



# Citizen Science


**AT Day Introduction, Texas Master Naturalist, Cradle of Texas**

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# Are YOU a Scientist?

- **YES – if you observe in nature**
    - **Where species live/don't live and seasonal variation/migration**
    - **What environmental conditions make species thrive**
    - **What species eat and what eats them**
    - **Plant/animal life cycles**
    - **How weather, water and land support plant and animal life**
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# Who Were Early Citizen Scientists?

Before 1900, science was done by amateur or self-funded individuals such as

- Benjamin Franklin
- Charles Darwin

After 1900, science was dominated by researchers employed by universities and government research labs and **studies by citizens were not seen as valid.**





# Professional vs. Citizen Scientists

## What is the Difference?

### Professional Scientists

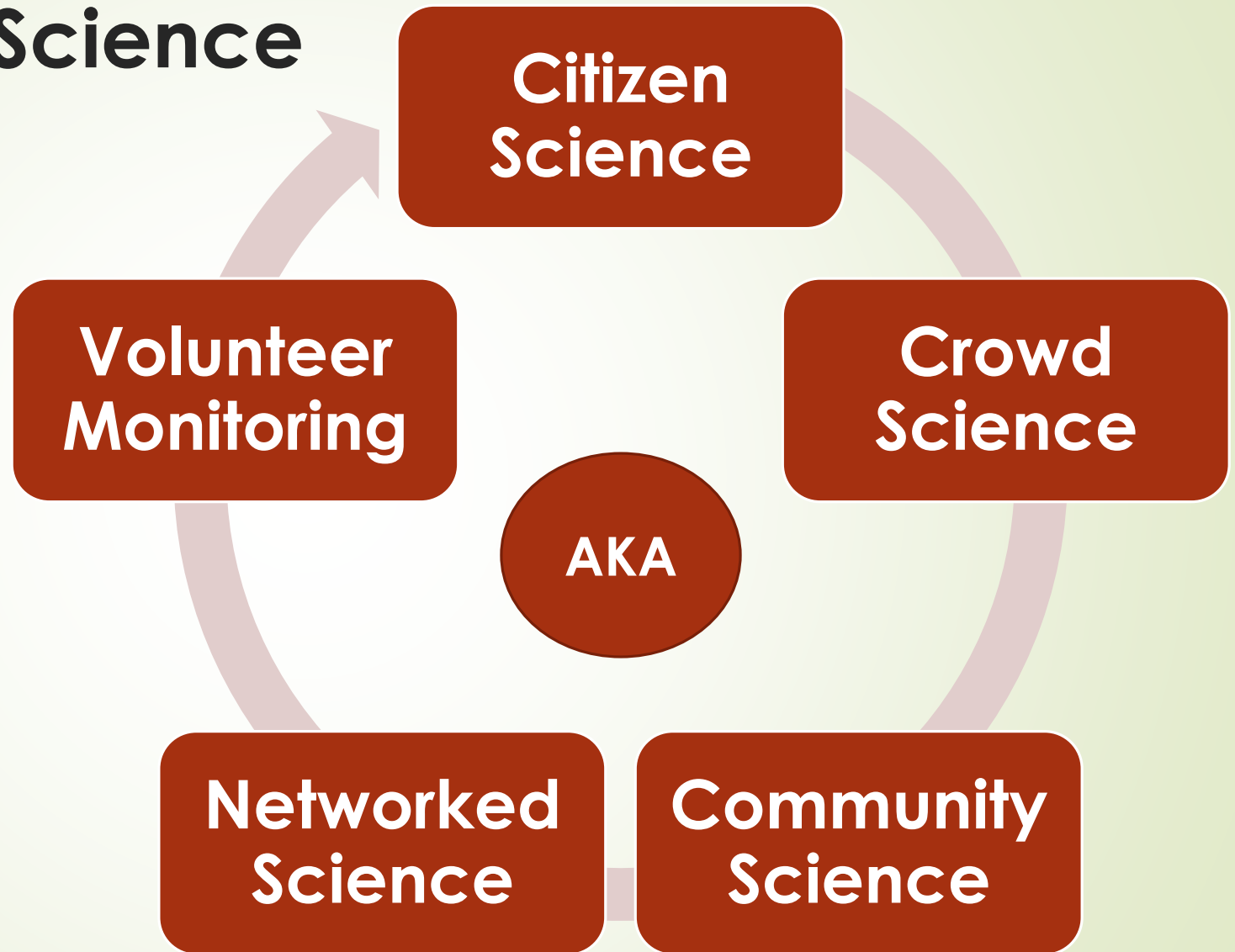
- Work for a university, business, or organization
- Funded by grants or by the organization
- Follow Scientific Method
- Often publish results in peer-reviewed journals.

### Citizen Scientists

- Work in collaboration with professionals
- **Work for free.**
- Follow Scientific Method
- Do not typically publish their work

# Citizen Science

- **Definition:**  
Scientific work done by members of the general public in collaboration with professional scientists



# What has Changed to Make Citizen Science Accepted Today?

Professional scientists and scientific organizations have figured out that

- Studies can be carefully designed to control variables. ...**WHICH GOOD SCIENTISTS SHOULD BE DOING REGARDLESS!**
- Citizens can be trained to observe and collect data per defined experimental protocols. **THUS, DATA CITIZENS COLLECT CAN BE TRUSTED.**
- Checks/balances can be put in place to avoid inaccuracies or biases in data collection. **ON-SITE FOLLOW-UP, QUALITY CONTROL, PHOTOS, REPEAT MEASURES, ETC. ADD PROOF.**
- Citizens add more eyes in the field. **MORE EYES MEAN MORE DATA, BETTER RESULTS, AND OTHER DISCOVERIES.**





# Where in the Scientific Method Are Citizen Scientists Involved?

- Purpose/Question
- Hypothesis
- Experimental Design
- **Experiments/Observations**
- **Results**
- Analysis
- Conclusion



**ALL STEPS!**



# Recent Citizen Science Projects Done by COT Master Naturalists Include

- ▶ Audubon Christmas Bird Counts (Since 1901!)
  - ▶ Texas Stream Team water quality
  - ▶ American Eel Project
  - ▶ Louisiana Eyed Silkmoth
  - ▶ Cactus Moth Project
  - ▶ iNaturalist, Cornell Labs Backyard Bird Counts, and other on-line nature data reporting
  - ▶ Oyster catcher and reef surveys
  - ▶ Bird banding and captured species documentation
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