

# Why Are We Doing This?

## The Role of Citizen Science in Studies of Avian Reproduction



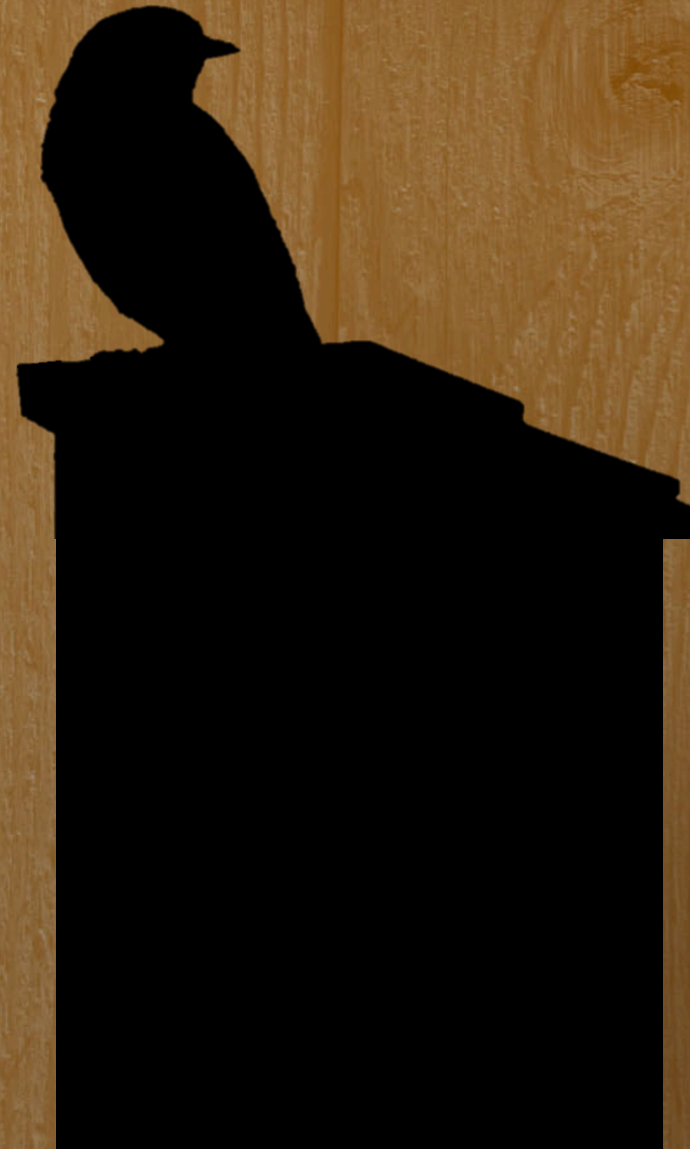
Robyn L. Bailey

NestWatch Project Leader  
Cornell Lab of Ornithology



# Outline

1. How have citizens contributed to knowledge?
2. What is NestWatch ?
3. Recent research results
4. Resources for citizen scientists





# 19<sup>th</sup> Century Oology

- Eggshell thinning & DDT
- Shell pigmentation and coloration
- Genetic reservoirs





# Nest Monitoring Programs





# Nest Monitoring Programs

- Basic discovery of reproductive biology and natural history
- Phenology and climate change studies
- Spatial variation in clutch size and productivity
- Habitat selection patterns
- Brood parasitism



## Climate change has affected the breeding date of tree swallows throughout North America

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Increasing evidence suggests that climate change has affected the breeding and distribution of wildlife. If such changes are due to global warming, then we should expect to see large-scale effects. To explore for such effects on avian reproduction, we examined 3450 nest records of tree swallows from across North America. The egg-laying date in tree swallows advanced by up to nine days during 1959–1991. This advance in phenology was associated with increasing surface air temperatures at the time of breeding. Our analysis controlled for several potentially confounding variables such as latitude, longitude, breeding density and elevation. We conclude that tree swallows across North America are breeding earlier and that the most likely cause is a long-term increase in spring temperature.



