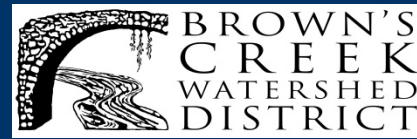
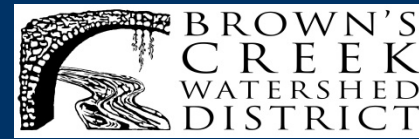


2017 Biological Survey



2017 Biological Survey



Caddis fly larvae

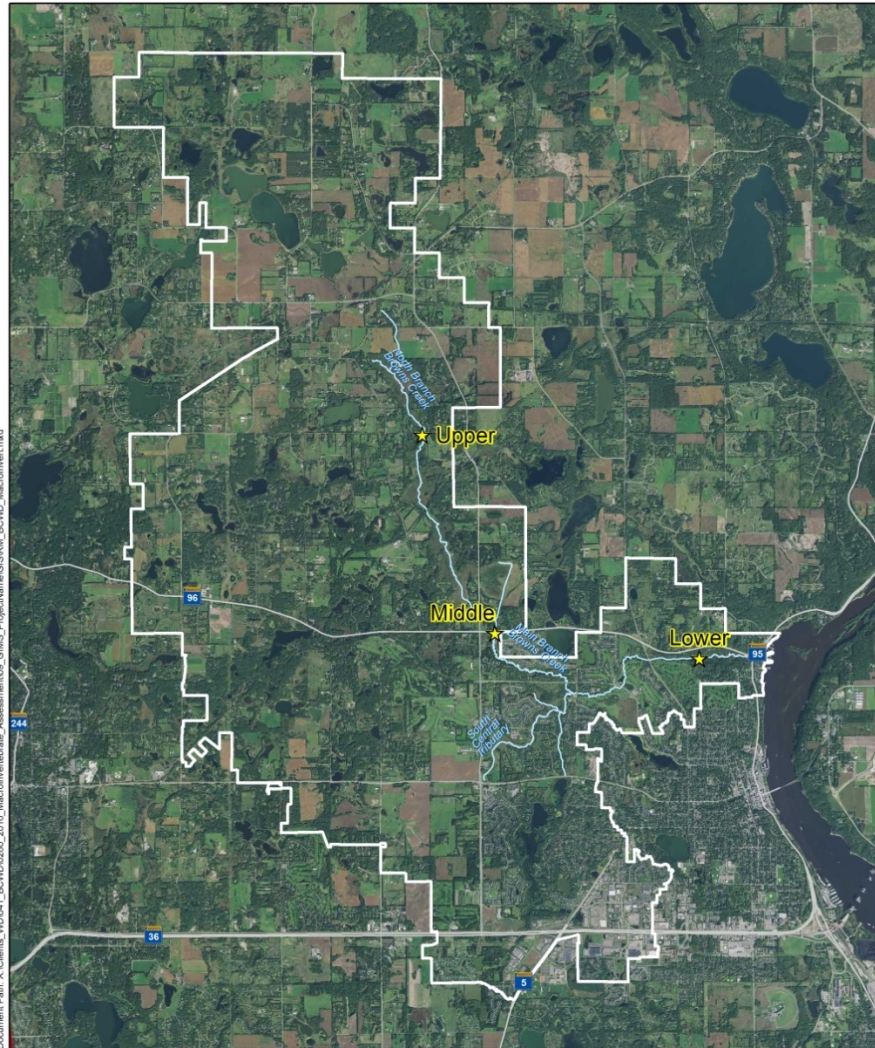
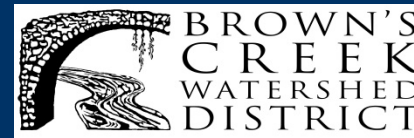


Young brown trout



BCWD collecting fish (every other year) and macroinvertebrate (annually) data in Brown's Creek since 2015 to develop a long-term trend of overall biological health of the stream

May & Sept 2017- Macroinvertebrates



60 species of macroinvertebrates total - Results indicate good water quality and stable conditions in Brown's Creek over the last 3 years

**Upper 38 taxa
Middle 32 taxa
Lower 34 taxa**

Consistent with 2015 & 2016.

All contained taxa with both high and low pollution tolerance levels.

