

The Blanchard River Watershed Partnership (BRWP) started a Water Quality Monitoring Program in the fall of 2007. The BRWP used the Ohio Scenic Rivers Stream Quality Assessment Form for the basis of collecting the data. Starting 2008 the BRWP started doing monitoring in the spring and in the fall. The monitoring involves identifying the macroinvertebrates found at each sites. Macroinvertebrates are under rocks and debris in stream riffle areas. The macroinvertebrates are grouped into three categories based on the tolerance of the macroinvertebrate to pollution.

The species in the first group (1) are *very sensitive* to any pollution. This group includes Water Penny larvae, Mayfly nymphs, Stonefly nymphs, Dobsonfly larvae, Caddisfly larvae, Riffle beetle adult, and Gilled snails. The species in the second group (2) are *somewhat sensitive* to any pollution. This group includes Damselfly nymphs, Dragonfly nymphs, Crane fly larvae, Beetle larvae, Crayfish, Scuds, Clams, Sowbugs (isopods). The species in the third group (3) are *pollution tolerant*. This groups includes Blackfly larvae, Aquatic worms, Midge larvae, Pouch snails, and Leech. At each site the number of each species identified was counted and recorded on the assessment form.

To determine the overall water quality, the number of taxa in each group was determined. The number of group 1 taxa was multiplied by three; group 2 by 2; and group 3 by 1. The product of each group was added together to determine the Cumulative Index Value. *Stream Quality Assessment (SQA)* was based on the following basis: Excellent (>22), Good (17-22), Fair (11-16), and Poor (<11).

### ***Summary 2011 Macroinvertebrate Monitoring***

Twenty six sites were monitored during 2011 on the Blanchard River (9), Lye Creek(4), The Outlet(3), Riley Creek(7), and Little Riley Creek(3). Again in 2011 only rock grabs were used at every site and rock grab and seine nets were used on the Blanchard River in the spring. As in 2010, high water levels in the spring forced the monitoring to be delayed until late June. In the fall high water again force the monitoring to be done on only 6 sites. The three riffle dam sites were unsafe to monitor at all in the fall.

The data was entered into the Stream Quality form described above. Individual Assessment forms for each side can be obtained by contacting the BRWP.

Of the nine sites on the Blanchard River, 6 sites showed a SQA of good and 3 sites were fair in the spring. In the fall only 6 sites could be monitored on the river due to the high level of the water with only 2 sites being good, 3 sites were fair and 1 site was poor. The largest number of taxa (45.5%) were from the most sensitive group to pollution. The high water levels with the high sediment load were probably responsible for the lower number of taxa observed in the river. Although taxa richness, prevented all of the sites from ranking excellent, the fact that each of the sites had the most taxa in the most sensitive group holds well for the water quality of the river. The substrate of the Blanchard River is mainly bedrock. The lack diversity in the type of macroinvertebrates could be attributed to the lack of specific habitat that some of the macroinvertebrates need. The heavy rains in June and late September may have washed some of the macroinvertebrates downstream and the species did not have enough time to re-colonize before the collection.

Of the four sites on Lye Creek, 3 sites were good and 1 site was poor in the spring. In the fall only 3 of the sites were observed. All three sites scored in the good range. Again, most of the taxa were species from the most sensitive to pollution (45.5%).

The Outlet sites showed poor SQA at all sites in the spring and fall. With the heavy rains during both the spring and fall. The sediment loading in The Outlet placed a significant sediment covering over the substrate that caused the habitat for the macroinvertebrates to be very limited or even destroyed. All taxa were from the Pollution Tolerant group. Whether this shows a poor water quality or is due to the excessive sediment loading was not determined.

Monitoring on Riley Creek occurred at 7 sites in the spring and 6 sites in the fall. The site at the Pandora Park has very little riffle areas and will no longer be studied. Results from the spring monitoring showed 3 sites being good, 2 sites fair, and 2 sites poor. Most of the taxa present were from the Pollution Sensitive group with 45.5% of the taxa. In the fall 4 sites were good, 1 site was fair, and 1 site was poor. Again, most of the taxa were from the Pollution Sensitive group with 45.5%.