# Rare Phenomena

- First instance of twinning in Eastern Bluebirds
- Adoption of novel breeding locations



## Occurrence of twin embryos in the eastern bluebird

Robyn L. Bailey<sup>✉1</sup>, Gerald E. Clark<sup>2</sup>

› Author and article information

✓ Abstract

We report the first record of presumed twinning in eastern bluebird (*Sialia sialis*) and provide a review of all previously reported twinning events in wild birds. A nest containing twin eastern bluebird nestlings was monitored in 2013 in central Pennsylvania and reported to the Cornell Lab of Ornithology's NestWatch program, a national program where volunteers submit data on wild nesting birds. A presumed double-yolked egg of a free-living eastern bluebird pair hatched successfully, and twin nestlings lived for 11 days in a nest box shared by three siblings. Due to the rarity of twinning in wild birds, engaging the public to monitor large numbers of nests is the most likely approach to documenting twinning in wild populations, and citizen science provides the infrastructure for individuals to share observations.

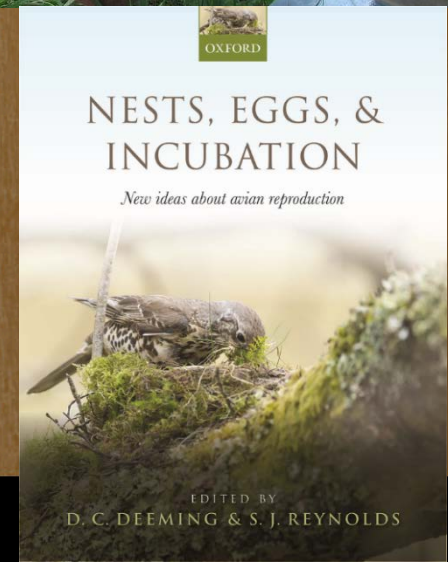


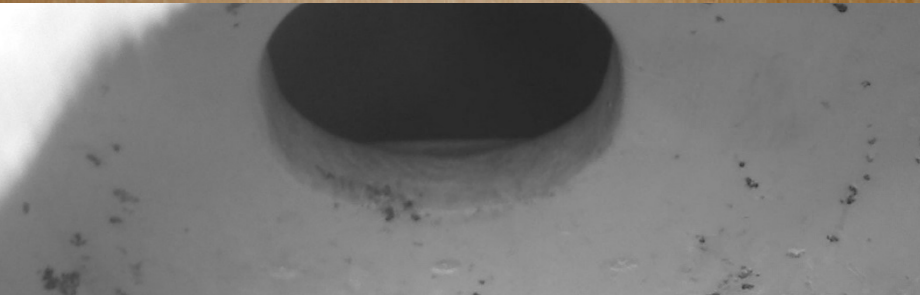


Data from volunteers  
underpins up to 77% of  
studies in this field  
(most volunteers are women)



New ornithology text  
acknowledges the huge debt  
we owe to citizen scientists





## The Future of Citizen Science

### **Bird Cams Reveal Hard-Working Hawk Family: Big**

Red and Ezra, the Red-tailed Hawks whose nest is live-streamed on our Bird Cams, make up to 230 food deliveries each year, carrying roughly 88–100 pounds of food to their three nestlings. Prey varies over time, but chipmunks, Rock Pigeons, and squirrels top the menu. With millions of viewers to help log each and every prey delivery, this prey record is by far the most detailed and complete ever compiled for a wild raptor, reported Bird Cams leader Charles Eldermire.

