**Brook stickleback** (*Cluaea inconstans*)

**Habitat:**
- **feeding** - clear, cold, densely vegetated streams, and swampy margins of lakes
  - low gradient
  - muck, peat, or marl substrate
  - not tolerant of turbidity
- **spawning** - shallow cool (<66°F) water
  - aquatic reeds or grasses necessary
Mottled sculpin (*Cottus bairdi*)

**Habitat:**

feeding - cool to cold streams
- riffle and rock substrates preferred
- clear to slightly turbid shallow water

spawning - nests under logs or rock
White perch (*Morone americana*)

**Habitat:**
- Feeding: clear, warm water of low-gradient streams, lakes, impoundments, and Lake Huron
- Spawning: shallow water over firm substrate
White bass (*Morone chrysops*)

**Habitat:**
- Feeding: large lakes, impoundments, and Lake Huron
  - Clear water of 30 feet or less depth
  - Firm substrate
- Spawning: tributary streams or

![Map showing the distribution of White bass habitats]
Rock bass (*Ambloplites rupestris*)

**Habitat:**
- feeding - clear, cool streams, rivers, and lakes
- rocky to sand substrate
- woody or vegetative cover
- spawning - sand or gravel nests
- shallow water
- winter refuge - deep water
Green sunfish (*Lepomis cyanellus*)

**Habitat:**
- **feeding** - impoundments and lakes, and low-current streams and rivers
- no substrate preference
- **spawning** - nests in shallow areas sheltered by rocks, logs, or aquatic vegetation

![Map of Flint River Basin](image-url)
**Pumpkinseed sunfish** (*Lepomis gibbosus*)

**Habitat:**

- **feeding** - non-flowing clear water in streams and rivers; also lakes and impoundments
  - muck or sand partly covered with organic debris substrate
  - dense beds of submerged aquatic vegetation

- **spawning** - nest in sand, gravel, or rock substrate
  - in shallow water near submerged vegetation
Warmouth (*Lepomis gulosus*)

**Habitat:**
- feeding - clear lakes and impoundments and very low-gradient streams
  - abundant aquatic vegetation
  - silt-free water
  - mucky substrate often covered with organic debris
- spawning - nesting sites in loose silt, sand with silt, or rubble over silt near stumps, roots, or vegetation
Bluegill (*Lepomis macrochirus*)

**Habitat:**
- **feeding** - non-flowing clear streams and rivers; also lakes and impoundments
- sand, gravel, or muck containing organic debris substrate
- scattered beds of aquatic vegetation
- cannot tolerate low oxygen or continuous high turbidity and siltation

- **spawning** - nests in firm substrate of gravel, sand, or mud
- **winter refuge** - deep water
Flint River Assessment Appendix

**Longear sunfish** (*Lepomis megalotis*)

**Habitat:**

- feeding - clear moderate-sized shallow streams with moderate vegetation
  - rocky substrates
  - little to no current

- spawning - nests in gravel, sand, or hard rock substrate
**Redear sunfish** (*Lepomis microlophus*)

**Habitat:**

- feeding - non-flowing clear waters of streams and lakes
- some aquatic vegetation

- spawning - nest in silt or gravel substrate
Smallmouth bass (*Micropterus dolomieu*)

**Habitat:**
- **feeding** - clear, cool, deep lakes and rivers
  - streams where 40% consists of riffles over clean gravel, boulder, or bedrock substrate
  - in pools with a current and >4 feet of depth
  - gradients between 4 and 25 feet per mile
- **spawning** - nest in sandy, gravel, or rocky substrate
  - gradients 7 to 25 feet per mile
  - streams 20 to 100 feet wide
- **winter refuge** - larger deeper waters with gradients between 3 to 7 feet per mile
Largemouth bass (*Micropterus salmoides*)

**Habitat:**

- feeding  
  - non-flowing clear waters - lakes, impoundments, and pools of streams
  - abundant aquatic vegetation
  - soft muck, organic debris, gravel, sand, and hard non-flocculent clay substrates

- spawning  
  - nest in gravelly sand to marl and soft mud substrates
  - emergent vegetation
  - quiet shallow bays; no current
White crappie (*Pomoxis annularis*)

**Habitat:**
- **feeding**: lakes and impoundments >5 acres
  - sluggish pools of moderate to large low-gradient rivers
  - no substrate preference
  - can tolerate severe turbidity and rapid siltation
- **spawning**: various substrates usually beside rooted aquatic vegetation
  - sometimes under banks
Black crappie (*Pomoxis nigromaculatus*)

