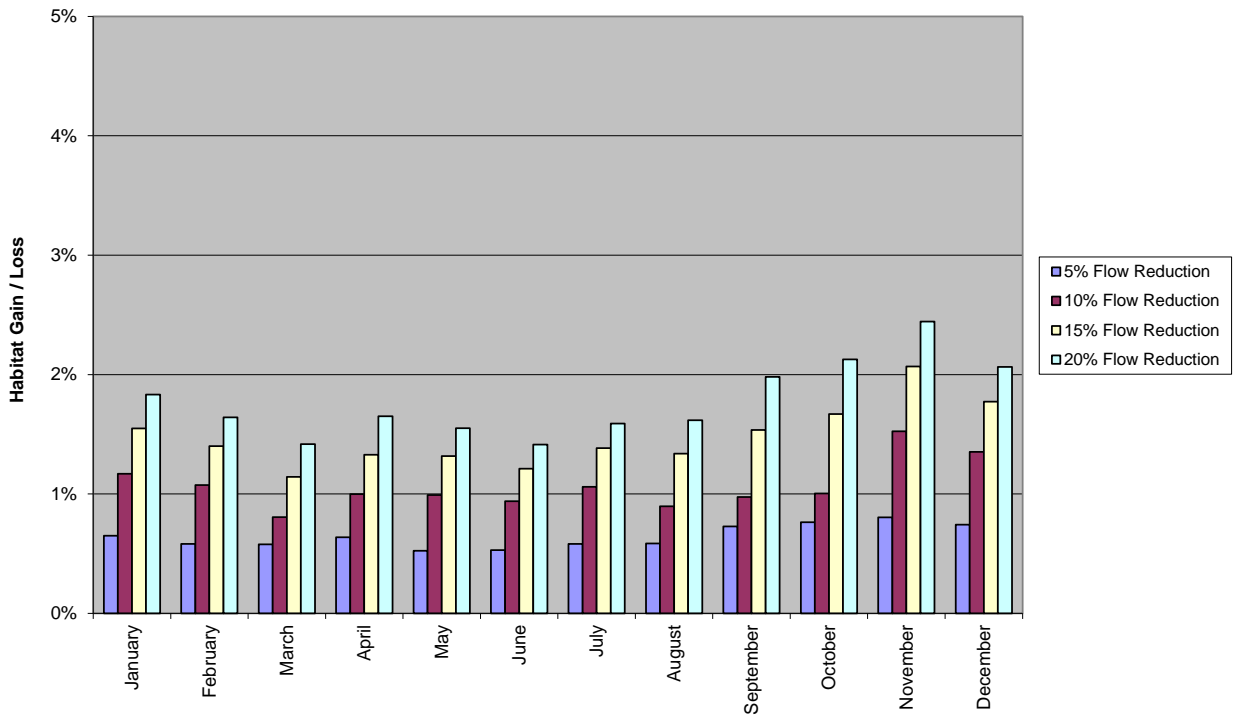
**Shallow-Fast Fish Habitat Guild (1965-2014)
High Back Water (75%)
Rainbow River - Pool Site**



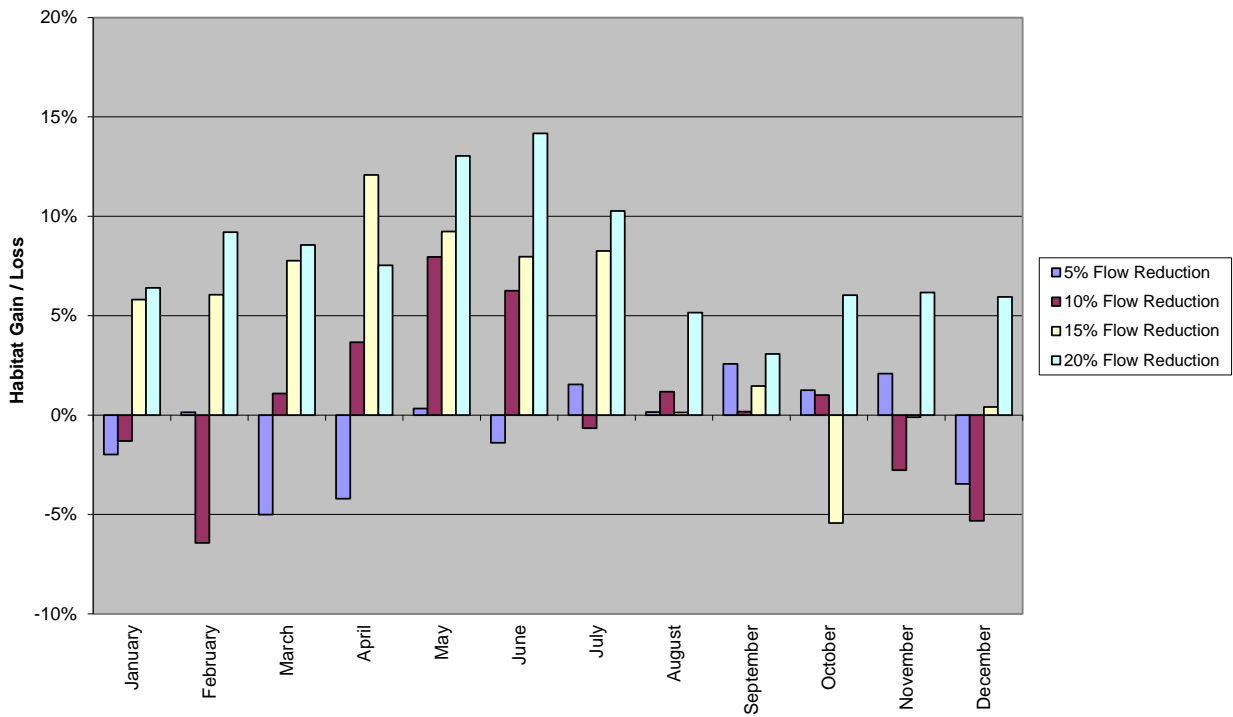
**Deep-Slow Fish Habitat Guild (1965-2014)
Low Back Water (25%)
Rainbow River - Pool Site**



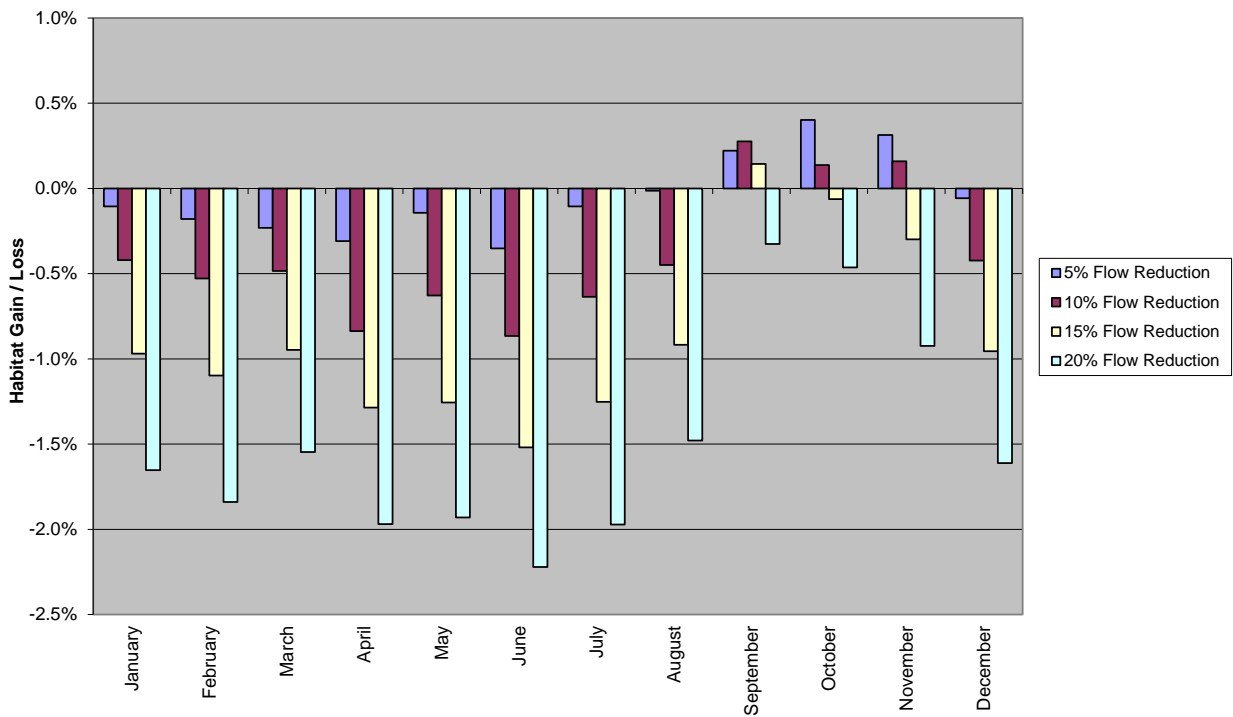
**Deep-Slow Fish Habitat Guild (1965-2014)
Medium Back Water (50%)
Rainbow River - Pool Site**



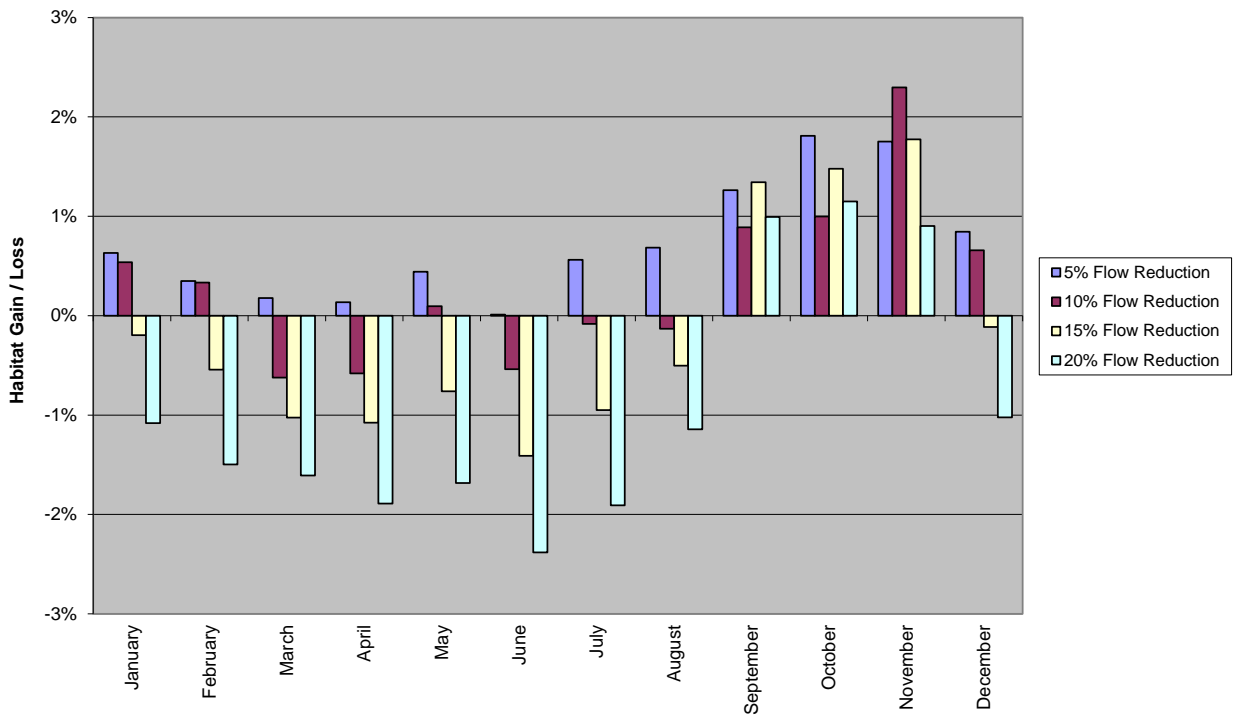
**Deep-Slow Fish Habitat Guild (1965-2014)
High Back Water (75%)
Rainbow River - Pool Site**



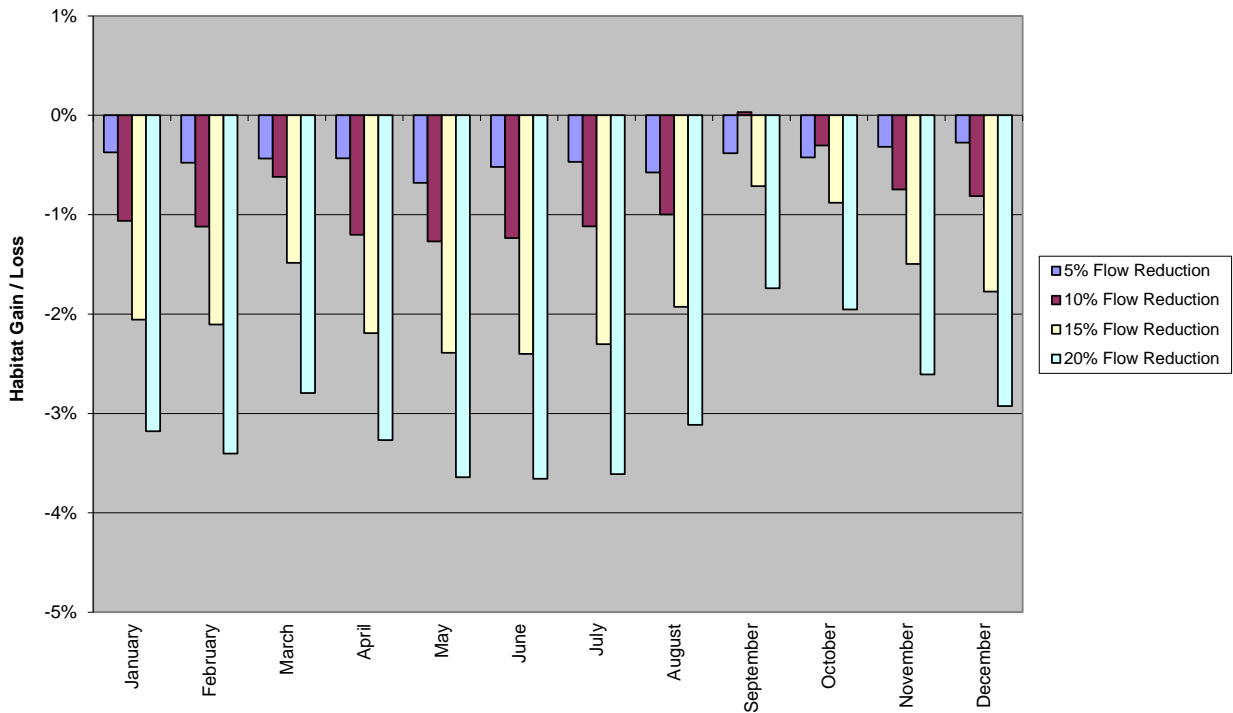
**Deep-Fast Fish Habitat Guild (1965-2014)
Low Back Water (25%)
Rainbow River - Pool Site**



