The Impacts of Urban Pollution on Streams
Department of Ecology, Evolution, and Organismal Biology

Emily Martin

Objective
The purpose of this study was to test the impact of urban water runoff on streams to see how pollution entering the small drainage stream Forrest Creek impacted the aquatic ecosystem as a whole.

Introduction
Poorly managed urban streams will cause the loss of invertebrates, fish, and plants in addition to the economic impacts of remediation. Creation of a successful management plan requires an understanding of the connection between unhealthy streams and the humans impacting it. Soldier Creek runs through the northern section of the city of Fort Dodge, Iowa. A tributary named Forrest Creek receives most of its flow from storm drain runoff in town. There is no process to absorb or mitigate pollutants entering storm drains from the streets of the city, which allows them to directly enter stream ecosystems.

Materials & Methods
◊ Water quality was investigated at three sites: Site 1 on Forrest Creek, Site 2 on Soldier Creek above the confluence, and Site 3 on Soldier Creek below the confluence
◊ Water quality and habitat quality were examined at each site once a month starting in March 2015 and continue to the present day
◊ Testing equipment was provided by the IOWATER DNR program. Tests were run for: pH, Nitrate/Nitrite, Dissolved Oxygen, Phosphate, and Chloride
◊ Index of Biotic Integrity and E. coli tests were run one time in October 2015

Results & Discussion
◊ E. coli at all 3 sites was off the readable charts at dilution
◊ There was no statistical difference between chemical levels at Site 2 and Site 3 on Soldier Creek
◊ Forrest Creek shows signs of moderate to severe impact caused by humans
◊ Photo records show several events in which green plumbers dye, concrete wash, industrial-grade soap, various trash items, dumping, hunter’s animal waste, and other items were all dumped into Forrest Creek
◊ Forrest Creek shows severe flashy behavior after every rain event, causing erosion and undercut banks

Conclusions
◊ The chemicals, trash, and other various pollution sources entering Forrest Creek are having an impact on the ecosystem as a whole
◊ A project is currently underway to fix the erosion in Forrest Creek
◊ Landowners, stakeholders, and the city of Fort Dodge can work together to find a solution with guidance from this project as well as their own ongoing surveys

Contact Information
⇒ Emily Martin: emartin@iastate.edu
⇒ Hannah Carroll: hcarroll@iastate.edu
⇒ Dr. Richard Schultz: rschultz@iastate.edu

Acknowledgements: ISU SESS Learning Community, Iowa DNR, City of Fort Dodge, Adam Bissen, Wade Martin, Lori Branderhorst, Connor Nicholas, Brenda & Russell Martin, Jena Hardy