Academy of Science – St. Louis

BioBlitz

Studying the Biodiversity of St. Louis

Guide for Teachers

Academy of Science – St. Louis

by Peggy James Nacke, BioBlitz Director

©2017 Academy of Science – St. Louis
Since 1856, the Academy of Science of St. Louis has been a leader in the advancement and integration of science and technology into contemporary Society. Academy resources are entirely mission focused, on expanded scientific outreach, education, resource sharing and recognition of scientific accomplishment. Academy partners include every scientific sector – academic, public, corporate and private from a broad range of science, medicine, engineering and technology concerns. 

**Website:** [academyofsciencestl.org](http://academyofsciencestl.org)

---

The Academy of Science – St. Louis BioBlitz is an exploration and inventory of the biodiversity of urban parks. Teams of public volunteers led by biologists, naturalists and environmental enthusiasts search natural areas, listing as many different species as they can find. The Academy has led BioBlitz in the major parks in the St. Louis Region and keeps a database of over 1,000 species.

---

Additional Academy programs include: Science Careers: Student Exploration, Science Seminars, Academy of Science – St. Louis Science Fair, Teen Café, and Junior Academy of Science.
is a flash-inventory of the Biodiversity in an urban area

“When one tugs at a single thing in nature, he finds it attached to the rest of the world.”

- John Muir
RESOURCES

Consider:
Reference Books, Field Guides and Websites

Academy of Science – St Louis
(Includes comprehensive resource list)
academyofsciencestl.org

academyofsciencestl.org
forestparkforever.org
insectidentification.org
leafsnap.com
mdc.mo.gov
missouribotanicalgarden.org
projectnoah.org
stlzoo.org
zooniverse.org
Lesson Plans – Project Based Learning

Resources:

Research on-line articles:

For example, the National Science Teachers Association (NSTA) has a great article, “Exploring Biodiversity’s Big Ideas In Your School Yard.” Includes lesson plan and ties in with the National Research Council (NRC) A framework for K-12 science Education: Practices, crosscutting concepts and core ideas.

“We caught a huge bullfrog at the pond. It was really awesome! I’ve never held one before!”

- 7th Grade student
Select your survey focus
Consider:
- Playground
- Track and Field
- School Grounds
- Nearby Park

Select your age group
Consider:
- All grades of same level
- Select one class
- Select different age groups

Obtain permission from your administration
You will need signed permission slips for participating students
BioBlitz Timeframe

Consider:
Two or more BioBlitz seasons to gather comparative data

Select your timeframe

Consider:
one school day
-or-
one class period every day for a week

“I learned that the tail of a tadpole turns orange/red when firefly nymphs are near them. They turn this color so the predator eats their tail and not their head!”

-10th grade student
BioBlitz Teams

Consider:

- Divide your students into teams of two or more
- Identify “area of expertise”
- Will your students be team leaders? They will need to research their area of expertise for identification (i.e. birds/plants/trees in the region)
- Teachers can lead teams, i.e. one will lead bird team; plant team etc.
- Contact local Master Naturalists and Master Garden groups who may be available to lead your teams
- Contact parents – may be a biologist or naturalist who could lead teams

“We worked in teams, one of us looked up the species while the other held the katydid!”

-8th grade student
BioBlitz Teams

Consider:
Nature Photography component

Consider:
-use school camera
-take picture of student followed by their photographs
-allow use of ipads
-buy disposable digital cameras
-print student photos for a BioBlitz wall of fame
-add to school BioBlitz website page

“When words become unclear, I shall focus with photographs.”
-Ansel Adams
BioBlitz Teams

Consider: Nature Art component

Consider:
- teaching a nature sketching lesson
- scan art work and add to BioBlitz Hall of Fame
- add to school BioBlitz website page

“Look deep into nature, and then you will understand everything better.”

-Albert Einstein
BioBlitz Teams

Consider:
Journal Component

Consider:
- Provide a journal component for students to write about their findings.
- A creative writing blog for students to journal about their BioBlitz experience.
- A creative writing opportunity for students to write stories with a nature theme.

“This was an amazing opportunity; these hands-on activities inspired a level of student engagement that I have never experienced before.”