Indicates urbanization impacts, but also ample oxygen levels and good habitat



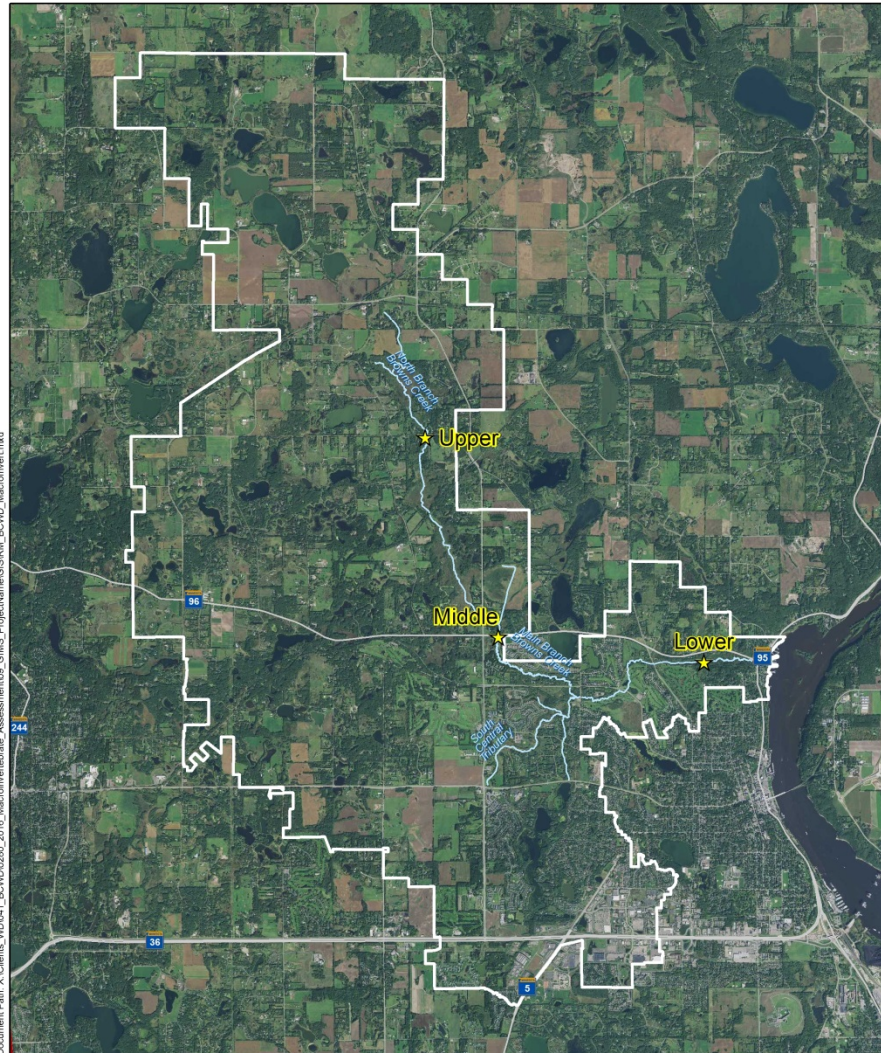
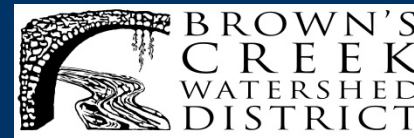
Legend
★ Macroinvertebrate Sampling Location
— BCWD Jurisdiction Boundary 2017
— BC_cl



**BCWD 2015-2017
Macroinvertebrate
Monitoring Locations**

June 2017 – Fish Survey

12 species of fish total



Date: 14/01/2018 Time: 2:08:41 PM Author: gjenen
Project: BCWD 2015-2017 Macroinvertebrate Assessment
File: BCWD_2015-2017_Macroinvertebrate_Assessment09_GIS_Map_ProjectName/GISPM_BCWD_Macroinvertebrate.mxd



Legend
★ Macroinvertebrate Sampling Location
— BCWD Jurisdiction Boundary 2017
— BC_{cl}



BCWD 2015-2017
Macroinvertebrate
Monitoring Locations

Upper 6 species – Fish IBI 0 (poor)
Middle 4 species – Fish IBI 0 (poor)
Lower 12 species – Fish IBI 30 (Fair)

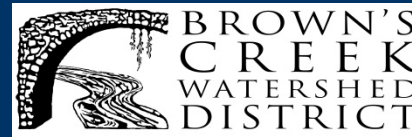
- limited number of coldwater species & top predators sampled
- few stenothermal species were sampled
- indicate possible thermal stressors

Most common species include black bullhead, brown trout, central mudminnow, pumpkinseed, and creek chub

Only 1 pollution intolerant species was captured (rainbow darter)

Creek chub – pollution tolerant

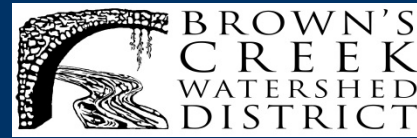
Upper 21, Middle 48, Lower 4



Fish IBI for the Upper & Middle was 0 (Very Poor) due to lack of coldwater species and top predators.