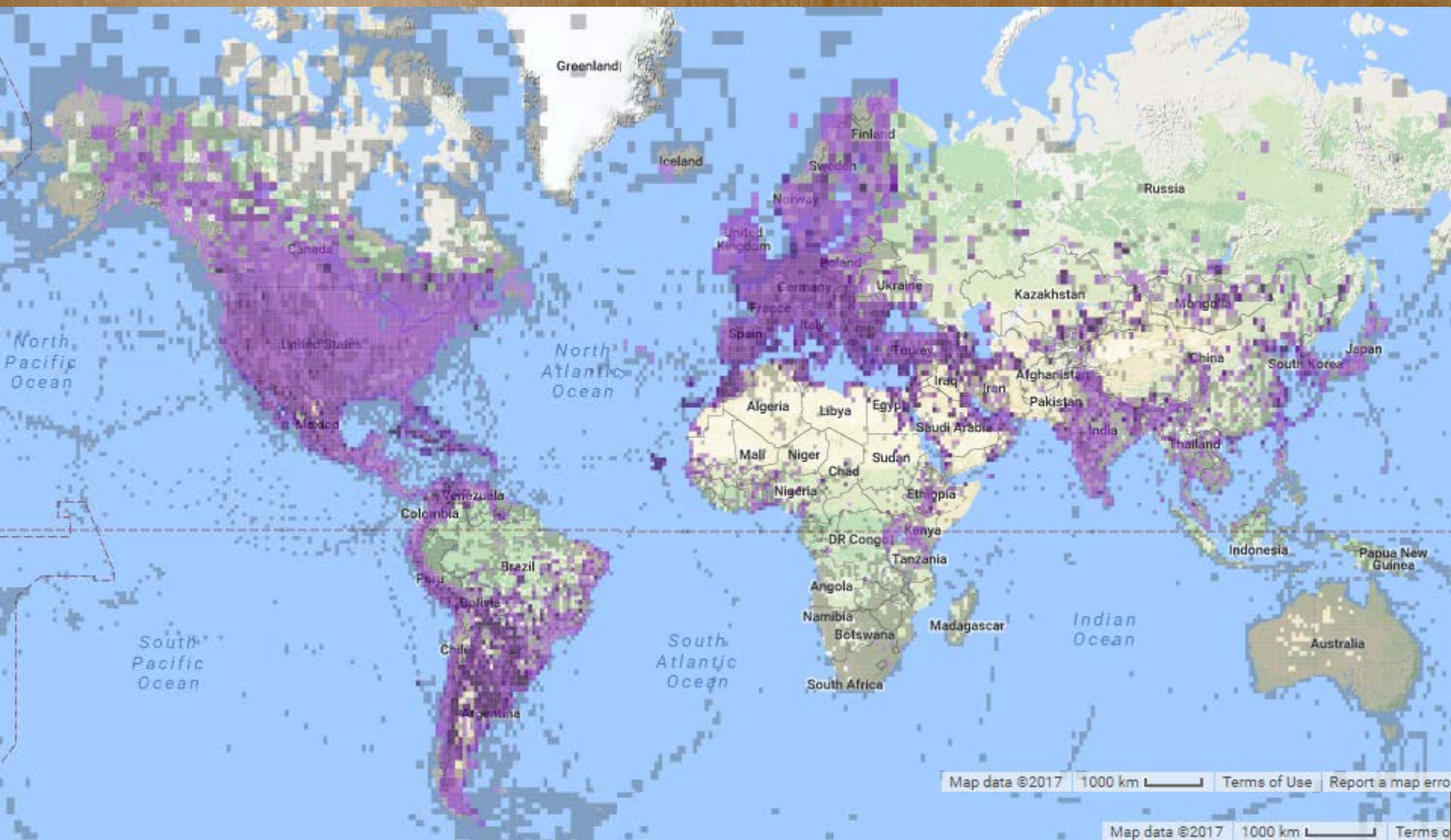




# Starling Swap?











## NestWatch

- ~20,000 nests submitted/year
- Widely-used nest monitoring protocol
- Volunteers monitor the properties & species of interest to them
- We help manage their data and provide useful online resources
- New data entry app





# Ongoing Research Projects

1. Do predator guards on nest boxes improve nest success?
2. How does local weather affect nest success?
3. Does supplemental feeding increase nest success?