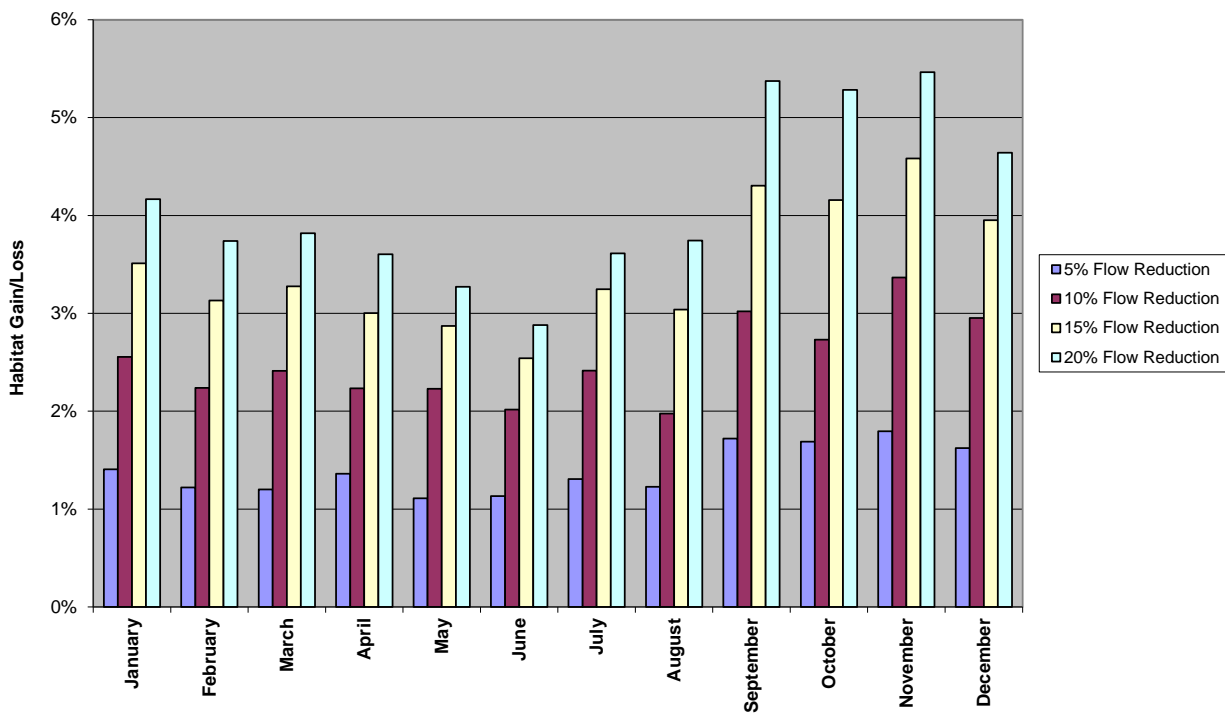
**Deep-Fast Fish Habitat Guild (1965-2014)
Medium Back Water (50%)
Rainbow River - Pool Site**



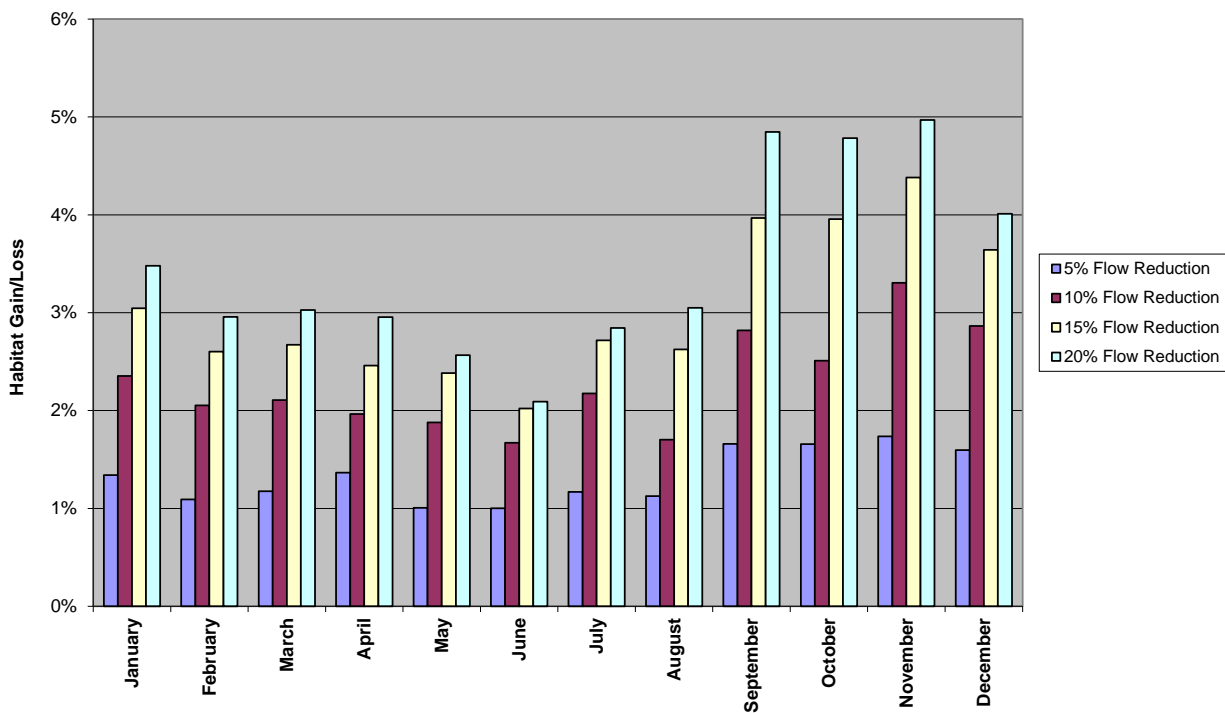
**Deep-Fast Fish Habitat Guild (1965-2014)
High Back Water (75%)
Rainbow River - Pool Site**



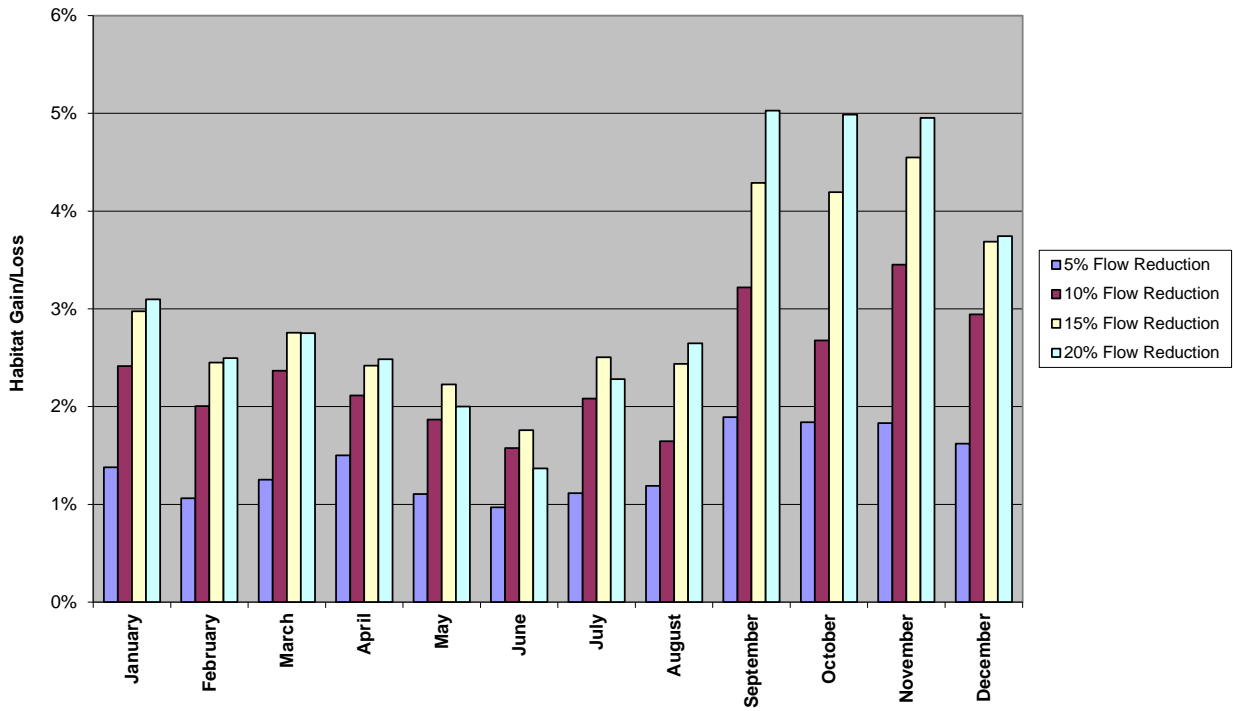
Spotted Sunfish Adults (1965-2014)
Low Back Water (25%)
Rainbow River - Pool Site



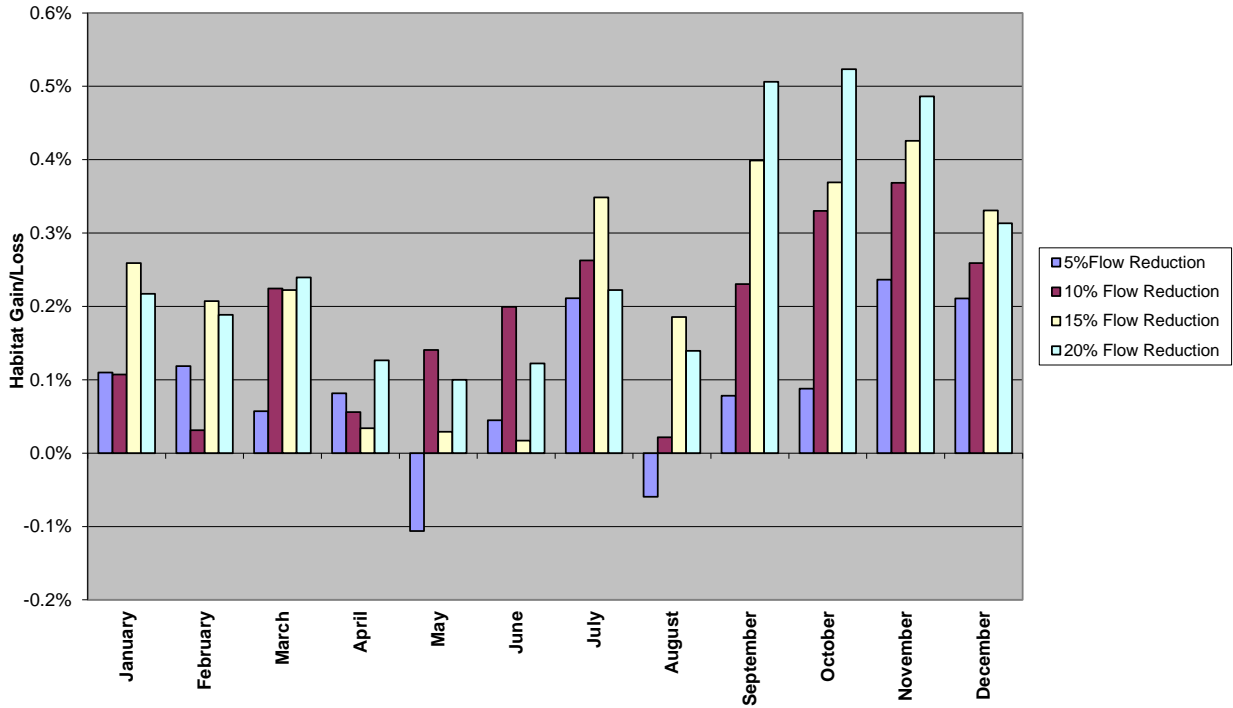
Spotted Sunfish Adults (1965-2014)
Medium Back Water (50%)
Rainbow River - Pool Site



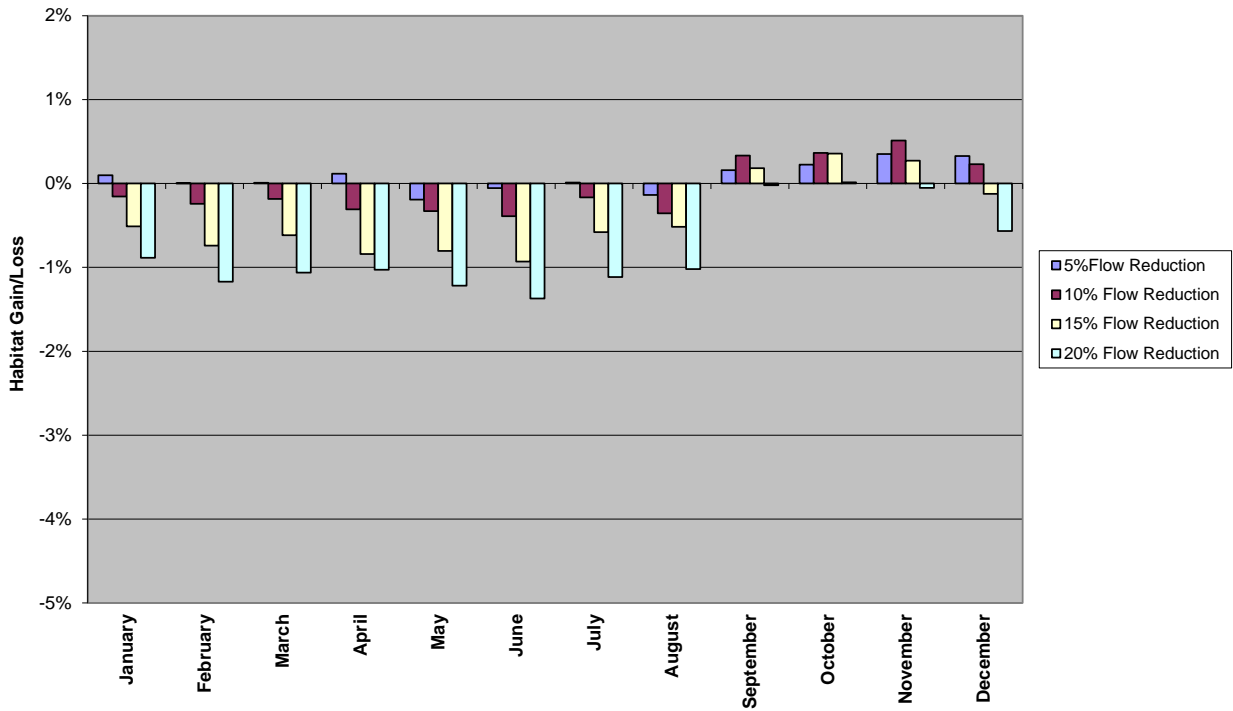
**Spotted Sunfish Adults (1965-2014)
High Back Water (75%)
Rainbow River - Pool Site**



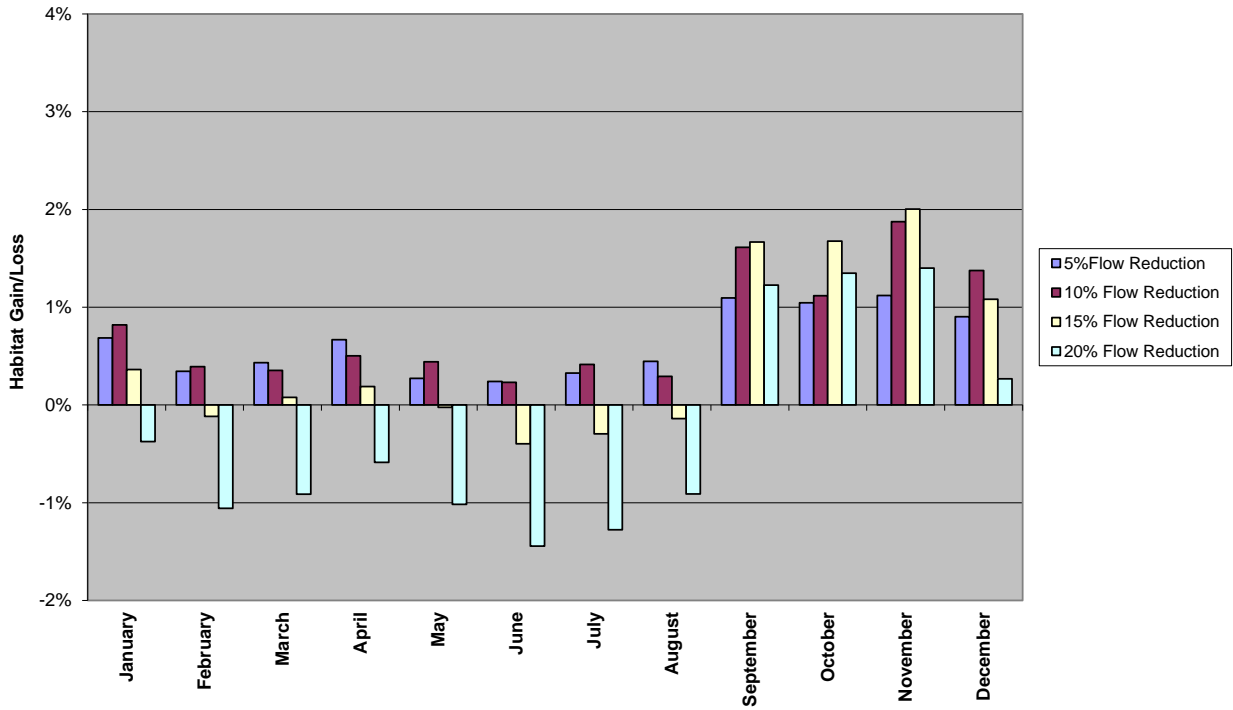
**Juvenile Spotted Sunfish (1965-2014)
Low Back Water (25%)
Rainbow River - Pool Site**