Monitoring on Little Riley Creek occurred at 3 sites in the spring and 2 in the fall. The two sites that studied in the spring and fall showed a SQA ranking of poor both during the spring and fall. Even with the poor SQA, the dominate SQA group was the Pollution Sensitive group with 42.9% of the taxa. The other site studied in the spring showed an SQA of fair.

Heavy rain events in the Riley Creek and Little Riley Creek watersheds forced the monitoring to be delayed during the spring and fall. The effects of these events on the results can not be determined.

## Water Quality Monitoring Results 2011 Blanchard River Watershed

| Blanchard River Sites                                   | Spring 2011 | Fall 2011 | KEY to Information   |
|---|-------------|-----------|--|
| BR 020-1 Riffle Dam east Blanchard Ave.                 | Fair-11     | NR*       | Green - Water Quality Excellent (>22)  |
| BR 020-2 North of Intersection TR208/TR234              | Fair-13     | Fair-12   | Red - Water Quality is Good (17-22)  |
| BR 020-3 Riverbend 2000' East of TR241                  | Good-21     | Fair-13   | Blue - Water Quality is Fair (11-16)   |
| BR 020-4 South of the Bridge on TR 207                  | Good-19     | Fair-14   | Brown - Water Quality is Poor (<11)  |
| BR 020-5 Private Dam at the Curve TR 173                | Good-20     | Poor-9    |  |
| BR 020-6 TR 166 just West Rieck Center                  | Good-19     | Good-19   |  |
| BR 020-7 SR 37 1/4 South of Bridge                      | Good-17     | Good-20   |  |
| BR 030-1 Riffle Dam east of Cory St. bridge             | Good-17     | NR*       |  |
| BR 030-2 Liberty Street Riffle Dam                      | Fair-16     | NR*       |  |
| <b>Lye Creek Sites</b>                                  |             |           |  |
| LC-2 West Bridge Hancock Co. Fairgrounds                | Good-21     | Good-18   |  |
| LC-2a Joyce Bostwick farm of SR 37                      | Good-17     | NR**      |  |
| LC-3 Elm Grove Cemetery SR 37/TR 234                    | Good-17     | Good-19   |  |
| LC-4 TR 167 on north side of bridge                     | Poor-9      | Good-18   |  |
| <b>The Outlet(2) Sites</b>                              |             |           |  |
| TO-020-1 TR 255 north of CR 7                           | Poor-1      | Poor-1    |  |
| TO-020-2 CR 11 South Branch                             | Poor-1      | Poor-1    |  |
| TO-020-3 TR 264   | Poor-2      | Poor-1    |  |
| <b>Riley Creek</b>                                      |             |           |  |
| RC 050-1 Road 6 east of Road L                          | Fair-14     | Good-17   |  |
| RC 050-2 Road 6 south of Road M                         | Good-18     | Good-19   |  |
| RC 050-3 SR 12 in Pandora Park                          | Poor-6      | ***       |  |
| RC 050-4 Road R east of Road 5                          | Poor-10     | Fair-15   |  |
| RC 050-5 Phillips Rd. south of Bixel Rd.                | Fair-12     | Good-18   |  |
| RC 050-6 Spring St. just east of Riley St.              | Good-19     | Good-19   |  |
| RC 050-7 College Ave. just north of stadium             | Good-17     | Poor-8    |  |
| <b>Little Riley Creek</b>                               |             |           |  |
| LR 1 East of Elm Street bridge                          | Poor-6      | Poor-4    | NR* Water level was too high to safely monitor   |
| LR 2 East of bridge at Bentley Rd. and Campus Dr.       | Poor-5      | Poor-7    | NR** Landowner was gone and we could not get permission  |
| LR 3 Bridge on Phillips Rd. 1/4 mile north of Hillville | Fair-11     | NR***     | NR*** Construction prevented be able to monitor<br>*** site is no longer being monitored due to poor riffles |

