# THE WILDLAB EDUCATION PROGRAM
# UNIT 3: ADAPTATION

**Goal:** To introduce students to the important role they can play in gathering data about birds and their habitat, using mobile technology as a scientific tool.

**Learning Objectives:**
- Students will gain an appreciation for the presence and diversity of birdlife in their local environment.
- Students will distinguish bird groups based on shape.
- Students learn that bird's various shapes are adaptations that help them survive.
- Students will apply technology to collect scientifically rigorous data in the field.

**Time Needed:** 45 minutes to 2 hours

**Materials:** Binoculars
     IPhone/iPod Touch with the WildLab app
     Notebook and pencil

**Vocabulary:** Citizen Science, Adaptation, Diversity, Niche, Morphology, Field Mark

**Supported New York State Elementary Learning Standards *Key Ideas* and *Performance Indicators*:[1]**
- Math, Science & Technology *Standard MST6*: Students will understand the relationships and common themes that connect mathematics, science, and technology and apply the themes to these and other areas of learning.
- Science *Key Idea MST4.LE7:* Human decisions and activities have had a profound impact on the physical and living environment.
- Science *Key Idea MST4.LE6:* Plants and animals depend on each other and their physical environment.
- Mathematics *Key Idea MST3.ME5:* Students use measurement in both metric and English measure to provide a major link between the abstractions of mathematics and the real world in order to describe and compare objects and data.
- Geography *Performance Indicator SS3.E.2C:* Students analyze geographic information by making relationships, interpreting trends and relationships, and analyzing geographic data.

## LESSON OUTLINE
- How can groups of birds be distinguished?
- How are bird's adaptations to certain diets reflected in their shapes?
- How do a bird's habitat preferences influence its unique adaptations?
- How can citizens help with conservation efforts?
- How can technology help with this process?
- Students explore The WildLab app

1.) From www.nylearns.org/standards. NY State learning standards encompass standards, key ideas, performance indicators and major understandings.

**Introduction: (30 Minutes)**
In this field session, the teacher or parent leads learners to the schoolyard, park, or other nearby outdoor study site.  The second step in the bird identification process using the WildLab is to identify the bird group based on shape. Once they choose the appropriate habitat, they are presented with a list of bird silhouettes.  Learning about a bird's shape can tell you much about its feeding habits and other **adaptations** (and vice-versa).  The study of an organism's shape is known as **morphology**.

**Activity: Seeing Shapes (30-60 Minutes)**
- How might a bird's habitat preferences affect its shape (adaptations)? Continue the previous unit's discussion of adaptations to habitats.  Explain that each species has a **niche**, and there are different adaptive solutions to any given habitat, for example, ducks have webbed feet to swim in a pond or marsh habitat, but herons and egrets have long legs to wade in the water instead.  However, every species has adaptations to find food, shelter, and water (the primary requirements of a habitat).
- These adaptations make different groups of birds distinctive in shape.  Most birds can be narrowed down to a family of perhaps 10 or 20 species by shape alone.  To prove this, have the students proceed to the Bird Silhouette Screen on their iPhones.  See if they can guess any of the groups.  They should be able to ID the duck, woodpecker, or pigeon silhouette easily.
- Ask what characteristics they used to identify the group (body shape, beak, length of legs or neck, etc.)
- Ask which categories of birds they are unfamiliar with.  Describe these species if you are able.
- Ask why do you think it's important to correctly identify the species we see?
- Look for birds using binoculars.  Once you encounter a bird, use the WildLab habitat and silhouette groups to narrow down which group it's in.  They should have a list of about 5-10 species (with the largest being the Warblers & Vireos, having 20 + species) of the most common species within that habitat and silhouette category.
- Now comes the most challenging part: identifying the species!
- Introduce the concept of **Field Marks**: the distinctive characteristics that allow us to identify a specific bird species.
- Different sizes, bill-shapes or leg-lengths are field marks that allow us to place birds in groups, and with a good view, specific species can usually be identified.
- Behavior, such as movement and song, provides clues to a bird's identity.
- Once the species is determined, enter the sighting with the WildLab.