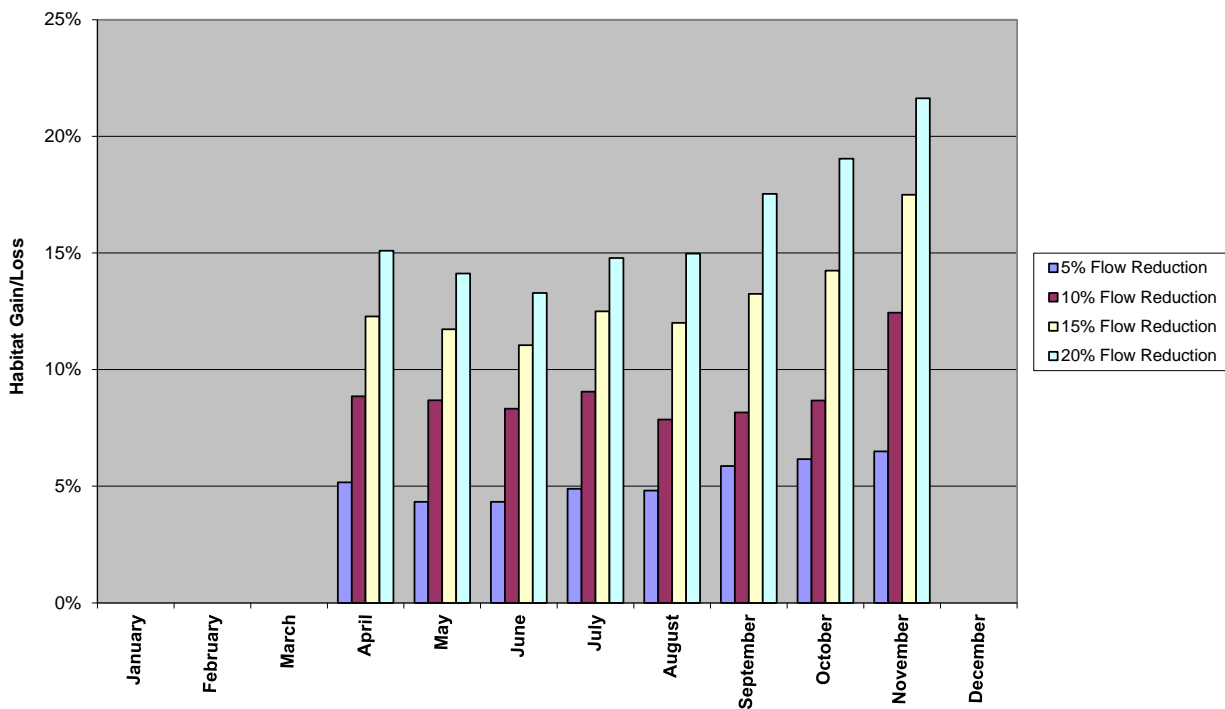
Juvenile Spotted Sunfish (1965-2014)
Medium Back Water (50%)
Rainbow River - Pool Site



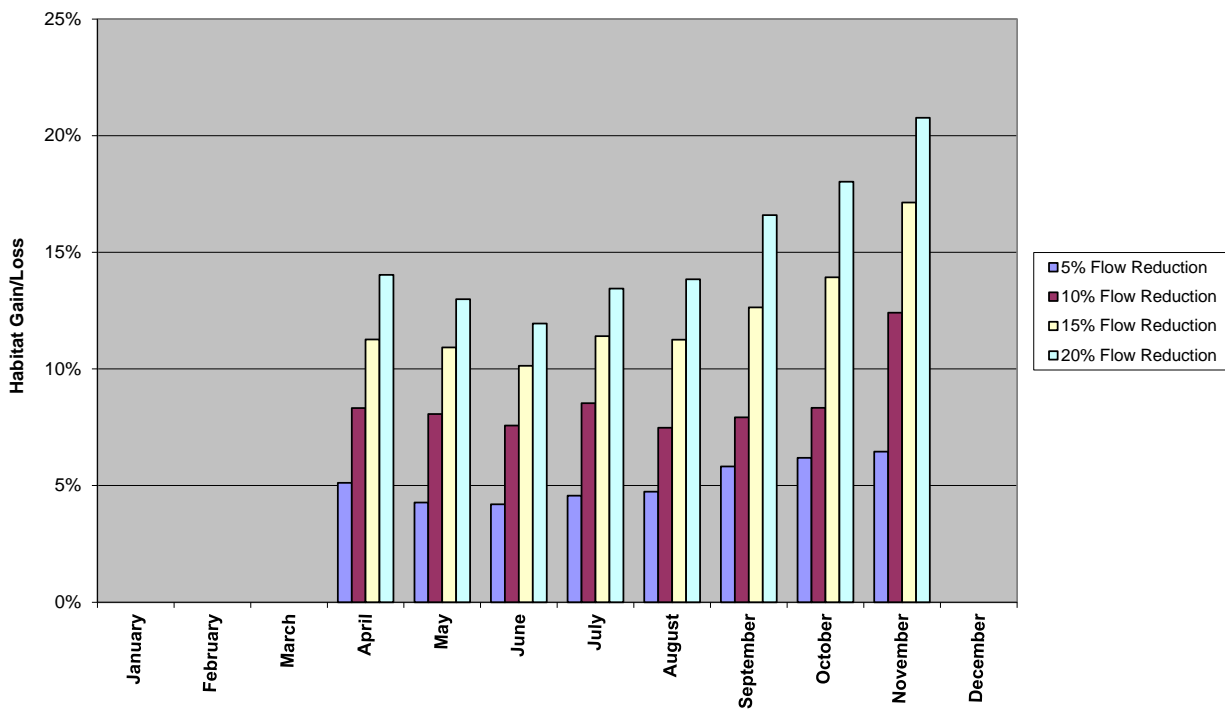
Juvenile Spotted Sunfish (1965-2014)
High Back Water (75%)
Rainbow River - Pool Site



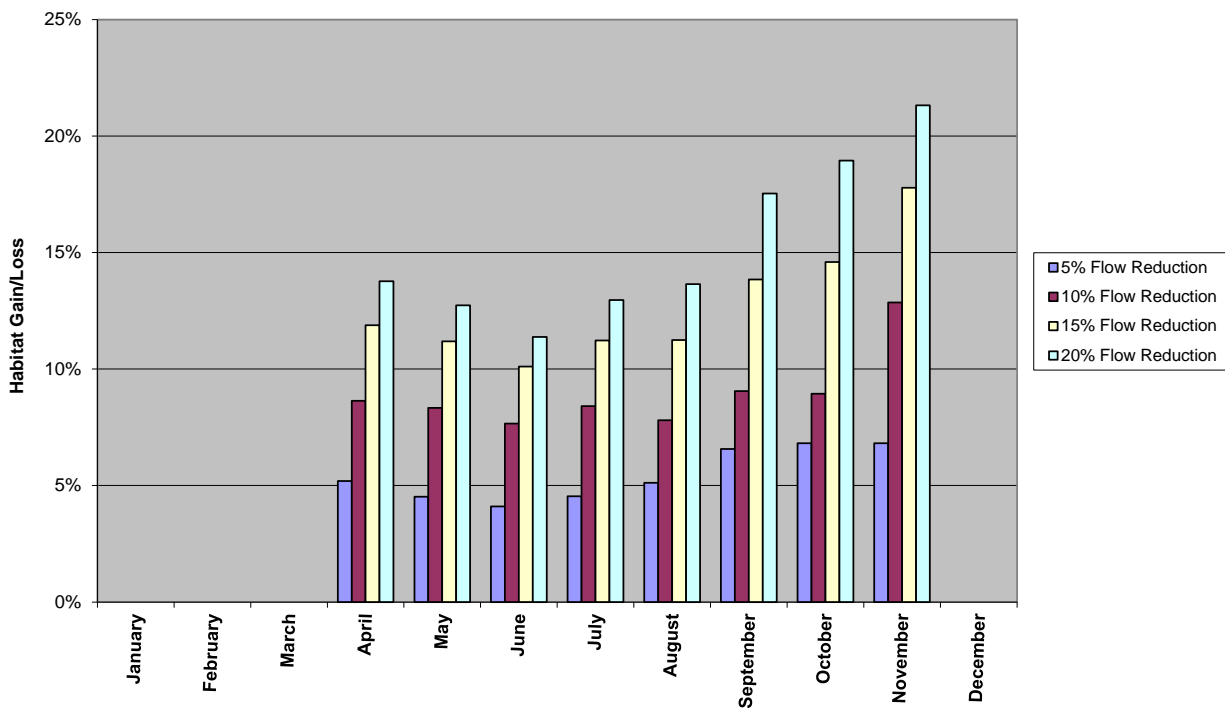
**Spawning Spotted Sunfish (1965-2014)
Low Back Water (25%)
Rainbow River - Pool Site**



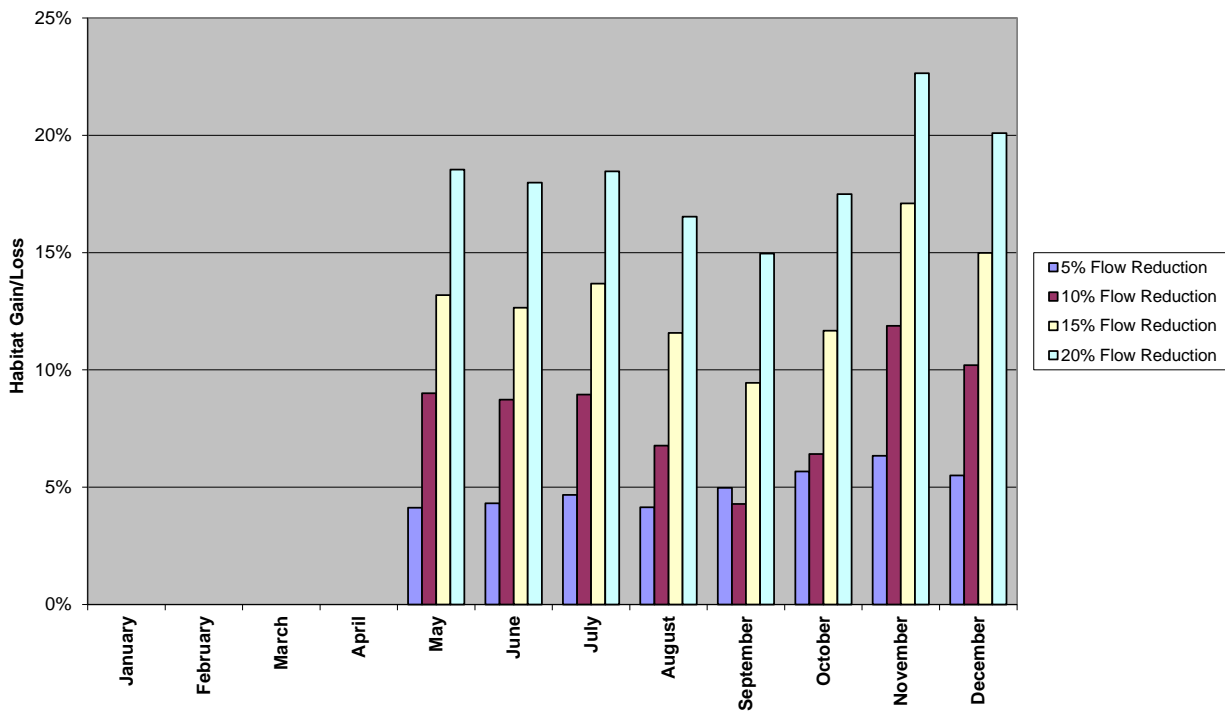
**Spawning Spotted Sunfish (1965-2014)
Medium Back Water (50%)
Rainbow River - Pool Site**



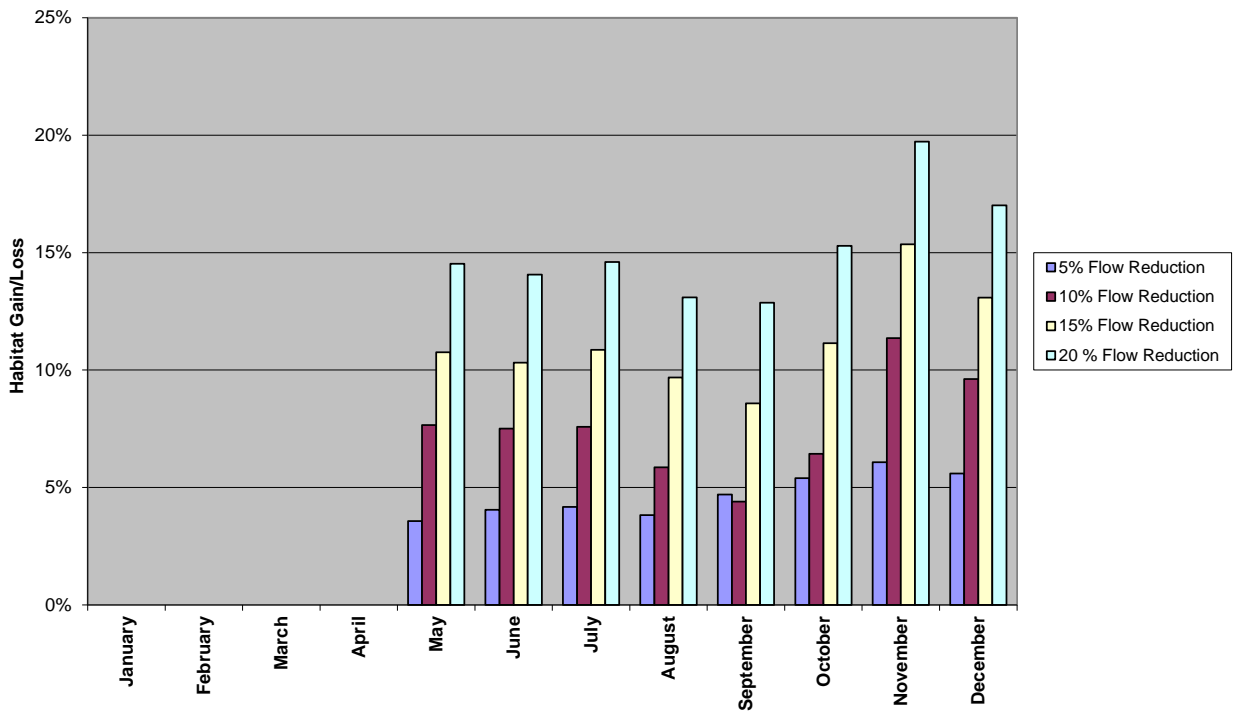
**Spawning Spotted Sunfish (1965-2014)
High Back Water (75%)
Rainbow River - Pool Site**



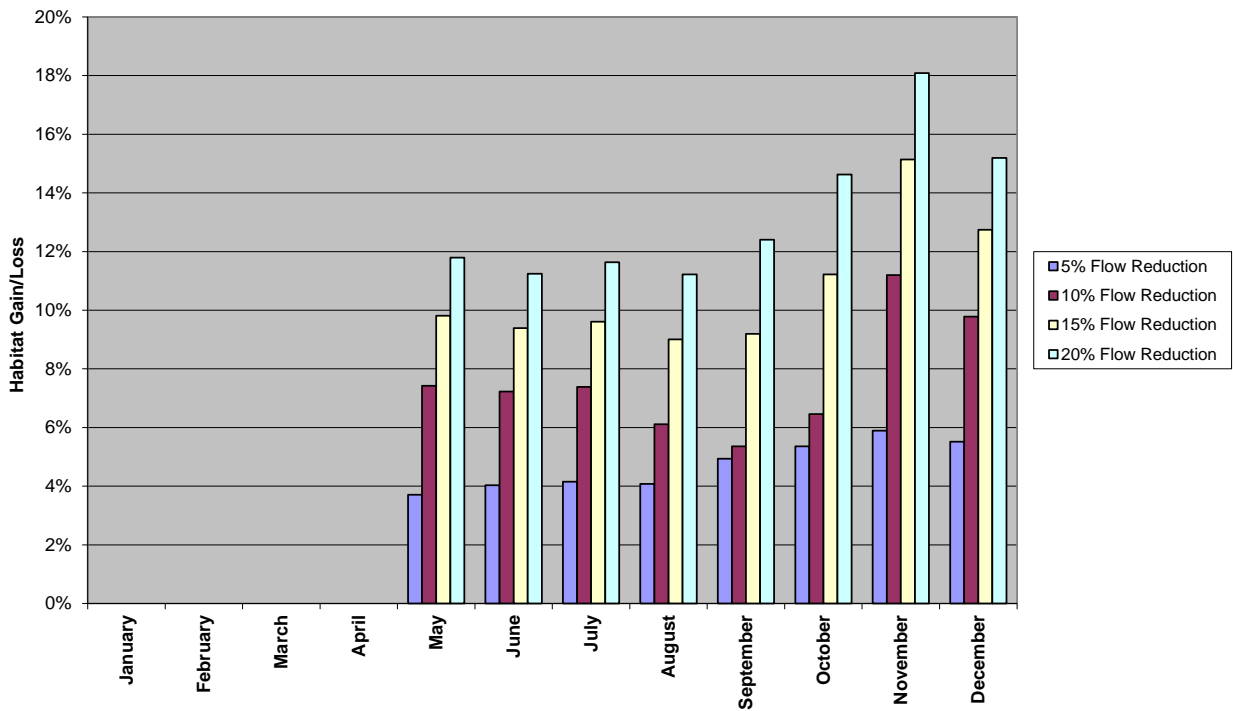
**Spotted Sunfish Fry (1965-2014)
Low Back Water (25%)
Rainbow River - Pool Site**