# *Macroinvertebrate Seasonal Frequency*

## Blanchard River Sites

|                               | Spring               |          |          | Fall                 |          |          | 2011<br>Avg. |
|-------------------------------|----------------------|----------|----------|----------------------|----------|----------|--------------|
|                               | Frequency/Percentage |          |          | Frequency/Percentage |          |          |              |
| <b>Pollution Sensitive</b>    | <b>F</b>             | <b>S</b> | <b>P</b> | <b>F</b>             | <b>S</b> | <b>P</b> |              |
| Water Penny Larvae            | 7                    | 9        | 77.8     | 5                    | 6        | 83.5     | 80.0         |
| Mayfly Nymph                  | 9                    | 9        | 100      | 4                    | 6        | 66.7     | 86.7         |
| Stonefly Nymph                |                      |          |          |                      |          |          |              |
| Dobsonfly Nymph               |                      |          |          |                      |          |          |              |
| Caddisfly Nymph               | 9                    | 9        | 100      | 6                    | 6        | 100      | 100          |
| Riffle Beetle Adult           | 6                    | 9        | 66.7     | 2                    | 6        | 33.3     | 53.3         |
| Gilled Snail                  | 8                    | 9        | 88.7     | 5                    | 6        | 83.5     | 86.7         |
| <b>Pollution Intermediate</b> |                      |          |          |                      |          |          |              |
| Damselfly Nymph               | 4                    | 9        | 44.4     | 3                    | 6        | 50.0     | 46.7         |
| Dragonfly Nymph               |                      |          |          |                      |          |          |              |
| Cranefly Nymph                |                      |          |          |                      |          |          |              |
| Beetle Larvae                 |                      |          |          |                      |          |          |              |
| Crayfish                      | 4                    | 9        | 44.4     | 1                    | 6        | 16.7     | 33.3         |
| Scuds                         |                      |          |          |                      |          |          |              |
| Clam                          | 3                    | 9        | 33.3     | 2                    | 6        | 33.3     | 33.3         |
| Sowbug                        | 2                    | 9        | 22.2     | 3                    | 6        | 50.0     | 33.3         |
| <b>Pollution Tolerant</b>     |                      |          |          |                      |          |          |              |
| Blackfly Larvae               |                      |          |          |                      |          |          |              |
| Aquatic Worms                 | 2                    | 9        | 22.2     | 0                    | 6        | ---      | 13.3         |
| Midge Larvae                  |                      |          |          |                      |          |          |              |
| Pouch Snail                   | 3                    | 9        | 33.3     | 0                    | 6        | ---      | 20.0         |
| Leech                         | 4                    | 9        | 44.4     | 3                    | 6        | 50.0     | 80.0         |

## *Macroinvertebrate Seasonal Frequency*

Lye Creek Sites

|                               | Spring               |          |          | Fall                 |          |          | 2011<br>Avg. |
|-------------------------------|----------------------|----------|----------|----------------------|----------|----------|--------------|
|                               | Frequency/Percentage |          |          | Frequency/Percentage |          |          |              |
| <b>Pollution Sensitive</b>    | <b>F</b>             | <b>S</b> | <b>P</b> | <b>F</b>             | <b>S</b> | <b>P</b> |              |
| Water Penny Larvae            | 2                    | 4        | 50.0     | 2                    | 3        | 66.7     | 57.1         |
| Mayfly Nymph                  | 3                    | 4        | 75.0     | 3                    | 3        | 100      | 85.7         |
| Stonefly Nymph                |                      |          |          |                      |          |          |              |
| Dobsonfly Nymph               |                      |          |          |                      |          |          |              |
| Caddisfly Nymph               | 4                    | 4        | 100      | 3                    | 3        | 100      | 100          |
| Riffle Beetle Adult           | 4                    | 4        | 100      | 3                    | 3        | 33.3     | 100          |
| Gilled Snail                  | 2                    | 4        | 50.0     | 1                    | 3        | 33.3     | 42.9         |
| <b>Pollution Intermediate</b> |                      |          |          |                      |          |          |              |
| Damselfly Nymph               | 1                    | 4        | 25.0     | 1                    | 3        | 33.3     | 28.6         |
| Dragonfly Nymph               |                      |          |          |                      |          |          |              |
| Cranefly Nymph                |                      |          |          |                      |          |          |              |
| Beetle Larvae                 |                      |          |          |                      |          |          |              |
| Crayfish                      | 3                    | 4        | 75.0     | 1                    | 3        | 33.3     | 57.2         |
| Scuds                         |                      |          |          |                      |          |          |              |
| Clam                          | 0                    | 4        | ---      | 2                    | 3        | 66.7     | 28.6         |
| Sowbug                        | 1                    | 4        | 25.0     | 2                    | 3        | 66.7     | 42.9         |
| <b>Pollution Tolerant</b>     |                      |          |          |                      |          |          |              |
| Blackfly Larvae               |                      |          |          |                      |          |          |              |
| Aquatic Worms                 | 3                    | 4        | 75.0     | 0                    | 3        | ---      | 42.9         |
| Midge Larvae                  |                      |          |          |                      |          |          |              |
| Pouch Snail                   | 1                    | 4        | 25.0     | 2                    | 3        | 66.7     | 42.9         |
| Leech                         | 3                    | 4        | 75.0     | 3                    | 3        | 100.0    | 85.7         |

