



Smithsonian

## FOOD WEB STUDY

Our objective is to determine the role that non-native trees and shrubs play in the trophic (food) web using lepidopteran larvae (caterpillars) and their avian predators as a model system



### Quick Facts About Carolina Chickadees

Nesting Season:  
April – June

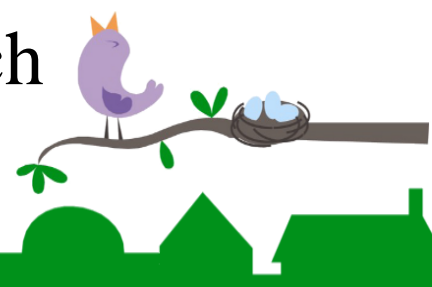
Clutch Size:  
3-10 eggs

Incubation Period:  
12-15 days

Nestling Period:  
16-19 days

A chickadee pair will feed over 7500 prey items to their young while they are in the nest!

# Neighborhood Nestwatch Food Web Study



September 2013 Newsletter

## Hello Nestwatch Participants!

Thank you again for a wonderful pilot field season for the Food Web Project. Here are some information about the project's goals, our study species and summaries of the data collection in 2013. We look forward to working with you next year!

-Desiree and the CACH team

## What we've been up to in the field

### Vegetation and Caterpillar Surveys

We quantified the amount of native and non-native tree and shrub species in the chickadee territory and the abundance of caterpillars feeding on them.



Cabbage Looper (*Trichoplusia ni*) feeding on Basil leaves

### Foraging Observations

Chickadees were followed during foraging bouts to determine if adults preferred to forage on some species of trees over others.

### Video recording of Nest Feeding

Videos of adults provisioning nests were obtained to quantify feeding rates and types of food items being brought to the nest.



Still from a video recording of (A,G/O) feeding his nest a caterpillar.

### Measuring Nestlings

We measured nestlings twice while in the nest to see how fast they grew and relate that to measures of food in the territory.



An 11 day old chickadee nestling

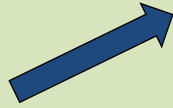
### Collecting blood, feather and fecal samples

Using isotopic and genetic analysis we can determine what kinds of food chickadees are eating and whether it impacts their energetic condition.

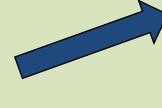
## Meet Your Caterpillars

### Food plant:

Deciduous trees like oaks, cherries, beeches, maples and more



Confused Woodgrain Caterpillar  
(*Morrisonia confusa*)



Confused Woodgrain Moth

Pictures from Wikipedia.org



## How do I take care of my Nest Box?

Providing a backyard nest box for cavity nesters is a great step in creating habitat for wildlife. A nest box can give small animals not only a safe place to raise young, but also a warm location to escape the cold winter nights. In the forest, animals look for natural cavities in old, dead trees called snags which are created by woodpeckers or natural decay. In suburban areas, trees tend to be younger and dead trees are quickly removed for safety and appearance. For this reason, and others, cavities are in short supply.

However, providing shelter for wildlife doesn't stop at putting up a box. Wildlife stewardship should also include taking care your nest boxes and cleaning it seasonally.

### Steps to Clean your Nest Box.

1. When your nesting birds have successfully fledged their young, remove the old nesting material from the box. Feel free to discard in an area where other birds may be able to recycle the material. Always be certain the nest is NOT active!
2. Nest boxes can be rinsed thoroughly with water or with a 10% bleach solution to get rid of any unwanted bacteria or mites. If bleach is used, leave the cap off for about 24 hours to air dry.
3. After drying, recap the lid to keep the inside nice and dry. If the lid seems like a tight fit, use petroleum jelly or another lubricant to make it easier to remove
4. If desired, fill the tube about  $\frac{1}{4}$  of the way with bedding, like animal shavings, or shredded paper.
5. Don't forget to check it again in February to see if it needs to be cleaned out again.



Natural Chickadee nest cavity found at a participant's house

### Native Wildlife that use Nest boxes

- Chickadees
- House Wrens
- Bluebirds
- Tree Swallows
- Purple Martins
- Tufted Titmouse
- Wood Duck
- Eastern Screech-Owl
- Prothonotary Warbler
- Great-crested Flycatcher
- Woodpeckers & Nuthatches
- American Kestrel
- Flying Squirrels
- *Peromyscus* Mice
- and more.....



Male Tree Swallow scoping out a participant's nest box

Nestwatch Nest boxes were made with 3 cm holes specifically to let in small birds like chickadees and wrens and to keep out larger birds like House Sparrows

Neighborhood Nestwatch - 202-633-9444 - nestwatch@si.edu

Did you know?