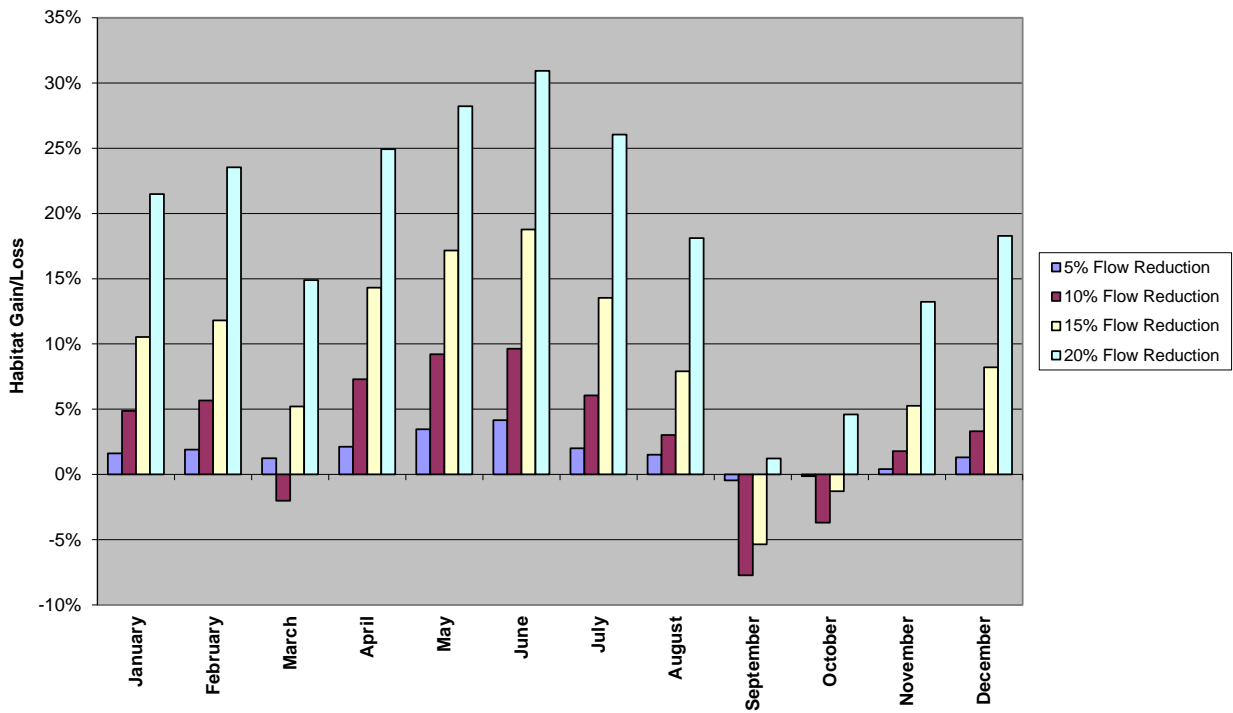
**Spotted Sunfish Fry (1965-2014)
Medium Back Water (50%)
Rainbow River - Pool Site**



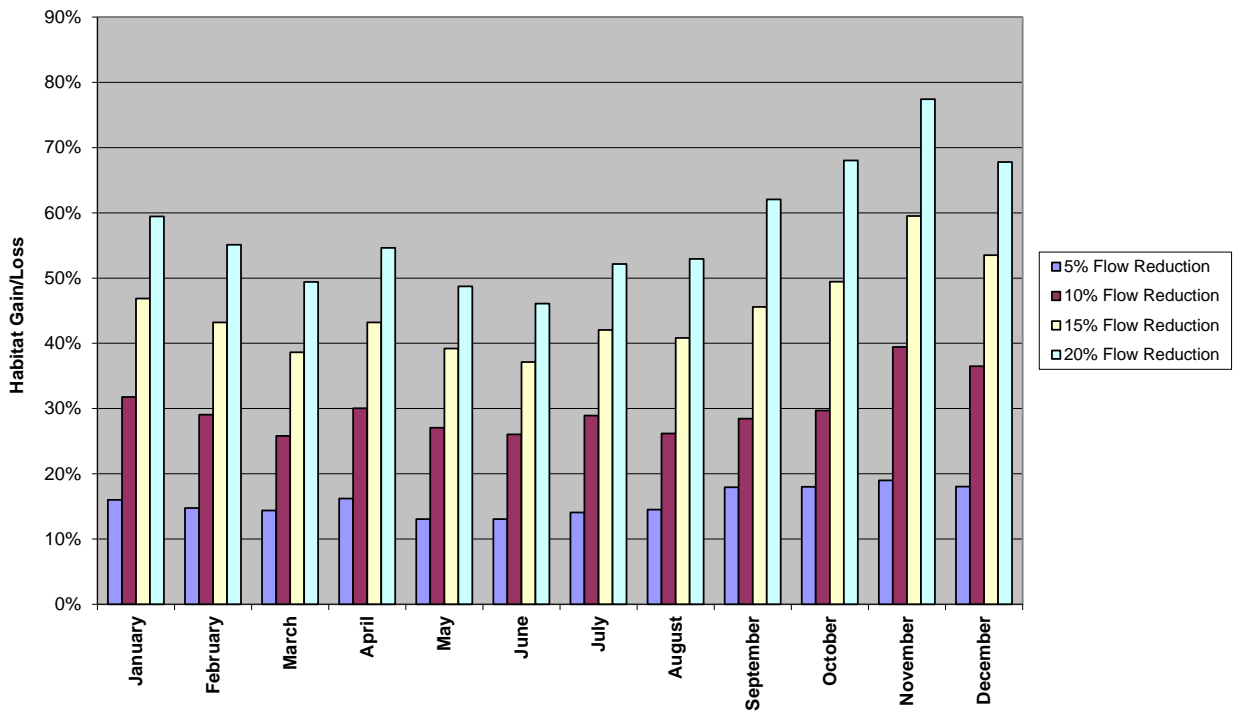
**Spotted Sunfish Fry (1965-2014)
High Back Water (75%)
Rainbow River - Pool Site**



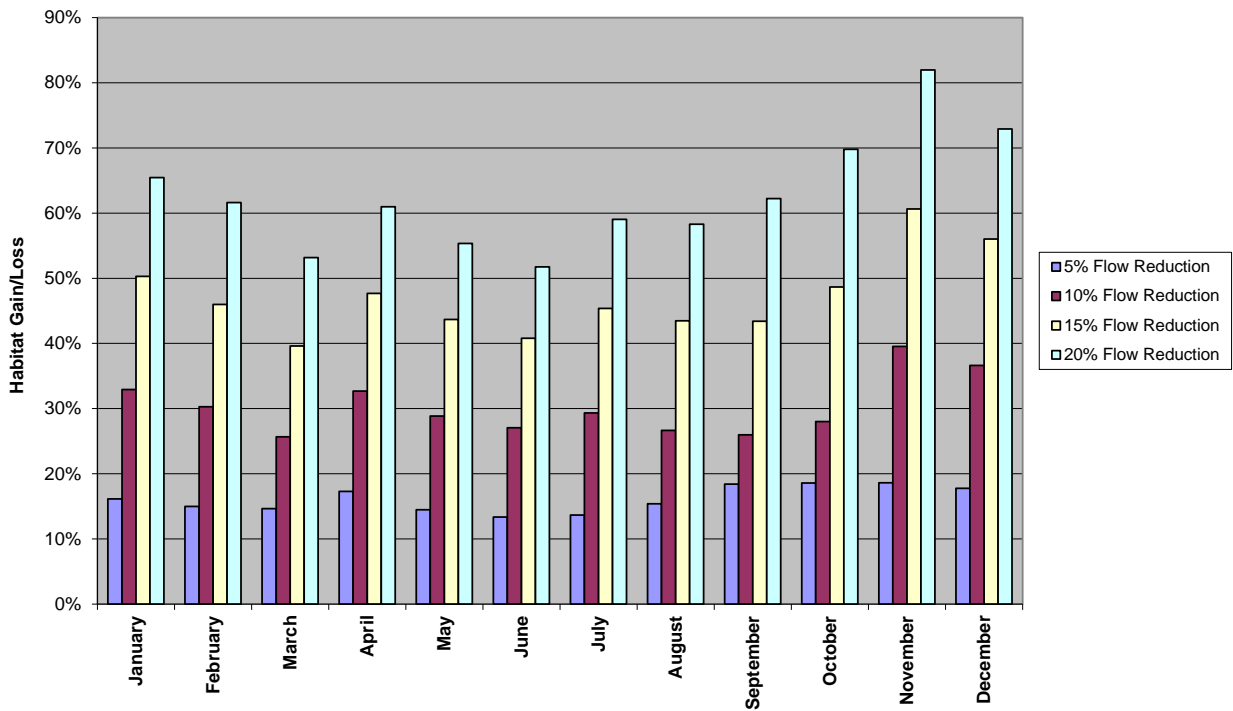
Benthic Macroinvertebrates (1965-2014)
Low Back Water (25%)
Rainbow River - Pool Site



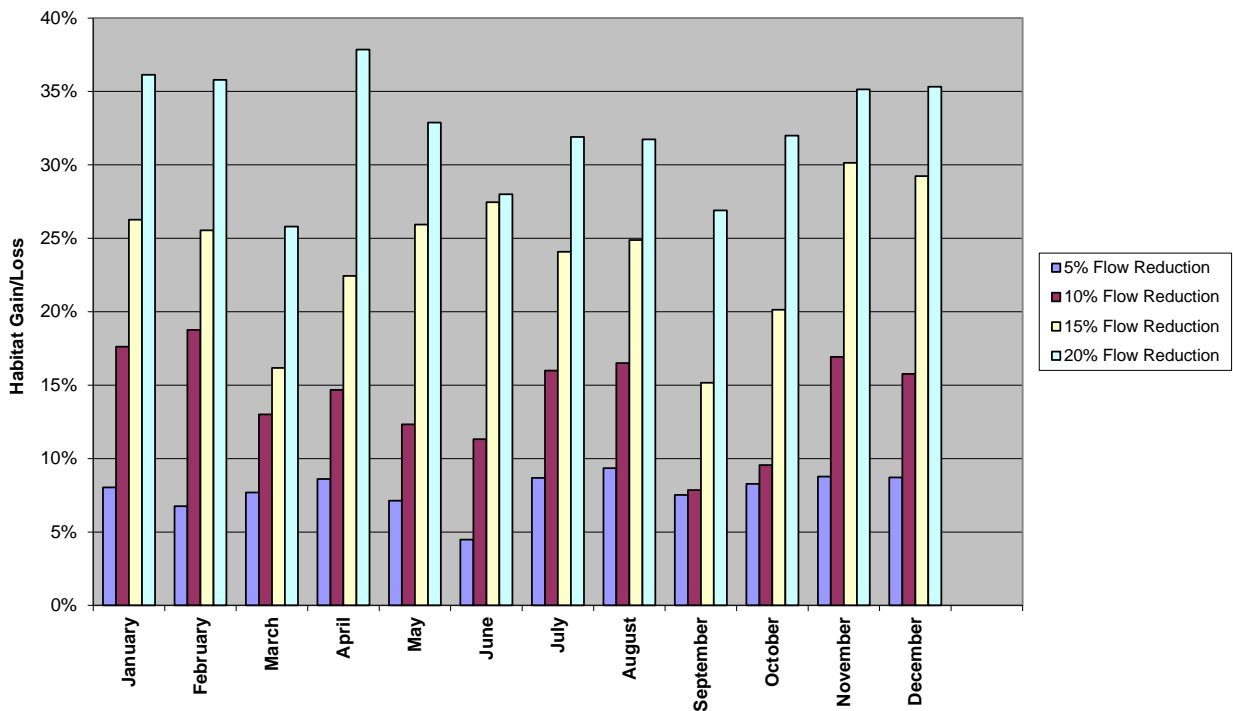
Benthic Macroinvertebrates (1965-2014)
Medium Back Water (50%)
Rainbow River - Pool Site



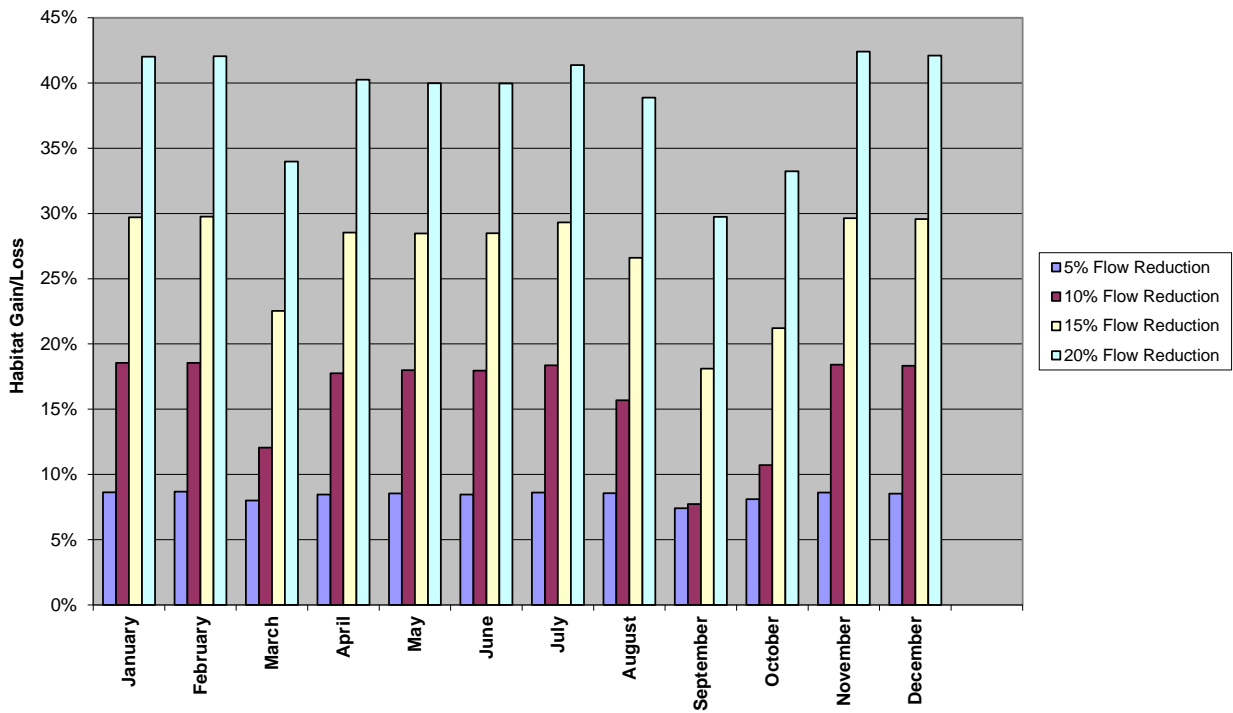
Benthic Macroinvertebrates (1965-2014)
High Back Water (75%)
Rainbow River - Pool Site