# *Macroinvertebrate Seasonal Frequency*

**The Outlet Ditch Sites**

|                               | Spring               |          |             | Fall                 |          |             | 2011<br>Avg. |
|-------------------------------|----------------------|----------|-------------|----------------------|----------|-------------|--------------|
|                               | Frequency/Percentage |          |             | Frequency/Percentage |          |             |              |
| <b>Pollution Sensitive</b>    | <b>F</b>             | <b>S</b> | <b>P</b>    | <b>F</b>             | <b>S</b> | <b>P</b>    |              |
| Water Penny Larvae            |                      |          |             |                      |          |             |              |
| Mayfly Nymph                  |                      |          |             |                      |          |             |              |
| Stonefly Nymph                |                      |          |             |                      |          |             |              |
| Dobsonfly Nymph               |                      |          |             |                      |          |             |              |
| Caddisfly Nymph               |                      |          |             |                      |          |             |              |
| Riffle Beetle Adult           |                      |          |             |                      |          |             |              |
| Gilled Snail                  |                      |          |             |                      |          |             |              |
| <b>Pollution Intermediate</b> |                      |          |             |                      |          |             |              |
| Damselfly Nymph               |                      |          |             |                      |          |             |              |
| Dragonfly Nymph               |                      |          |             |                      |          |             |              |
| Cranefly Nymph                |                      |          |             |                      |          |             |              |
| Beetle Larvae                 |                      |          |             |                      |          |             |              |
| Crayfish                      |                      |          |             |                      |          |             |              |
| Scuds                         |                      |          |             |                      |          |             |              |
| Clam                          |                      |          |             |                      |          |             |              |
| Sowbug                        |                      |          |             |                      |          |             |              |
| <b>Pollution Tolerant</b>     |                      |          |             |                      |          |             |              |
| Blackfly Larvae               |                      |          |             |                      |          |             |              |
| Aquatic Worms                 |                      |          |             |                      |          |             |              |
| Midge Larvae                  |                      |          |             |                      |          |             |              |
| Pouch Snail                   | <b>1</b>             | <b>3</b> | <b>33.3</b> | <b>0</b>             | <b>3</b> | <b>---</b>  | <b>16.7</b>  |
| Leech                         | <b>1</b>             | <b>3</b> | <b>33.3</b> | <b>1</b>             | <b>3</b> | <b>33.3</b> | <b>33.3</b>  |