**Habitat:**

**feeding**
- larger clear non-silty low-gradient rivers; also in lakes and impoundments
- clean hard sand or muck substrate
- associated with submerged aquatic vegetation
- does not tolerate silt or turbidity well

**spawning**
- nests in gravel, sand, or mud substrate
- some vegetation must be present
- sometimes nests under banks
Greenside darter (*Etheostoma blennioides*)

**Habitat:**
- **feeding** - young: in quiet water
  - swift gravelly riffles or pools with current of streams and rivers
- **spawning** - filamentous algae necessary for egg deposition
**Rainbow darter** (*Etheostoma caeruleum*)

**Habitat:**

- feeding - gravelly high gradient riffles
- clear, moderate to large streams
- in shallows (average 1 foot)

- spawning - gravel or rubble riffles
**Iowa darter** (*Etheostoma exile*)

**Habitat:**

- **Feeding:**
  - clear, slow moving streams and lakes
  - sandy to muddy substrates
  - intolerant of turbid water
  - lives in rooted aquatic vegetation

- **Spawning:**
  - in pond-like extensions of streams on organic matter or roots
  - in shallows
**Fantail darter** (*Etheostoma flabellare*)

**Habitat:**
- feeding - small, shallow (<18 inches) streams  
  - some tolerance of turbidity and siltation  
  - clear warm waters  
  - slow to moderate current  
  - gravel and boulder substrate

- spawning - gravel in slower water  
  - lays eggs on underside of rocks, male guards and fans them

- winter refuge - moves downstream to larger and deeper waters
Least darter \((Etheostoma microperca)\)

**Habitat:**
- feeding  - moderate to warm temperature
  - clear quiet low-gradient vegetated streams (wetlands, floodplains)
  - soft substrate
- spawning  - spawning occurs on stems of plants
  - male guards a territory in a vegetated area
Johnny darter (*Etheostoma nigrum*)

**Habitat:**
- **feeding** - sand and silt substrate
- - little to moderate current
- - shallow areas of streams, rivers, lakes, and impoundments
- - tolerant of many organic and inorganic pollutants and turbidity
- **spawning** - underneath rocks
- - in stream pools or protected shallows of lakes
Yellow perch (*Perca flavescens*)

**Habitat:**

- feeding - clear lakes and impoundments; also Lake Huron
- low gradient rivers
- abundance of rooted aquatics
- muck, organic debris, sand, or gravel substrate
- does not tolerate turbidity and siltation

- spawning - shallows of lakes, tributaries of streams
- occurs over rooted vegetation, submerged brush, fallen trees
- may occur over sand or gravel
Logperch (*Percina caprodes*)

**Habitat:**
- feeding - gravel riffles, deeper slower sections of rivers
  - medium size streams; also lakes, impoundments, and Lake Huron
  - sand, gravel, or rock substrate
  - avoids turbidity and silt
- spawning - riffles or sandy in-shore shallows
Blackside darter (*Percina maculata*)

**Habitat:**

- **feeding**: small to medium streams
  - low to medium gradient
  - gravel and sand substrate
  - tolerate some turbidity

- **spawning**: gravel and sand substrate
Walleye (*Stizostedion vitreum*)

Habitat:

**feeding** - larger, deeper streams and in large, shallow, turbid lakes and impoundments; also Lake Huron
- gravel, bedrock, and firm substrates preferred
- does not tolerate a lot of turbidity or low oxygen

**spawning** - rocky substrates in high gradient water in rivers
- boulder to coarse gravel shoals in lakes

**winter refuge** - avoids strong currents
**Freshwater drum** (*Aplodinotus grunniens*)

**Habitat:**
- **feeding** - deeper pools of rivers and Lake Huron
  - in shallows
  - prefers clear waters and clean substrates
  - can adapt to high turbidity levels
- **spawning** - pelagically, in open water, over sand or mud substrate
  - occurs in bays or lower portions of marshes
**Round goby** (*Neogobius melanostomus*) – non-native species

**Habitat:**

- **feeding** - rock, cobble, riprap, and vegetate areas of rivers and lakes
- young found over sand substrate

- **spawning** - rocky substrate with large interstitial spaces

- **winter refuge** - rocky substrate with large interstitial spaces
- deep water