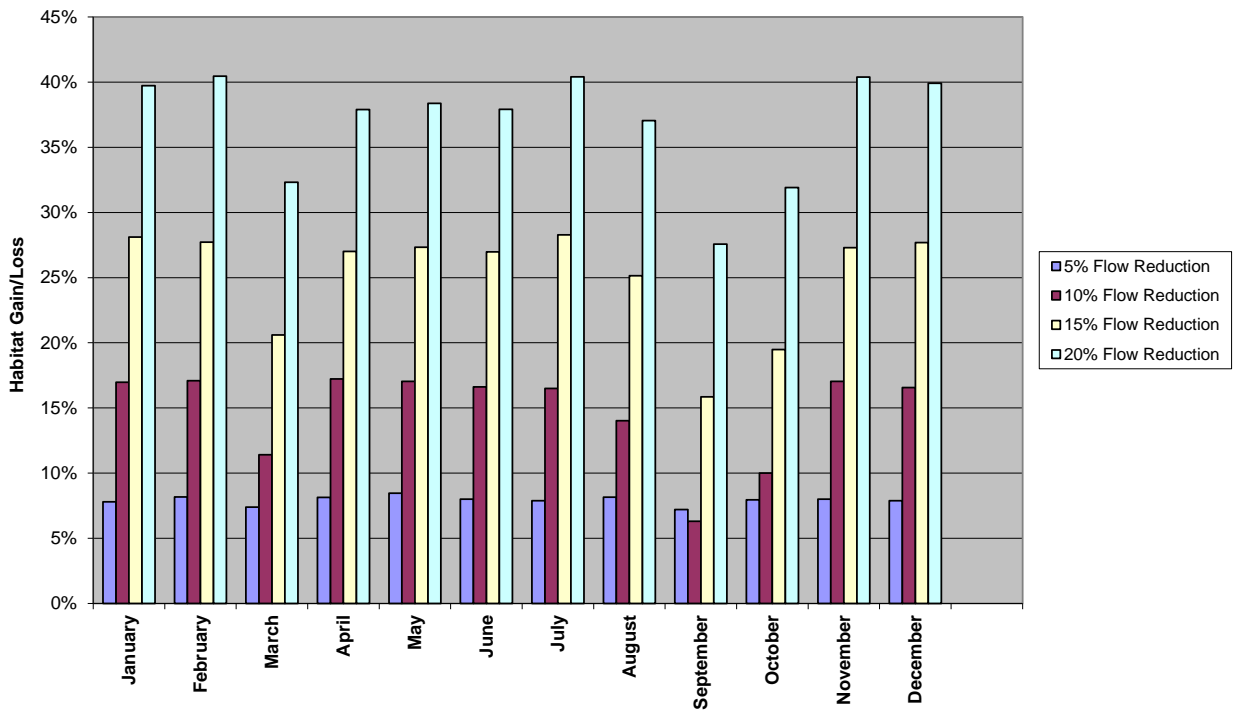
Largemouth Bass Adults (1965-2014)
Low Back Water (25%)
Rainbow River - Pool Site



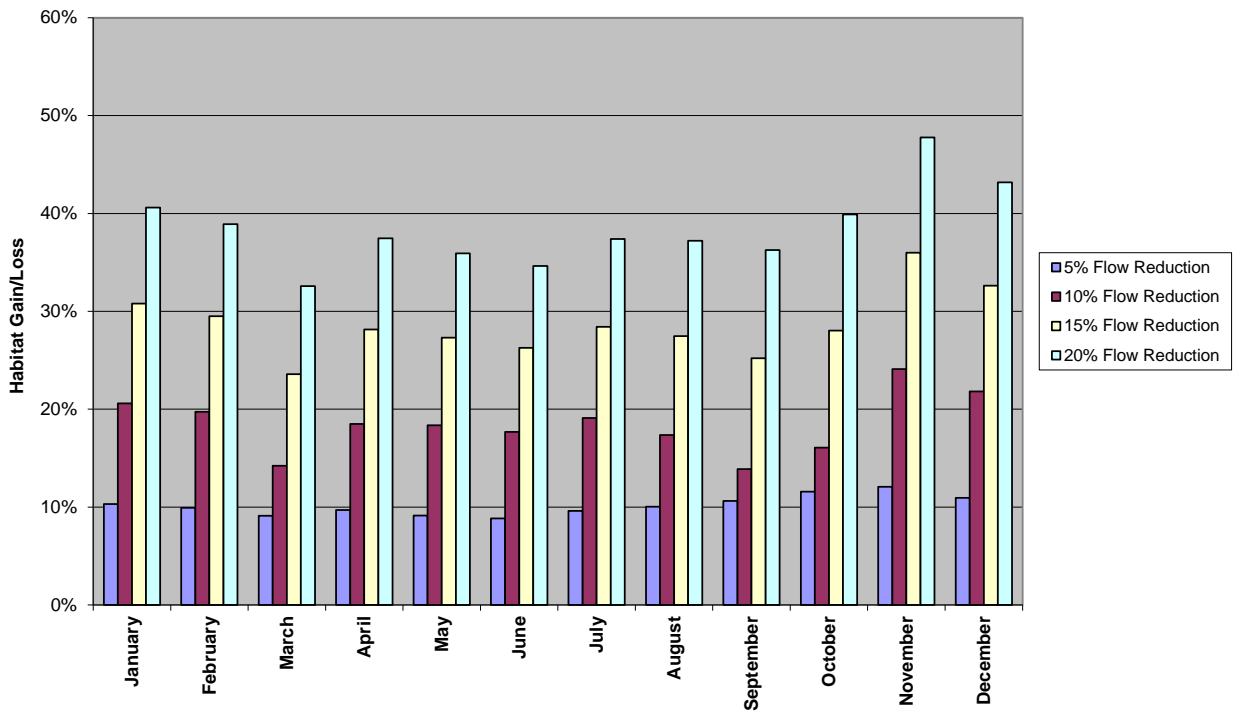
**Largemouth Bass Adults (1965-2014)
Medium Back Water (50%)
Rainbow River - Pool Site**



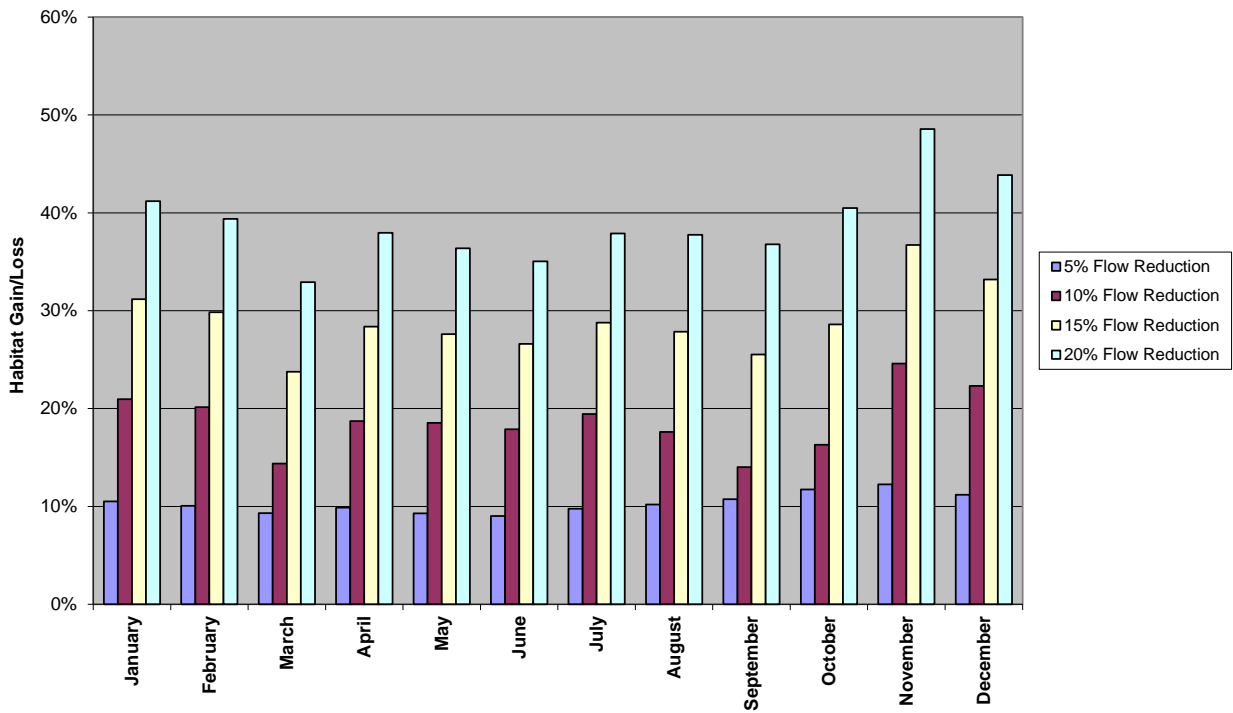
**Largemouth Bass Adults (1965-2014)
High Back Water (75%)
Rainbow River - Pool Site**



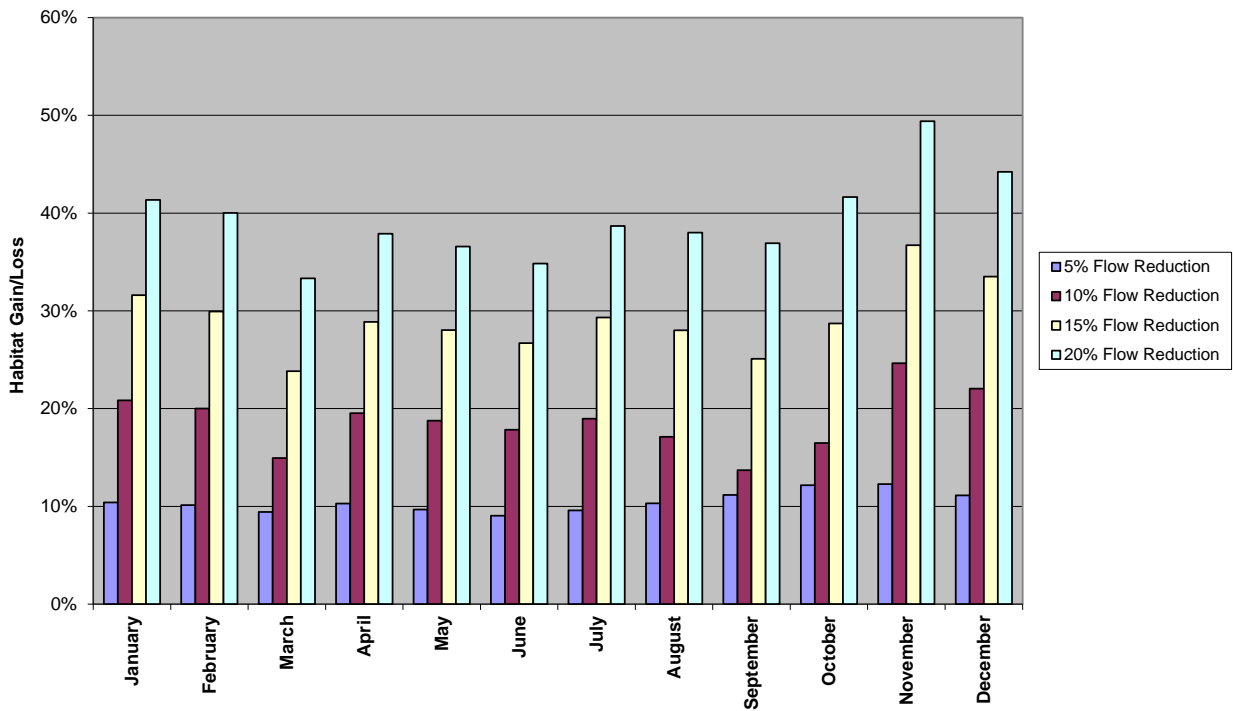
Largemouth Bass Juvenile (1965-2014)
Low Back Water (25%)
Rainbow River - Pool Site



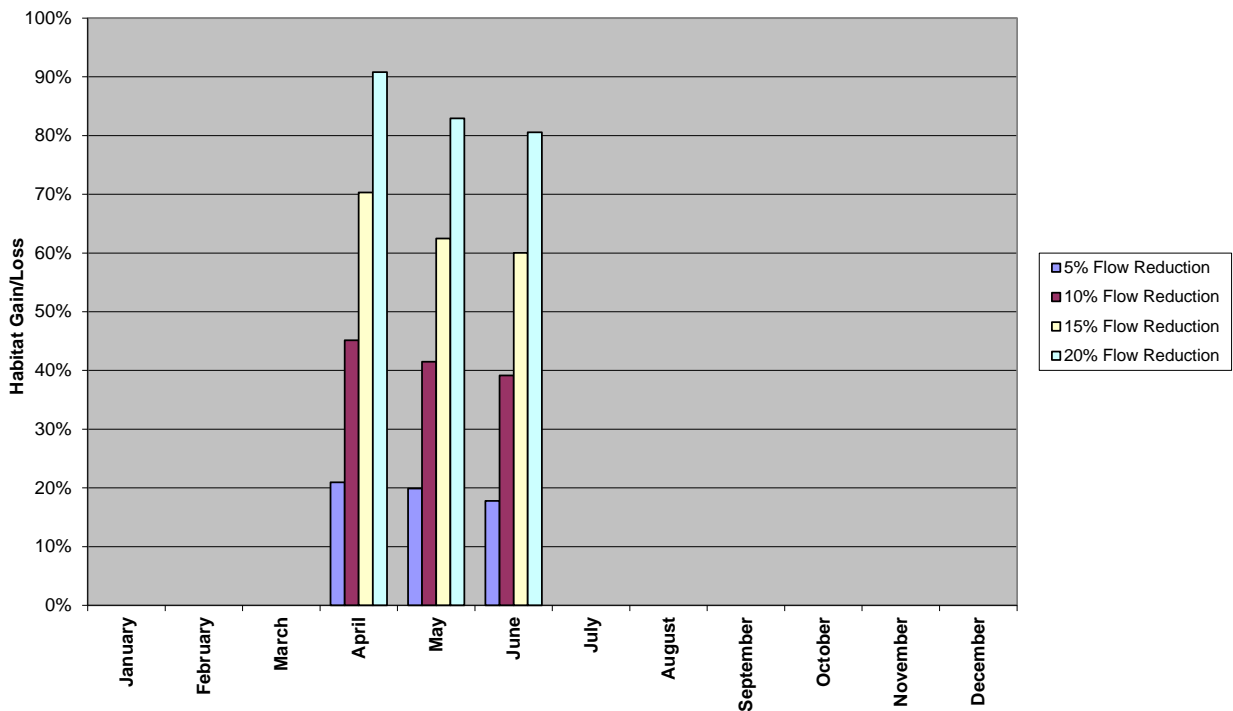
Largemouth Bass Juvenile (1965-2014)
Medium Back Water (50%)
Rainbow River - Pool Site



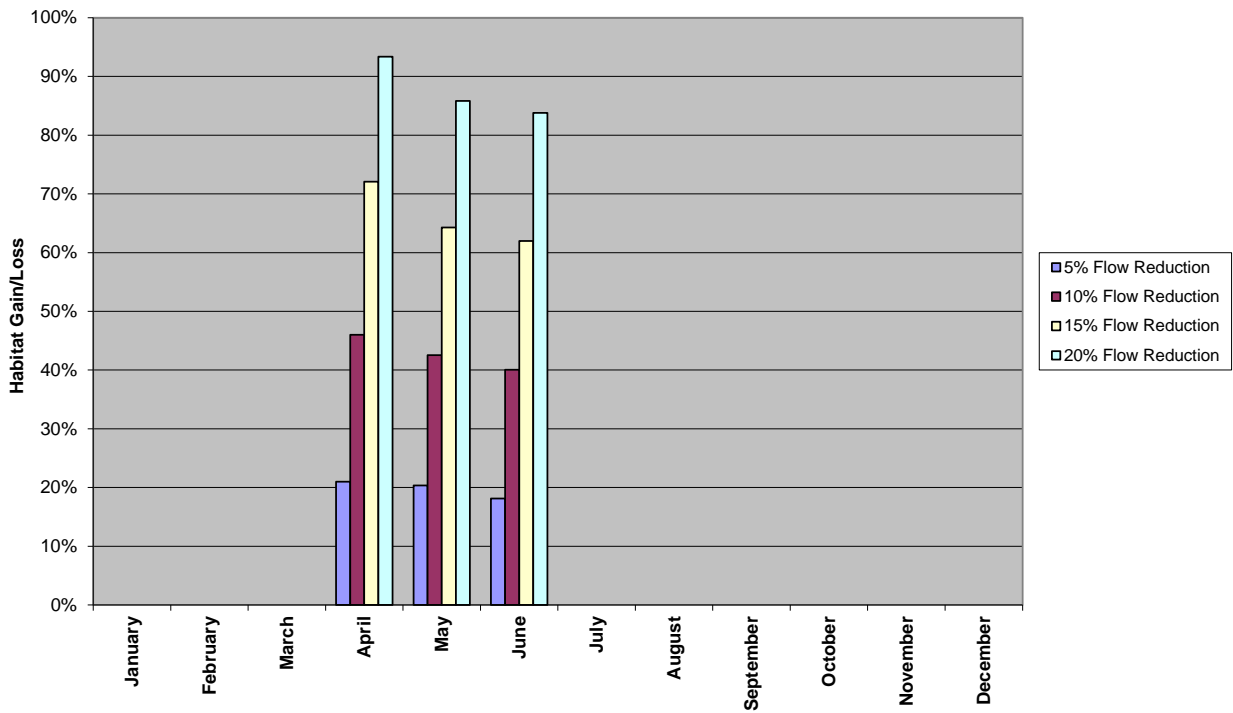
**Largemouth Bass Juvenile (1965-2014)
High Back Water (75%)
Rainbow River - Pool Site**