## *Macroinvertebrate Seasonal Frequency*

Riley Creek Sites

|                               | Spring               |          |          | Fall                 |          |          | 2011<br>Avg. |
|-------------------------------|----------------------|----------|----------|----------------------|----------|----------|--------------|
|                               | Frequency/Percentage |          |          | Frequency/Percentage |          |          |              |
| <b>Pollution Sensitive</b>    | <b>F</b>             | <b>S</b> | <b>P</b> | <b>F</b>             | <b>S</b> | <b>P</b> |              |
| Water Penny Larvae            | 2                    | 7        | 28.6     | 4                    | 6        | 66.7     | 46.1         |
| Mayfly Nymph                  | 7                    | 7        | 100      | 6                    | 6        | 100      | 100          |
| Stonefly Nymph                |                      |          |          |                      |          |          |              |
| Dobsonfly Nymph               |                      |          |          |                      |          |          |              |
| Caddisfly Nymph               | 7                    | 7        | 100      | 5                    | 6        | 83.3     | 92.3         |
| Riffle Beetle Adult           | 4                    | 7        | 57.1     | 4                    | 6        | 66.7     | 61.5         |
| Gilled Snail                  | 5                    | 7        | 71.4     | 5                    | 6        | 83.3     | 76.9         |
| <b>Pollution Intermediate</b> |                      |          |          |                      |          |          |              |
| Damselfly Nymph               | 2                    | 7        | 28.6     | 5                    | 6        | 83.3     | 53.8         |
| Dragonfly Nymph               |                      |          |          |                      |          |          |              |
| Cranefly Nymph                |                      |          |          |                      |          |          |              |
| Beetle Larvae                 |                      |          |          |                      |          |          |              |
| Crayfish                      | 4                    | 7        | 57.1     | 1                    | 6        | 16.7     | 38.5         |
| Scuds                         |                      |          |          |                      |          |          |              |
| Clam                          | 2                    | 7        | 28.6     | 2                    | 6        | 33.3     | 33.3         |
| Sowbug                        | 1                    | 7        | 14.3     | 1                    | 6        | 16.7     | 15.4         |
| <b>Pollution Tolerant</b>     |                      |          |          |                      |          |          |              |
| Blackfly Larvae               |                      |          |          |                      |          |          |              |
| Aquatic Worms                 | 0                    | 7        | ---      | 4                    | 6        | 66.7     | 30.8         |
| Midge Larvae                  |                      |          |          |                      |          |          |              |
| Pouch Snail                   | 1                    | 7        | 14.3     | 0                    | 6        | ---      | 7.7          |
| Leech                         | 4                    | 7        | 57.1     | 4                    | 6        | 66.7     | 61.5         |

# *Macroinvertebrate Seasonal Frequency*

Little Riley Creek Sites

|                               | Spring               |          |             | Fall                 |          |             | 2011<br>Avg. |
|-------------------------------|----------------------|----------|-------------|----------------------|----------|-------------|--------------|
|                               | Frequency/Percentage |          |             | Frequency/Percentage |          |             |              |
| <b>Pollution Sensitive</b>    | <b>F</b>             | <b>S</b> | <b>P</b>    | <b>F</b>             | <b>S</b> | <b>P</b>    |              |
| Water Penny Larvae            |                      |          |             |                      |          |             |              |
| Mayfly Nymph                  | <b>3</b>             | <b>3</b> | <b>100</b>  | <b>1</b>             | <b>2</b> | <b>50</b>   | <b>80.0</b>  |
| Stonefly Nymph                |                      |          |             |                      |          |             |              |
| Dobsonfly Nymph               |                      |          |             |                      |          |             |              |
| Caddisfly Nymph               | <b>1</b>             | <b>3</b> | <b>33.3</b> |                      | <b>2</b> | <b>---</b>  | <b>20.0</b>  |
| Riffle Beetle Adult           |                      |          |             |                      |          |             |              |
| Gilled Snail                  | <b>2</b>             | <b>3</b> | <b>66.7</b> | <b>2</b>             | <b>2</b> | <b>100</b>  | <b>80.0</b>  |
| <b>Pollution Intermediate</b> |                      |          |             |                      |          |             |              |
| Damselfly Nymph               | <b>1</b>             | <b>3</b> | <b>33.3</b> | <b>0</b>             | <b>2</b> | <b>---</b>  | <b>20.0</b>  |
| Dragonfly Nymph               |                      |          |             |                      |          |             |              |
| Crane fly Nymph               |                      |          |             |                      |          |             |              |
| Beetle Larvae                 |                      |          |             |                      |          |             |              |
| Crayfish                      |                      |          |             |                      |          |             |              |
| Scuds                         |                      |          |             |                      |          |             |              |
| Clam                          |                      |          |             |                      |          |             |              |
| Sowbug                        | <b>0</b>             | <b>3</b> | <b>---</b>  | <b>1</b>             | <b>2</b> | <b>50.0</b> | <b>20.0</b>  |
| <b>Pollution Tolerant</b>     |                      |          |             |                      |          |             |              |
| Blackfly Larvae               |                      |          |             |                      |          |             |              |
| Aquatic Worms                 |                      |          |             |                      |          |             |              |
| Midge Larvae                  |                      |          |             |                      |          |             |              |
| Pouch Snail                   | <b>1</b>             | <b>3</b> | <b>33.3</b> | <b>0</b>             | <b>2</b> | <b>---</b>  | <b>20.0</b>  |
| Leech                         | <b>1</b>             | <b>3</b> | <b>33.3</b> | <b>1</b>             | <b>2</b> | <b>50.0</b> | <b>60.0</b>  |