# Neighborhood Nestwatch

Chickadee Nests can be identified by the signature thick layer of **moss** for the base, and lined with soft, warm material like **cotton** or **animal fur**.

## What's in a chickadee nest?



Field work isn't all hard work and no play. Exciting moment when a young male ruby-throated hummingbird came to visit our nets!



## Season Highlights



**Crazy nests!**

This chickadee pair didn't mind daily visits from the mailman and nested successfully in a newspaper slot this season.

### Fast Facts about Nestwatch Chickadees in 2013

**2004**

Year the oldest chickadee resighted was originally banded (The oldest chickadee on record was 10 years old!)

**45**

Number of Chickadee nests monitored this season

**126**

Number of Chickadees color banded this season (including 61 nestlings!)

**324**

Number of Caterpillars found on Trees and Shrubs

## What's in a House Wren nest?



Photo by: Ellen M Falbowski

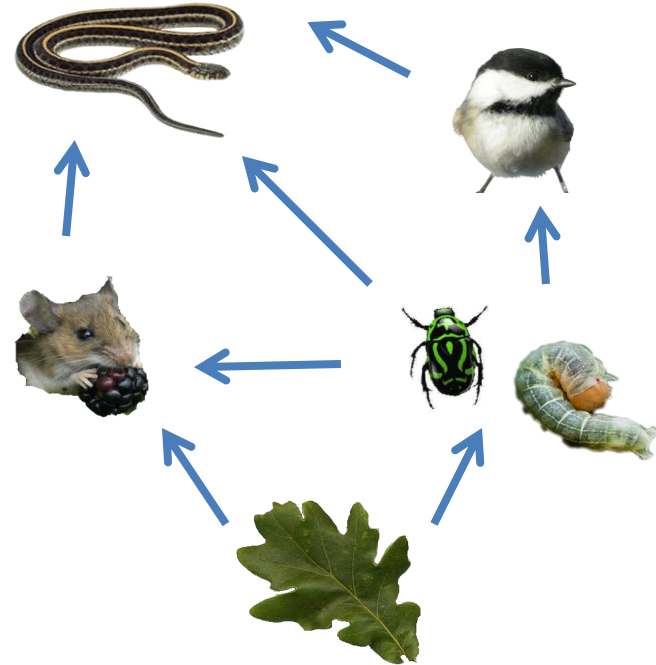
House Wren nests can be identified by the use of **sturdy twigs and stems** for the sturdy and sometimes surprisingly thick base. Males often adorn their favorite nest spots with decorations of **spider sacs**. You'll know a female has picked a nest spot when she starts to line the cup with soft material like **dried grass** and **animal fur**.

# What's a Trophic Web?

The main objectives of this study is to determine how non-native (exotic) plants are impacting higher trophic organisms. So what does that mean? A trophic (or food web) refers to the way that energy flows through the ecosystem from producers (i.e. organisms that make food; plants) to consumers (organisms that consume food). Consumers can be low in the trophic web if they directly eat producers (like a caterpillar) or high if they eat other consumers. For example, a hawk would be the highest trophic organism because they eat consumers (birds and small mammals), and there are few or no organisms that eat them.

To protect themselves, plants have evolved special chemical defenses in their leaves to deter herbivory from insects. However, over time some caterpillars have evolved their own protection against these defenses, resulting in only a select few insect species able to feed on a particular species of plant.

As areas become urbanized and developed, there are drastic changes in the abundance and diversity of vegetation. In addition, many homeowners specifically landscape their properties for aesthetic or ecological properties by way of wildlife habitat. The loss of a particular species of plant, and/or replacement by a related non-native species, may result in changes to the community of organisms that rely on this food source. This suggests that insect eating birds (like our chickadees) may in part be negatively effected by non-native plants, by way of reducing available food resources. This, however, has not yet been explicitly tested, so with the help of Neighborhood Nestwatch participants we will begin to address these questions.



*An example of a possible Eastern Forest Food Web*

## Find Us Online

### For more information about the Food Web Study:

Desiree L. Narango  
Nestwatch.foodweb@gmail.com

### Neighborhood Nestwatch:

[http://nationalzoo.si.edu/scbi/migratorybirds/research/neighborhood\\_nestwatch/](http://nationalzoo.si.edu/scbi/migratorybirds/research/neighborhood_nestwatch/)

### Find us on Facebook:



<https://www.facebook.com/pages/Smithsonian-Neighborhood-Nestwatch/226594372076>

## Thank you to all Nestwatch participants, friendly neighbors and volunteers!

Look for an email from Desiree in March 2014 for information about next year's field season



Don't forget to enter your Nestwatch Nest and resight data!