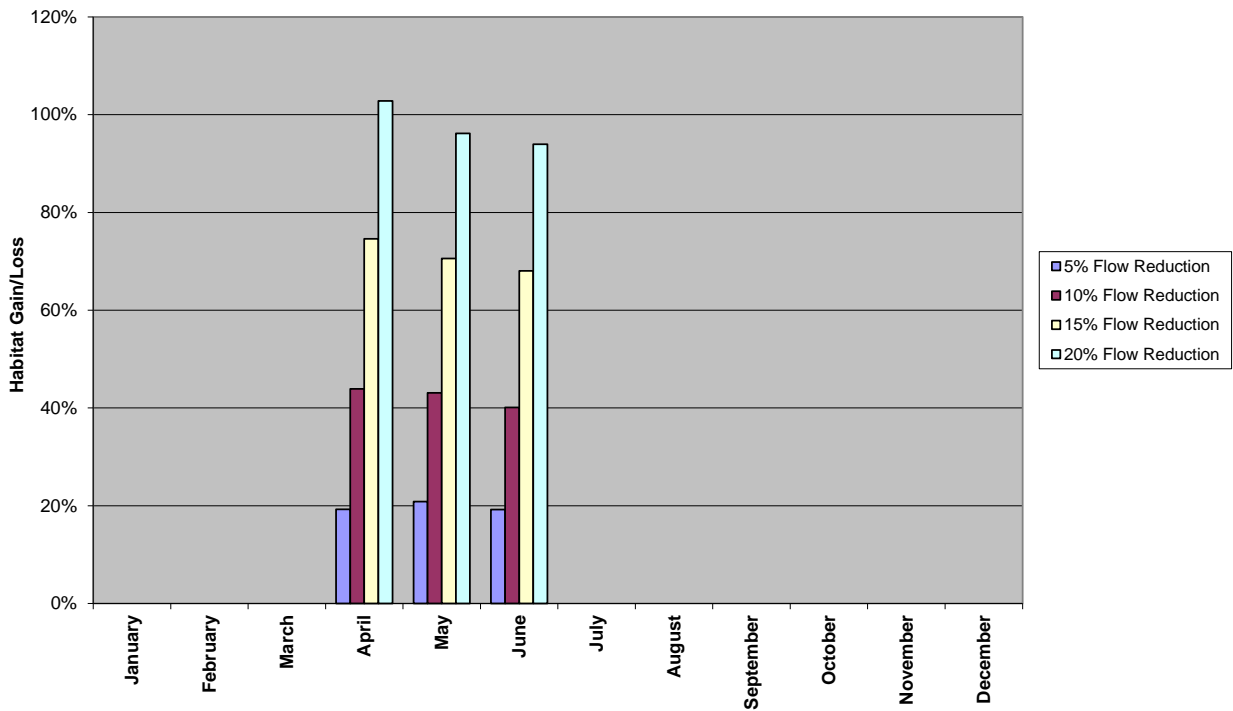
**Largemouth Bass Spawning (1965-2014)
Low Back Water (25%)
Rainbow River - Pool Site**



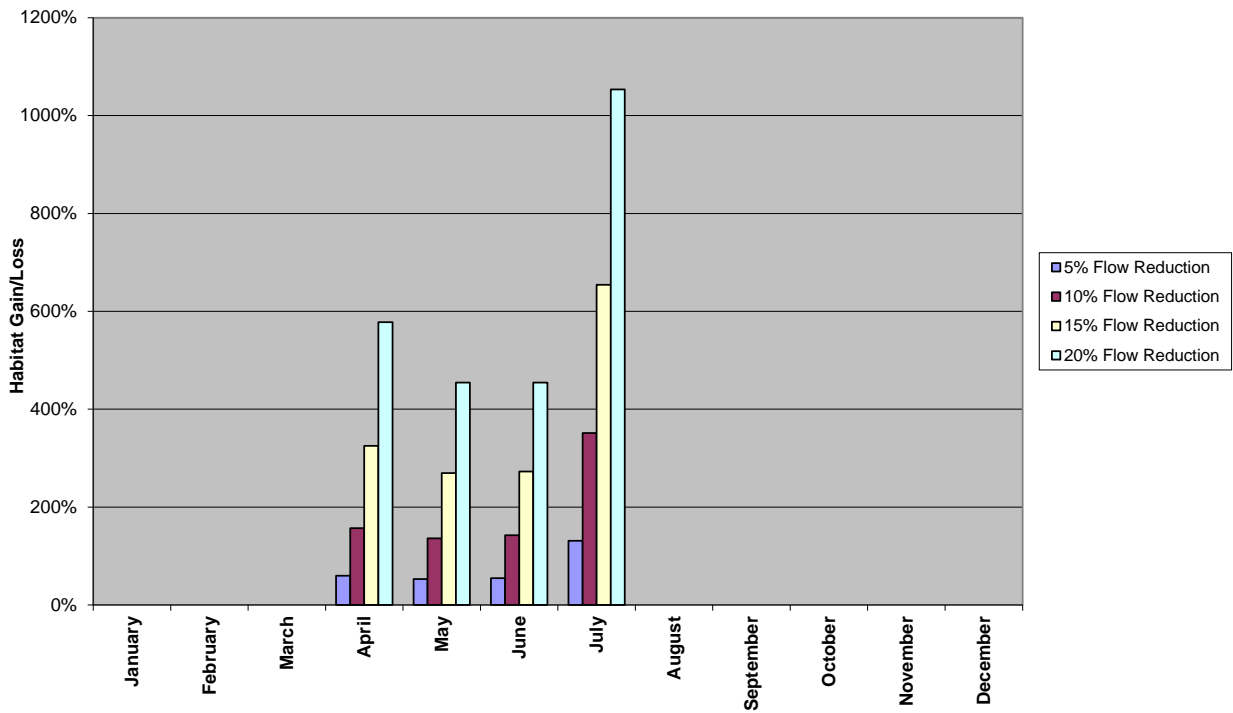
**Largemouth Bass Spawning (1965-2014)
Medium Back Water (50%)
Rainbow River - Pool Site**



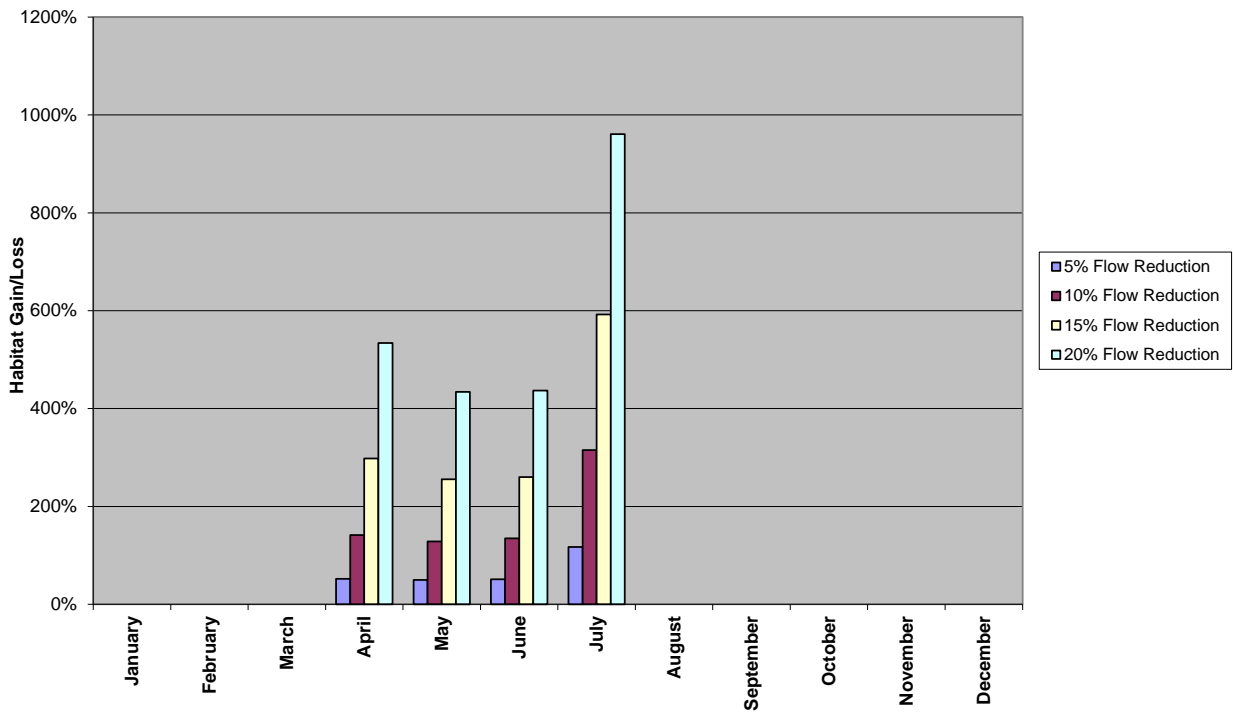
**Largemouth Bass Spawning (1965-2014)
High Back Water (75%)
Rainbow River - Pool Site**



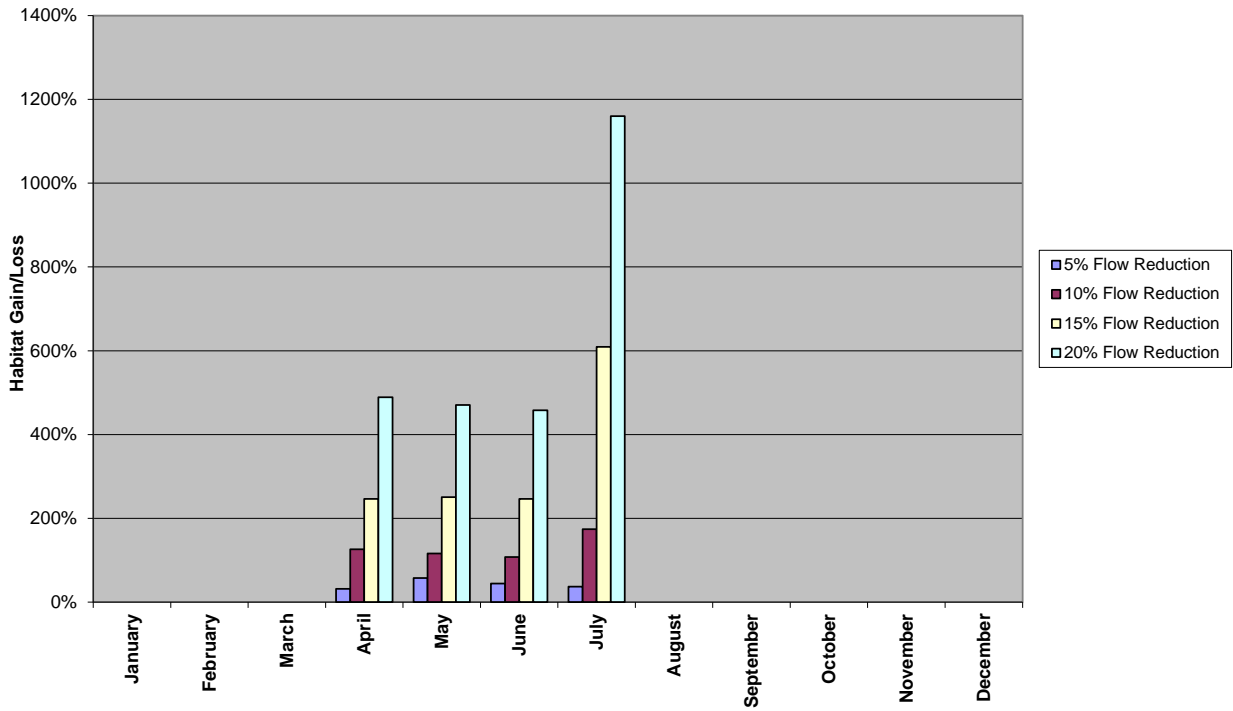
**Largemouth Bass Fry (1965-2014)
Low Back Water (25%)
Rainbow River - Pool Site**



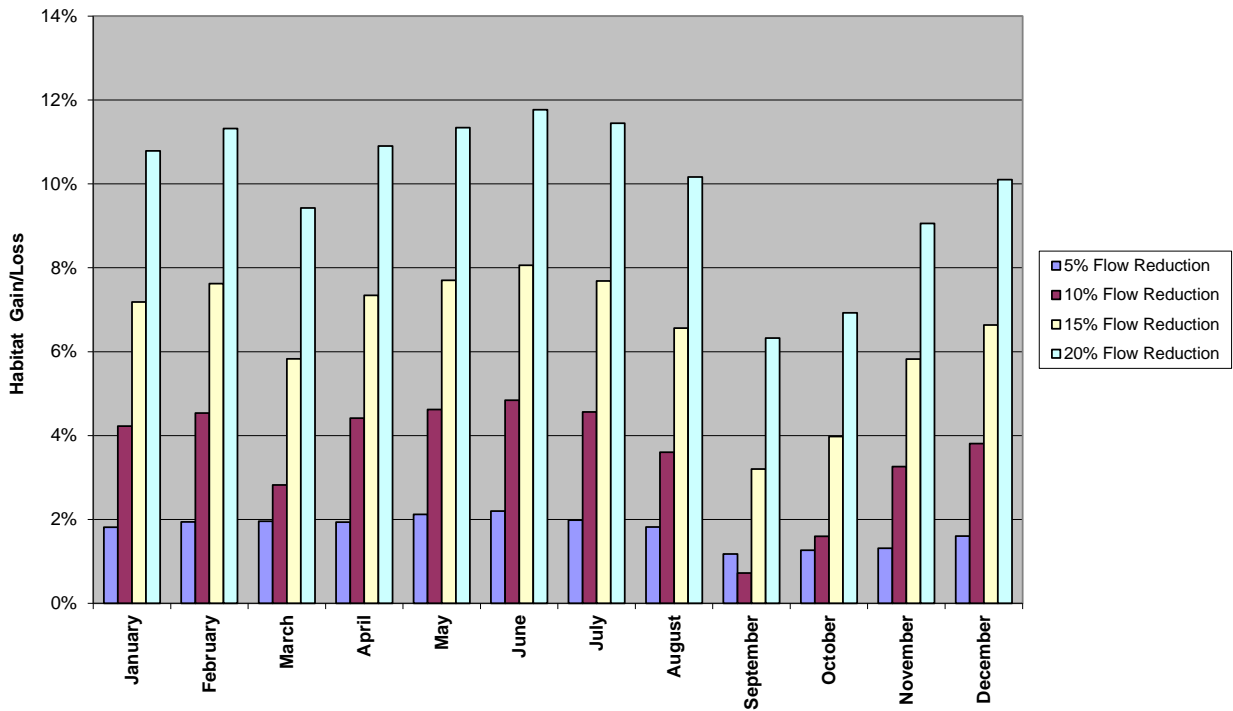
**Largemouth Bass Fry (1965-2014)
Medium Back Water (50%)
Rainbow River - Pool Site**