Fish species sampled in these reaches were indicative of cool to warm water fish communities (creek chub, black bullhead, central mudminnow)

Black Bullhead— Upper 11, Lower 293



Central Mudminnow— pollution tolerant

Upper 12, Middle 97, Lower 12

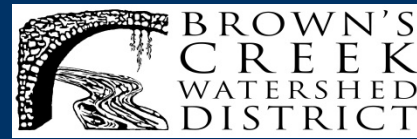


Photo by Matthew Ignoffo - <http://www.flickrriver.com/photos/ignoffo/6949024784/>

Fathead minnow— Upper 1, Middle 1, Lower 16

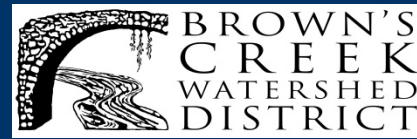
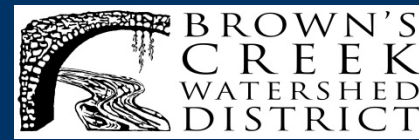


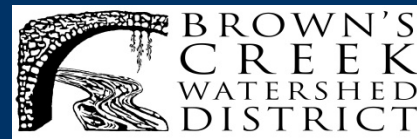
Photo <http://sepond.com/fish-stocking/fathead-minnows>

Green sunfish – pollution tolerant - Lower 4
Bluegill – Lower 28
Pumpkinseed – Lower 89

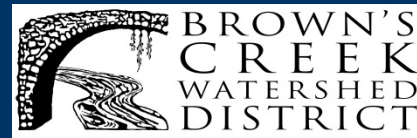


White sucker – pollution tolerant

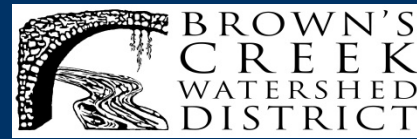
Lower 4



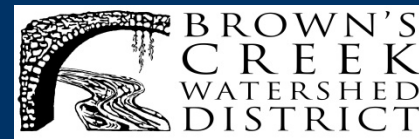
Brook Stickleback– stenothermal Upper 4, Middle 1, Lower 1



Burbot (eelpout) – top predator & stenothermal - Lower 3



Brown trout- top predator & stenothermal - Lower 140

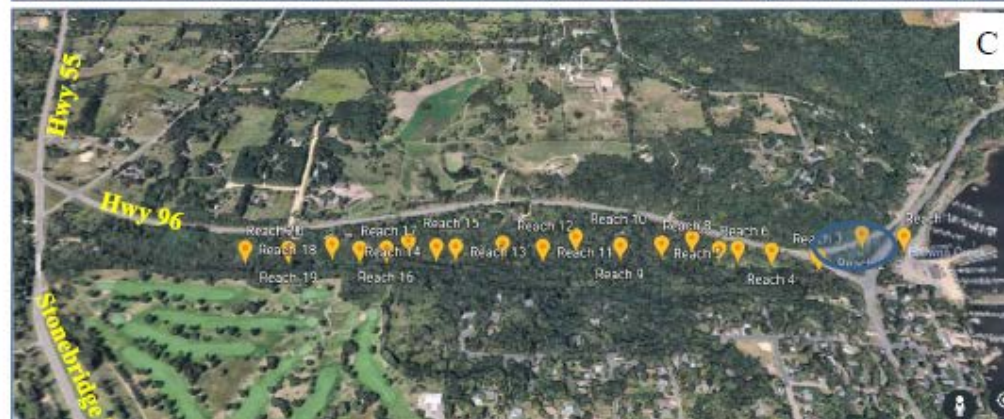


Brown trout were only captured in the Lower reach.

Total of 140 trout

- **73 young of-the-year indicating good natural reproduction had occurred in 2016**
- **Size Range 6.4-37.8 cm**

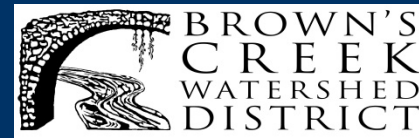
Rainbow Darter – pollution intolerant



Found rainbow darters in 2015 during the Unique Species Inventory

Rainbow darter survey also completed from Stonebridge Trail to Hwy 95 to verify presence, estimate abundance and distribution.

Rainbow Darter Location



Four rainbow darters collected from a restricted area between Hwy 95 and Hwy 96. The Hwy 96 culvert may be a barrier to darter migration upstream. Other possible stressors include temp and brown trout predation

Assess Hwy 96 culvert in 2018 and looking into options to expand darter population upstream of Hwy 96

Thank you

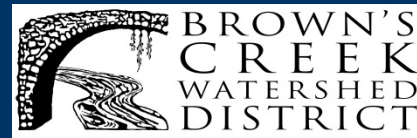


photo by USFWS

www.bcwd.org