“I think this was a very fun project. We got to go outside and work hands on. I think it is a lot easier to learn when you get to do things yourself.” (8th grader)
4-H & Citizen Science

Cornell Lab of Ornithology
Jennifer Shirk
CitizenScience.org

Ileana Betancourt
K-12, BirdSleuth

4-H/Cooperative Extension
Nancy Schaff
Cornell Cooperative Extension
4-H Youth Development State STEM Specialist

Jay Staker
Extension – Science, Engineering & Technology
Iowa State University

Trudy Dunham
Extension Center for Youth Development
University of Minnesota
WebEx Orientation
Mission: To interpret and conserve the earth's biological diversity through research, education, and citizen science focused on birds.
Exploring the promise of citizen science for 4-H...

Pilot project  Webinars

Citizen science is the engagement of public participants in real-world scientific collaborations: asking questions, collecting data, and/or interpreting results.

Citizen science can look like:

- Youth sharing observations and data with a large-scale science project, such as Project FeederWatch, the Citizen Weather Observing Program, or Adopt-a-Pixel.

- Youth collecting and/or using data to help address and improve local conditions, such as monitoring stream health through Illinois RiverWatch or checking the accuracy of local data in the Food Environment Atlas.
Citizen Science

The engagement of volunteers and professionals in collaborative research to generate new science-based knowledge.
Citizen Science

Members of the public engaging in real-world scientific investigations: asking questions, collecting data, and/or interpreting results.
It’s learning...

In the Monarch Larvae Monitoring Program, youth “bond” over loving science!

(Kountoupes and Oberhauser 2008)
... and it's real science!

Monarch data predict ideal breeding conditions will be found further north in the future.

(Batalden et al. 2007)
Existing Projects

Clean Annapolis River Project
NestWatch
nature's notebook eBird

Operation Magpie
Bird Sleuth
FeederWatch

House Finch Disease Survey
Golden-winged Warbler Atlas Project

Birds in Forested Landscapes

The Lost Ladybug Project

JAY WATCH
RIS

House Finch Disease Survey

OAKMAPPER
Project BudBurst

GREAT LAKES WORM WATCH

The Cornell Lab of Ornithology
What can youth do in citizen science?

- Define a question/issue
- Gather information
- Develop explanations
- Design data collection methods
- Collect samples
- Analyze samples
- Analyze data
- Interpret data/conclude
- Disseminate conclusions
- Discuss results/inquire further

Potential benefits of Citizen Science to 4H

Why?

- SET/STEM
- Civic Engagement
- Youth Inquiry Investigations
- Getting Youth Outdoors
- Youth Technology Experience
- Connections to Research

Citizen Science topics

- Astronomy
- Other
- Weather
- Human Health
- Geography
- Agriculture
- Environmental Quality
- Natural Resources

How?
• youth in 36 Utah elementary schools

• plant tulips and monitor bloom times for Journey North project

• 4-H and Junior Master Gardener partnership

VIDEO: [http://www.youtube.com/watch?v=qepQNKDZKRo](http://www.youtube.com/watch?v=qepQNKDZKRo)

Utah State University

**TULIP JOURNEY NORTH**
4-H Special Interest Club, East St. Louis, Illinois

GROWING AND ACCESSING ADEQUATE FOOD TO PREVENT HUNGER

- small group of youth
- partner with a University scientist
- choose experiment:
  - system
  - medium
  - cover crop
- advance knowledge for urban agriculture
• capacity building for adults to lead inquiry-based activities with youth

• youth conduct their own experiments by collecting and/or accessing data from these projects

• groups have the opportunity to share their research with other D2D groups from around the country

VIDEO:  http://mediamill.cla.umn.edu/mediamill/embed/196984

University of Minnesota

DRIVEN TO DISCOVER
The National Map Volunteer Corps - Adopt-a-Quad

Start Here:
Adopt-a-Quad User Guide

Login:
Password: [blank]

Join or create new account
Forgot password?

Adoption Map
The National Map Corps
The Adopt-a-Quad Editor
Contact us

Available to Adopt
- Adopted (QC)
- USGS Review (QA)
- Finished/Unreviewed

Map:

Dognition

WHAT IS COGNITION?

When it comes to tackling life's challenges, we all take different approaches — some of us are team players while others prefer to fly solo. Dogs are no different. Cognition is the way your mind — and your dog's mind — processes the world around it.
What does Citizen Science provide for 4-H youth?

Potential benefits of Citizen Science to 4H

- SET/STEM
- Civic Engagement
- Youth Inquiry Investigations
- Getting Youth Outdoors
- Youth Technology Experience
- Connections to Research
4-H Conversation: A rich history of citizen science

4-H Origins: Taking the University research to the community through youth

1912, Marius Malgren, Hickory, VA

4-H Today: Citizen Science serving community and youth

Youth using GIS for research with FWS Sites

Canning Clubs: Food Preservation
INQUIRY???

Involvement of youth in the research process

Designing data collection methods/protocols
- None
- A few
- About half
- Most
- All

Developing explanations or testing hypotheses
- None
- A few
- About half
- Most
- All

Gathering background information
- None
- A few
- About half
- Most
- All

Defining the question or issue
- None
- A few
- About half
- Most
- All

Interpreting data from charts/graphs/maps
- None
- A few
- About half
- Most
- All

Analyzing data (crunching numbers)
- None
- A few
- About half
- Most
- All

Analyzing samples or classifying objects
- None
- A few
- About half
- Most
- All

Recording observations and collecting data
- None
- A few
- About half
- Most
- All

Refining the question for future research
- None
- A few
- About half
- Most
- All

Acting on conclusions
- None
- A few
- About half
- Most
- All

Discussing conclusions with broader community
- None
- A few
- About half
- Most
- All

Drawing conclusions
- None
- A few
- About half
- Most
- All

Conclusions and next steps

Data collection and analysis
- Designing a study
- Defining the question or issue
- Recording observations and collecting data

(Already involved)
Potential needs for making Citizen Science successful for 4H

- Help evaluating learning outcomes
- Access to technology or equipment
- Direct connections to teachers
- Help finding appropriate projects
- Curriculum materials
- Help getting youth interested
- Funding
- Training for 4H staff and volunteers

Number of responses for each potential need
Resources for getting started:

CitizenScience.org    SciStarter.com
VISION:

Supporting a community of practice for citizen science in 4-H and other youth development contexts.
Upcoming webinars:

Taking it Local: Making more of research than just data collection
Engaging the Community: From data to decision-making

inquiry-based curriculum on birds
Jennifer Shirk
Website: citizensscience.org
Twitter: @citscicentral
Email: JLS223@cornell.edu

BirdSleuth
Twitter: @birdsleuth
Facebook: BirdSleuth
Website: www.birdsleuth.org
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