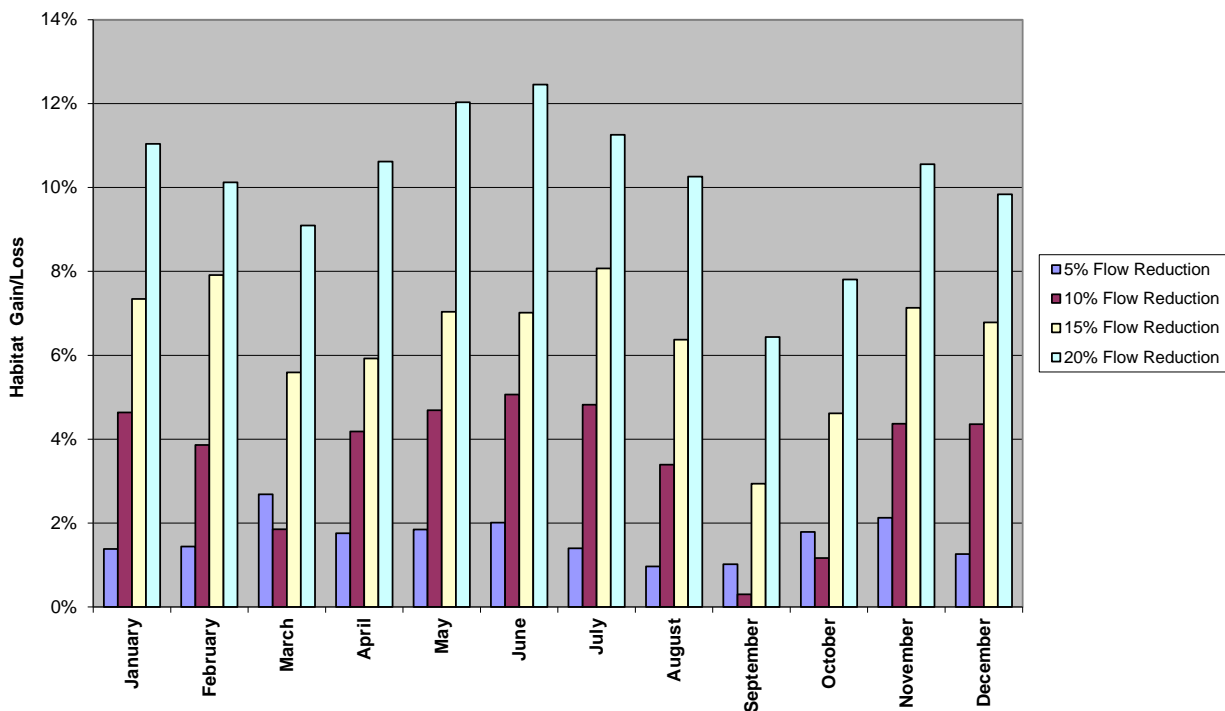
**Largemouth Bass Fry (1965-2014)
High Back Water (75%)
Rainbow River - Pool Site**



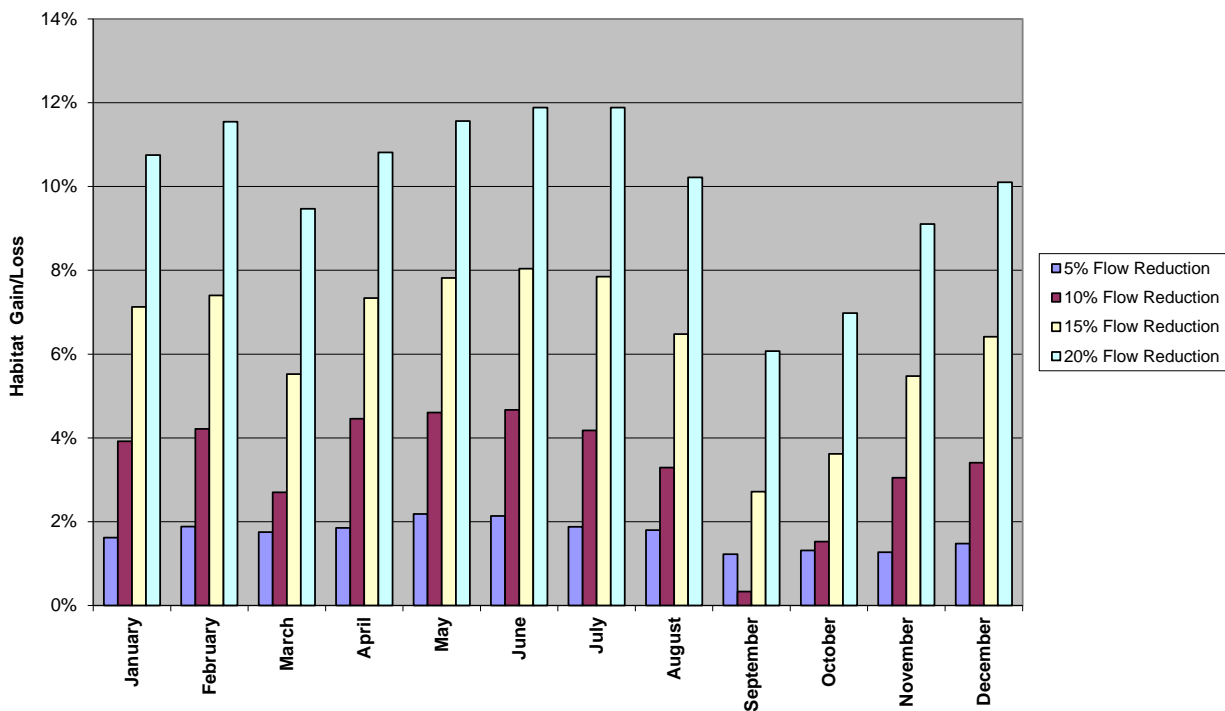
**Bluegill Sunfish Adults (1965-2014)
Low Back Water (25%)
Rainbow River - Pool Site**



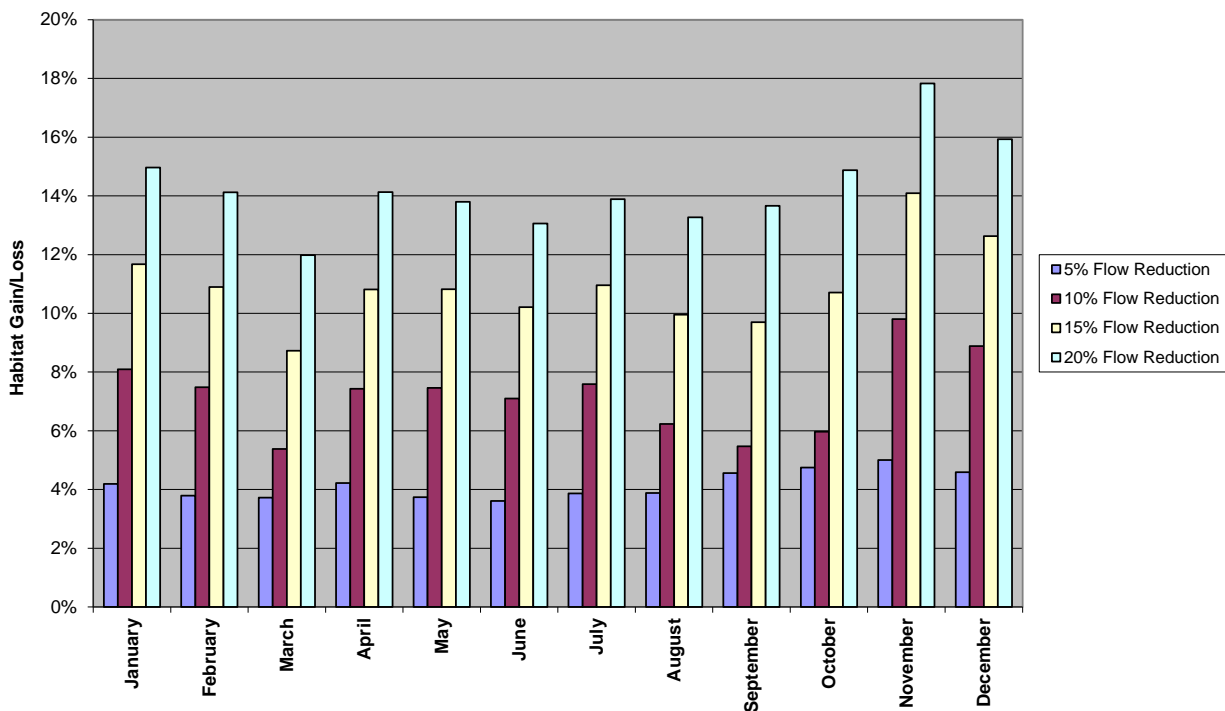
Bluegill Sunfish Adults (1965-2014)
Medium Back Water (50%)
Rainbow River - Pool Site



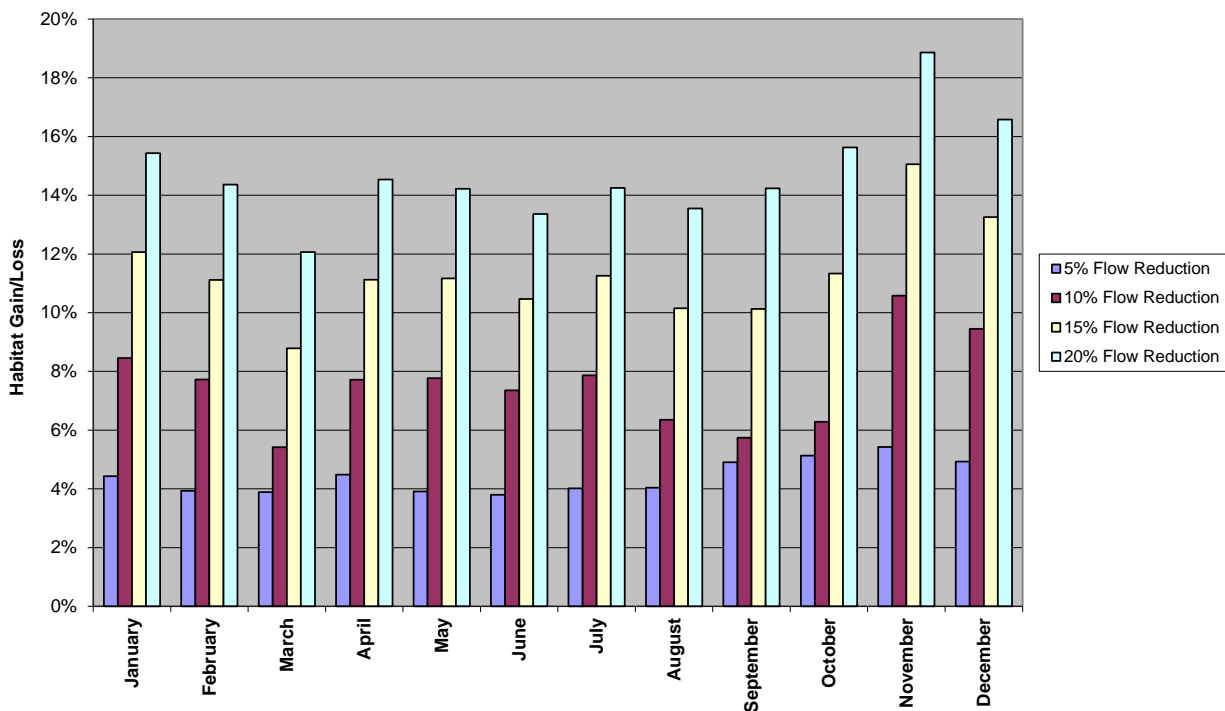
Bluegill Sunfish Adults (1965-2014)
High Back Water (75%)
Rainbow River - Pool Site



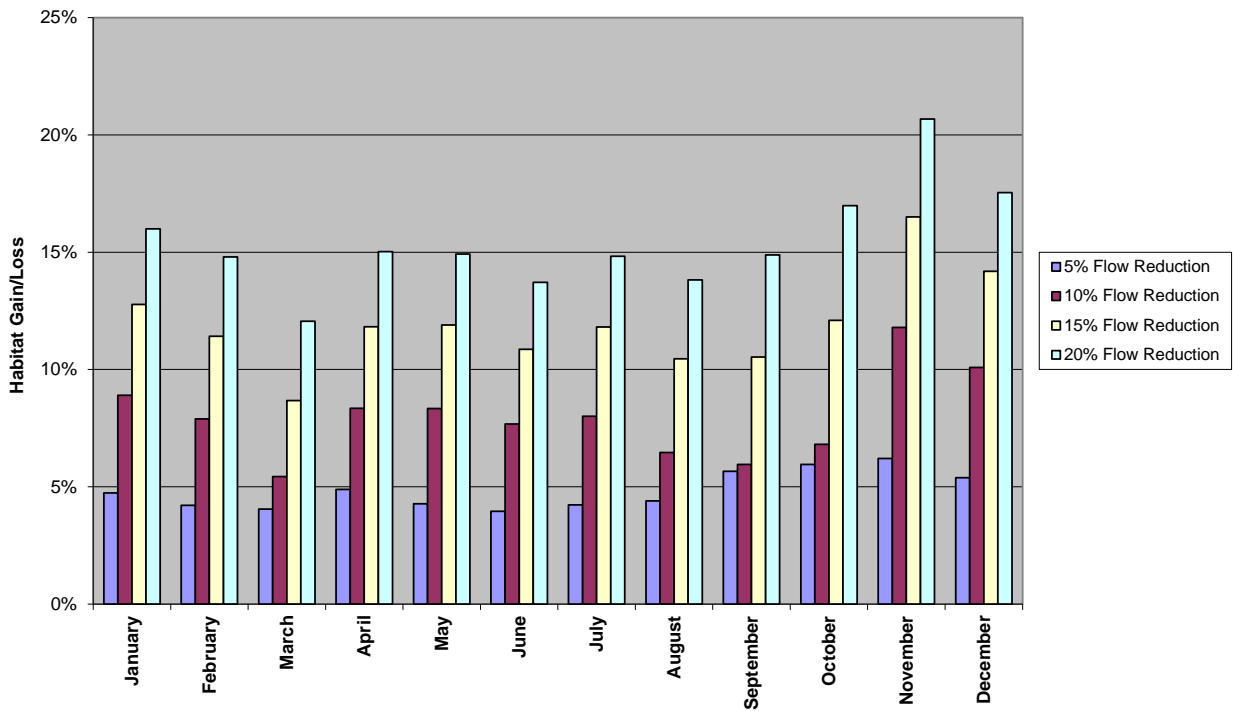
Bluegill Sunfish Juveniles (1965-2014)
Low Back Water (25%)
Rainbow River - Pool Site



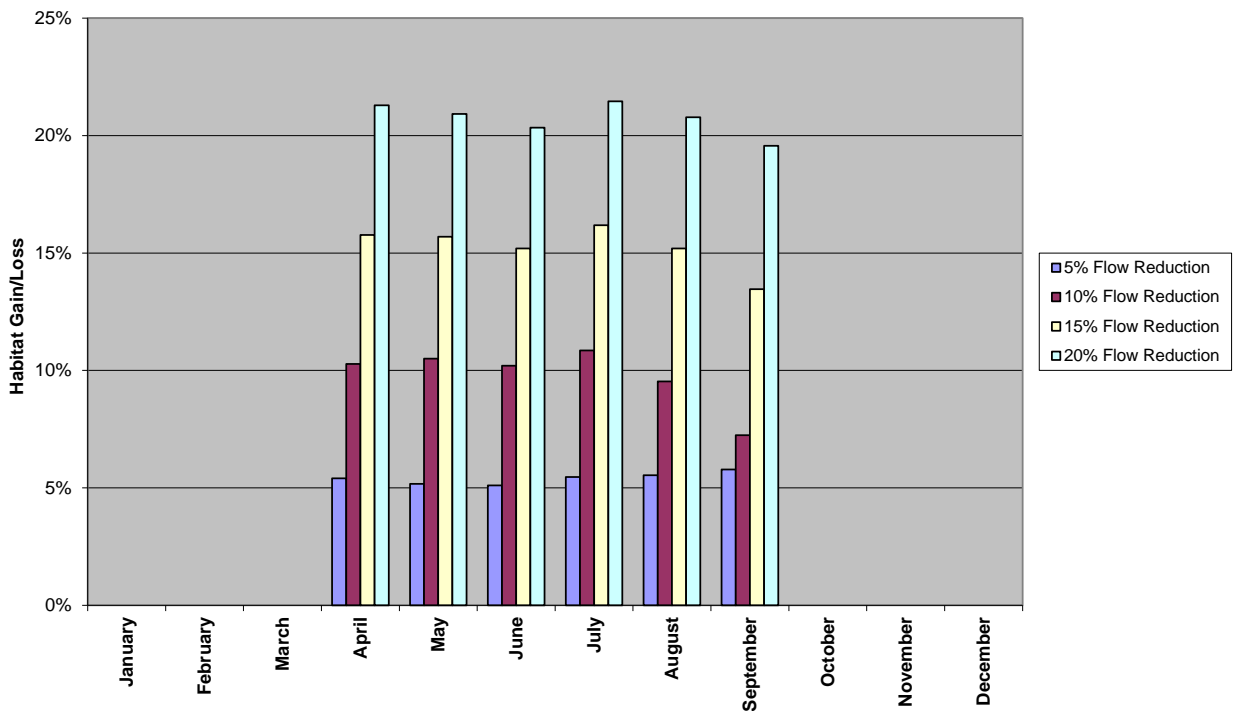
Bluegill Sunfish Juveniles (1965-2014)
Medium Back Water (50%)
Rainbow River - Pool Site