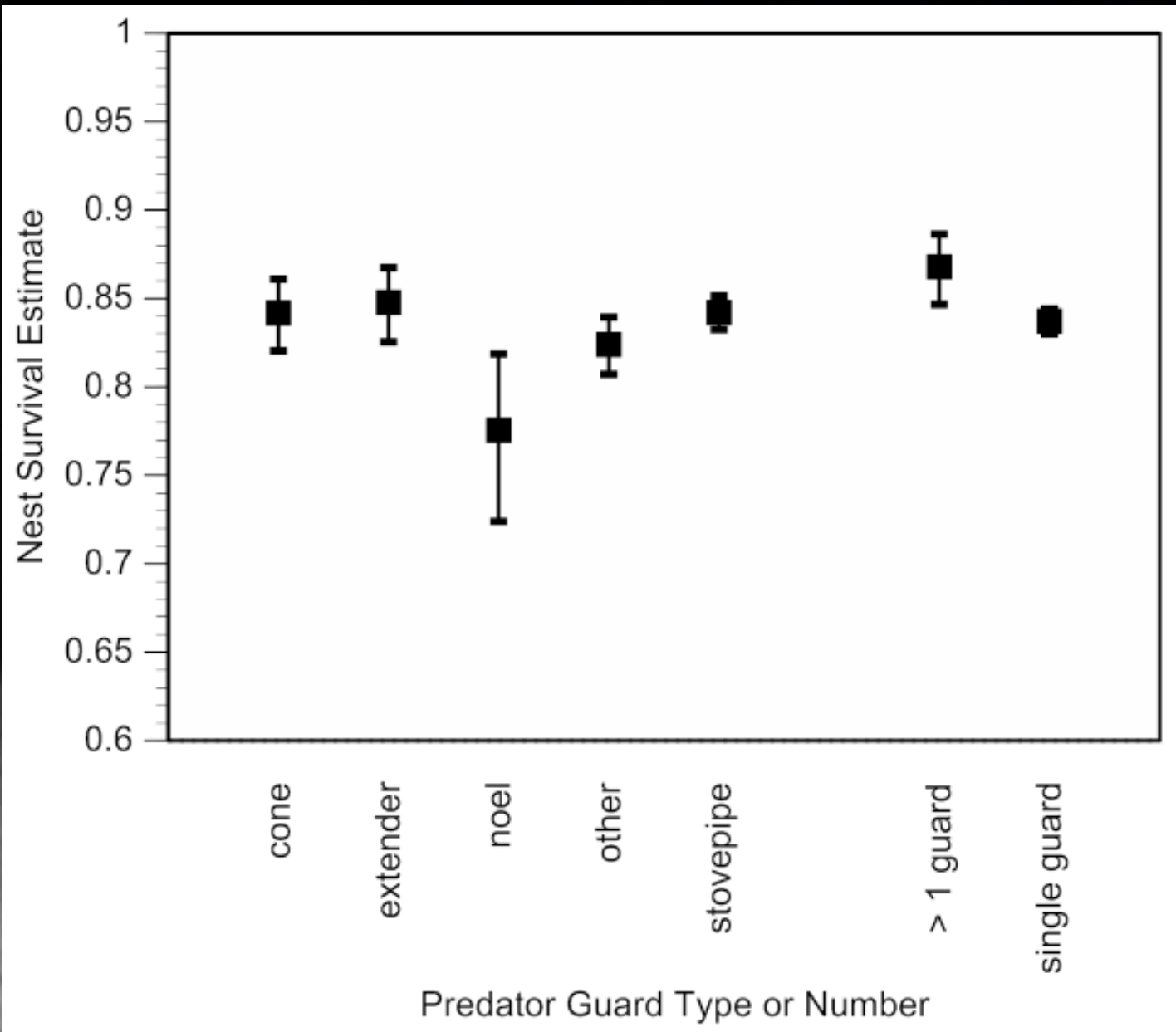


Photo by Kevin McGowan



Photo by Larry Keller







# Resources @ NestWatch.org



- Free predator guard construction plans
- Free nest box plans for >50 species
- Free data on thousands of nest attempts
- Free bulk upload service
- Free data entry app



# Why Do People Do This?

## Motivators

1. Contributing to science
2. Sense of place/nature
3. Enjoyment

## Facilitators

1. Feedback – Data access
2. An opportunity presented itself
3. Contributing to science

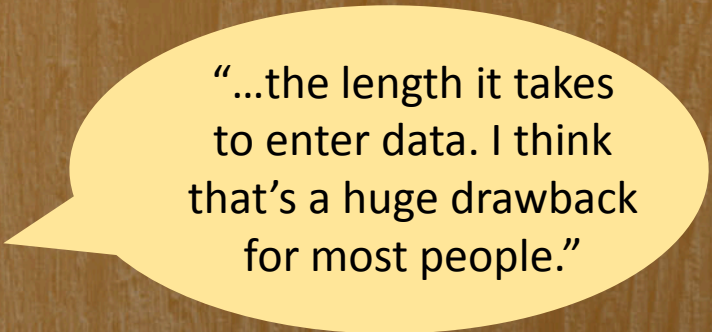
“I think citizen scientists need feedback. They need to see where all this is going and where does it end up, and how did it get used, because I think that gives them some satisfaction that what they did was pretty useful...I think that's a pretty cool thing.”



# Why Don't *More* People Do This?

## Barriers

1. Technical issues with data entry
2. Time
3. Data transparency – how are the data used?



“...the length it takes to enter data. I think that’s a huge drawback for most people.”



“So, I didn’t realize that bridging with NestWatch would really be science at the time, until maybe a year after the data was entered and I kept referring to it. Then, it was like, “Oh! This *is* scientific. Like, I can show people the growth.”

“Science is what I do.  
Science is what I am..”



Thank you.