- 6th grade teacher
Water Quality & Macro Invertebrates

Consider:
Water Quality Testing - determine what you would like to test for, i.e. bacteria levels, chlorine, etc. Kits may be purchased on-line or locally at Grainger Supply.

Macro Invertebrates – bring a bucket or pan for collection.

“I really liked the aquatic ecology. Marine biology is a career I am interested in”
-10th Grade Student
Field Work

Consider:
Methods (ask permission before collecting)
Sweeping (with nets)
Collecting
Photographing
Observation

Students:
-Carefully observe the grass and soil. Don't miss the tree trunks and branches. If you see an old log or a big rock, turn it over and observe the underside. Then replace.
-To observe animals and birds, move quietly and slowly.
-Take notes on your data sheets.
-For identification – refer to your reference books, websites or submit for photo identification.
Data Sheets

Consider:
Provide data sheets for each team
Customize to coordinate with your lesson plan
Provide materials (paper or electronic) for species identification look-up

Consider:
Including tracking weather, date, genus, species, count, location, method, notes

“We saw a moth and it had yellow on its head. I learned that’s one way to know it’s a male.”
-5th grade student
Digital BioBlitz

Consider:
Map findings and record data with GPS coordinates

iNaturalist

“The students really liked seeing their data in real-time in iNaturalist”
-Middle School Teacher
Maps

Consider:

- Provide map of Schoolyard or BioBlitz Area
- Students draw their own map

“I learned that it’s not just looking at something, it’s also about smelling, listening, and touching.”
- 6th grade student
Consider:
Teaching how to make a rain garden in your backyard

You can make this portable rain garden
Start with small swimming pool
Line with burlap
Add mulch
Add plants (in pots): buttonbush, cardinal flower, copper iris, palm sedge, rose mallow.

More rain garden information at:
Missouri Botanical Garden
and Missouri Department of Conservation

“What a fantastic experience for my animal obsessed, science-minded kids!

-6th grade mom
Safety Plan

Consider:
Student allergies, i.e. bee stings, pollen, etc.
(include school health professional with a proactive action plan)

Identify Danger areas:
Walk the grounds
  - All bodies of water
  - Parking Lots and Streets
  - Identify poison ivy & poison oak

Put together your safety plan
- Include in pre-BioBlitz lesson plan
- Set physical boundaries to identify areas that students will not be allowed to survey
- Review safety plan in classroom and again outside on BioBlitz day

Consider:
Student and Adult Safety Officers to assist in implementation of your safety plan

Consider:
Communication in the event of an emergency
Schoolyard BioBlitz 101

1. Obtain permission from Administration
2. Identify area to be surveyed
3. Review BioBlitz resources
4. Determine scope of your BioBlitz
5. Prepare Safety Plan
6. Identify participating students
7. Divide students into BioBlitz teams
   A. Assign BioBlitz team “area of expertise”
8. Define Student expectations
   A. Educate with resources for sample gathering and identification
   B. Safety on day of BioBlitz
   C. Respect for each other and the environment
      1. No damage to insects/animals, etc.
   D. Game plan for BioBlitz teams on BioBlitz Day
9. Implementation on BioBlitz Day!
10. After BioBlitz
    A. Complete Data Sheets
    B. Implement project-based learning research activities
    C. Record BioBlitz on your website
    D. Record findings in database
    E. Discuss relevance of your findings
“Adopt the pace of nature: her secret is patience.”
-Ralph Waldo Emerson
Desmodium perlexum!
Academy of Science – St. Louis

BioBlitz
Studying the Biodiversity of St. Louis

EDUCATE
PROTECT
Activity
You are the architect designing your schoolyard BioBlitz.

How will it look?

What components will you include?

Ignite your students through authentic research and field work!
Upcoming BioBlitz opportunities - open to the community

Academy of Science – St. Louis
BioBlitz
Studying the Biodiversity of St. Louis

For more information: academyofsciencestl.org

©2017 Academy of Science – St. Louis
Photography

Denise Baker
Rose Jansen
Peggy James Nacke
Ashley Newport
Barbara Rey
Michael Winkler