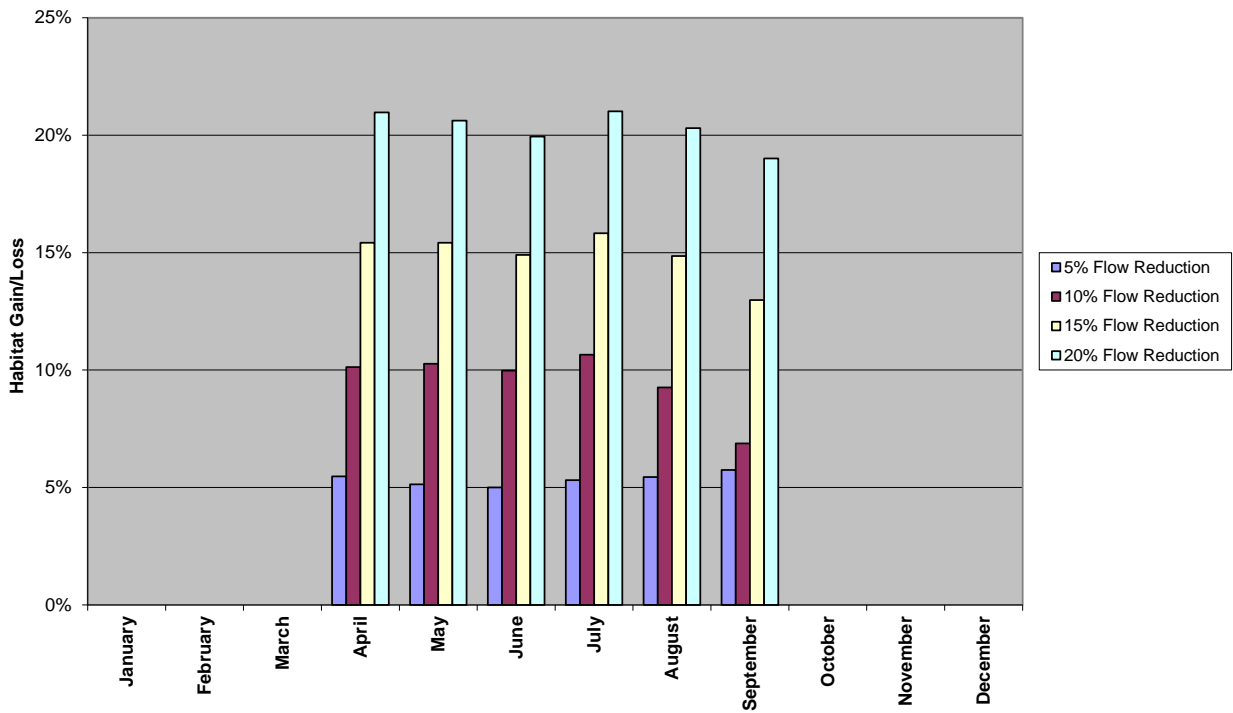
**Bluegill Sunfish Juveniles (1965-2014)
High Back Water (75%)
Rainbow River - Pool Site**



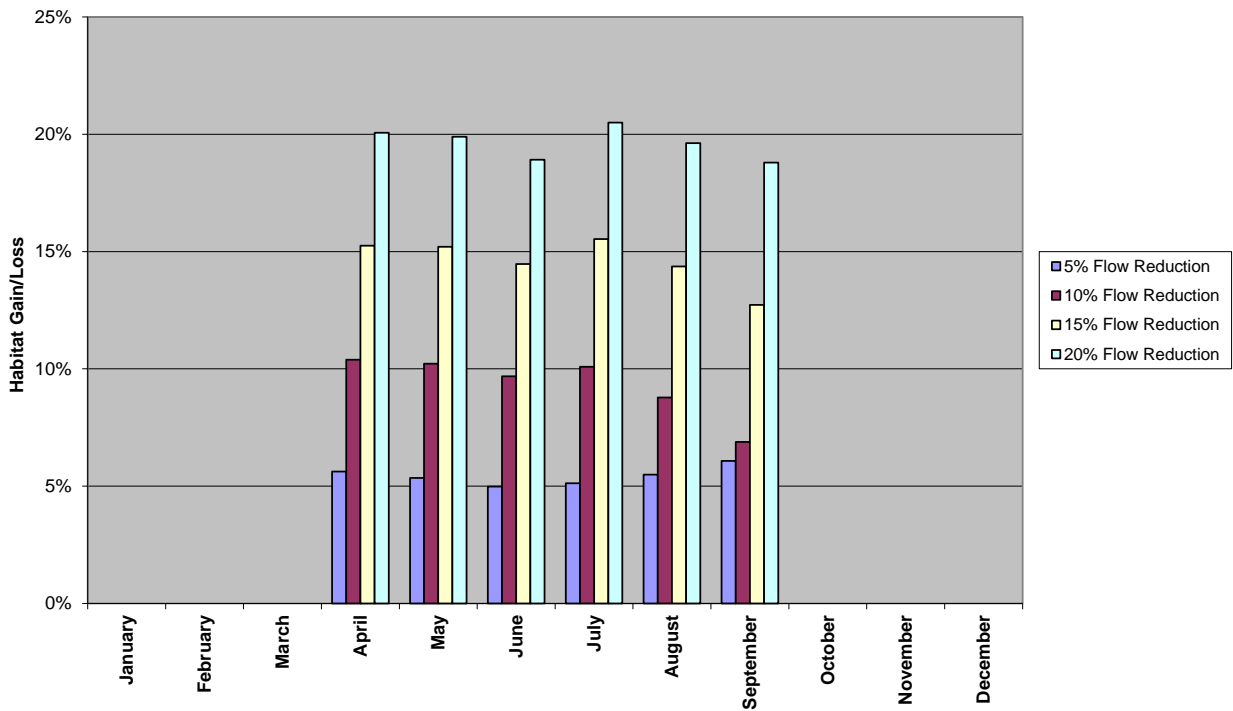
**Bluegill Sunfish Spawning (1965-2014)
Low Back Water (25%)
Rainbow River - Pool Site**



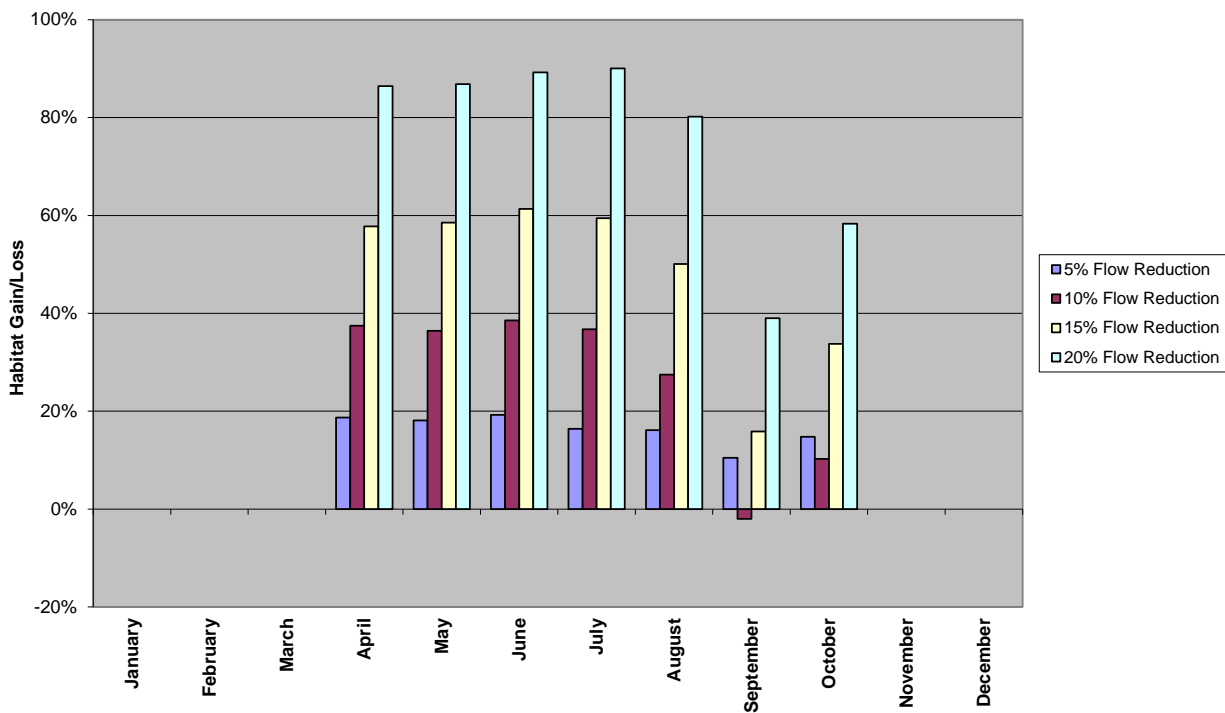
**Bluegill Sunfish Spawning (1965-2014)
Medium Back Water (50%)
Rainbow River - Pool Site**



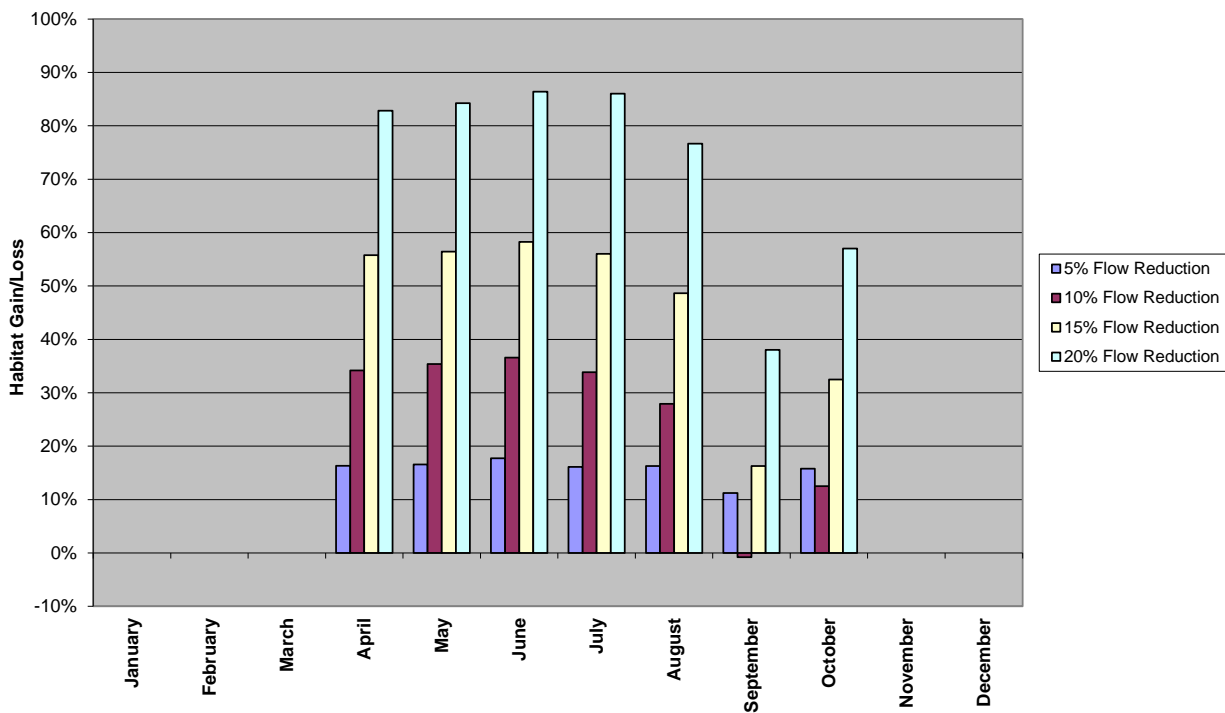
**Bluegill Sunfish Spawning (1965-2014)
High Back Water (75%)
Rainbow River - Pool Site**



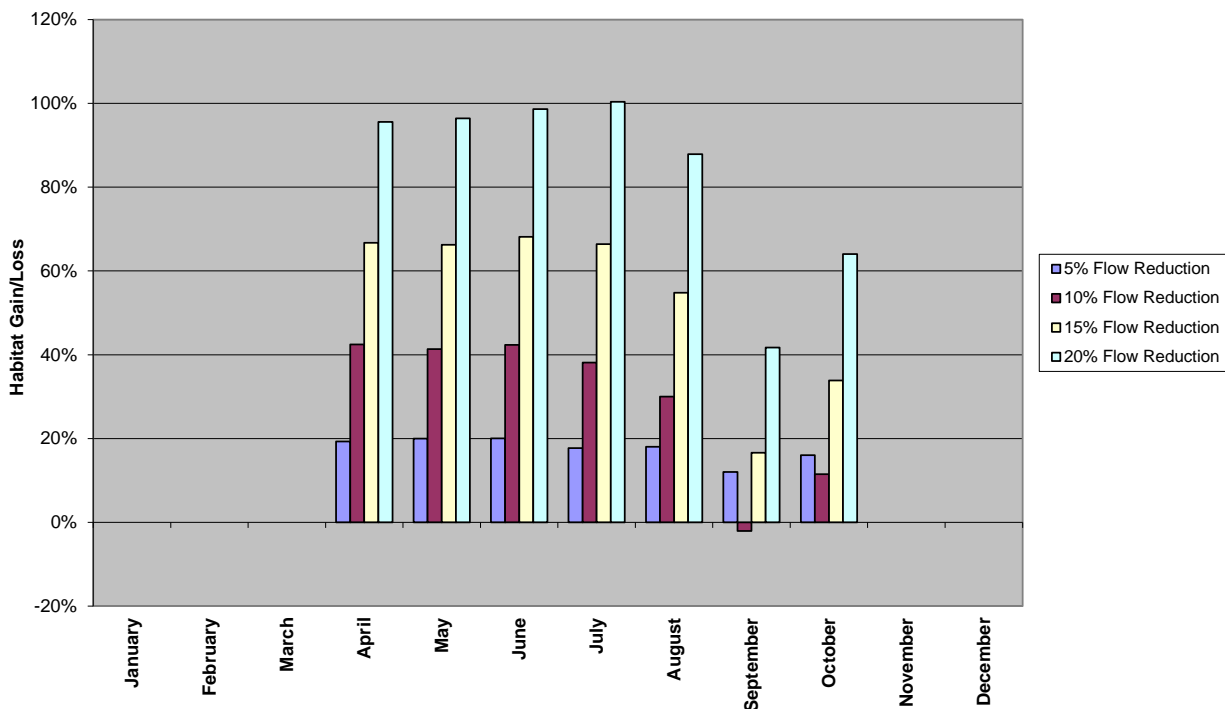
**Bluegill Sunfish Fry (1965-2014)
Low Back Water (25%)
Rainbow River - Pool Site**



**Bluegill Sunfish Fry (1965-2014)
Medium Back Water (50%)
Rainbow River - Pool Site**



**Bluegill Sunfish Fry (1965-2014)
High Back Water (75%)
Rainbow River - Pool Site**



**Minnnows (1965-2014)
Low Back Water (25%)
Rainbow River - Pool Site**

