

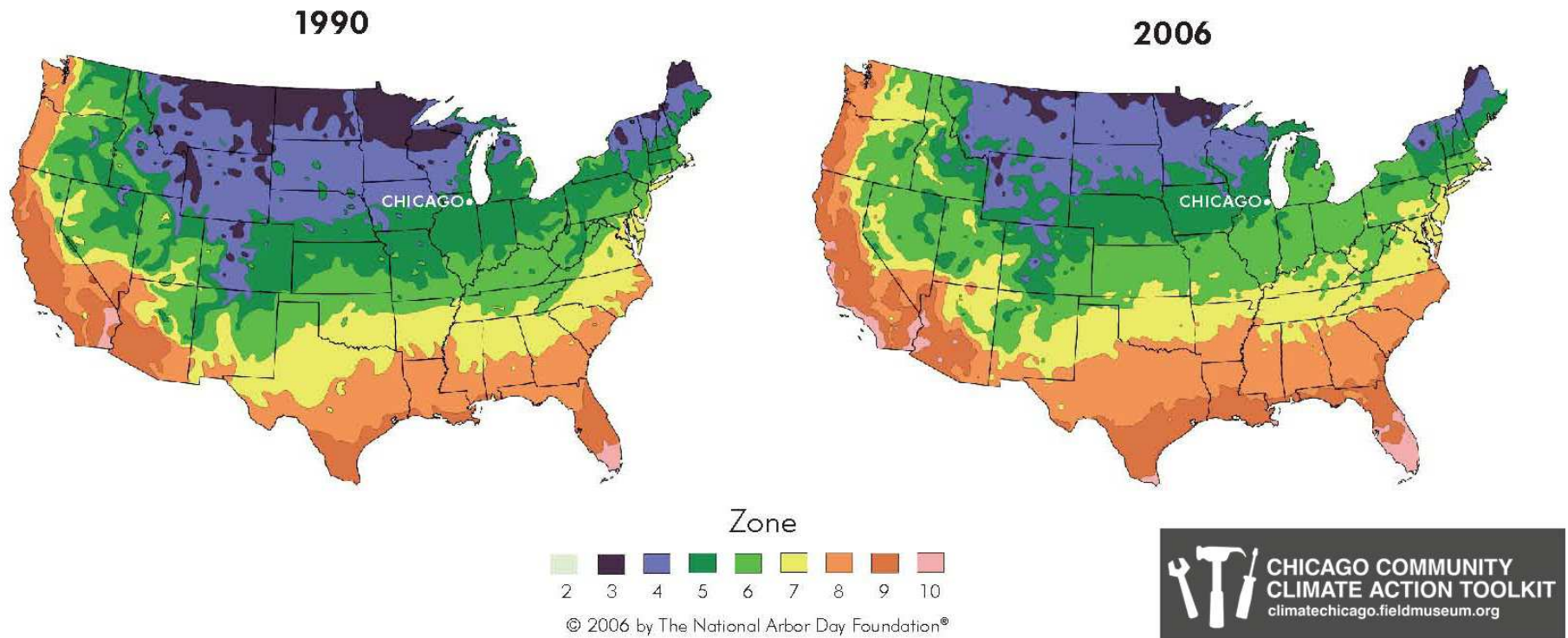
Climate Change will have Food Implications for PEOPLE, ANIMALS, and PLANTS



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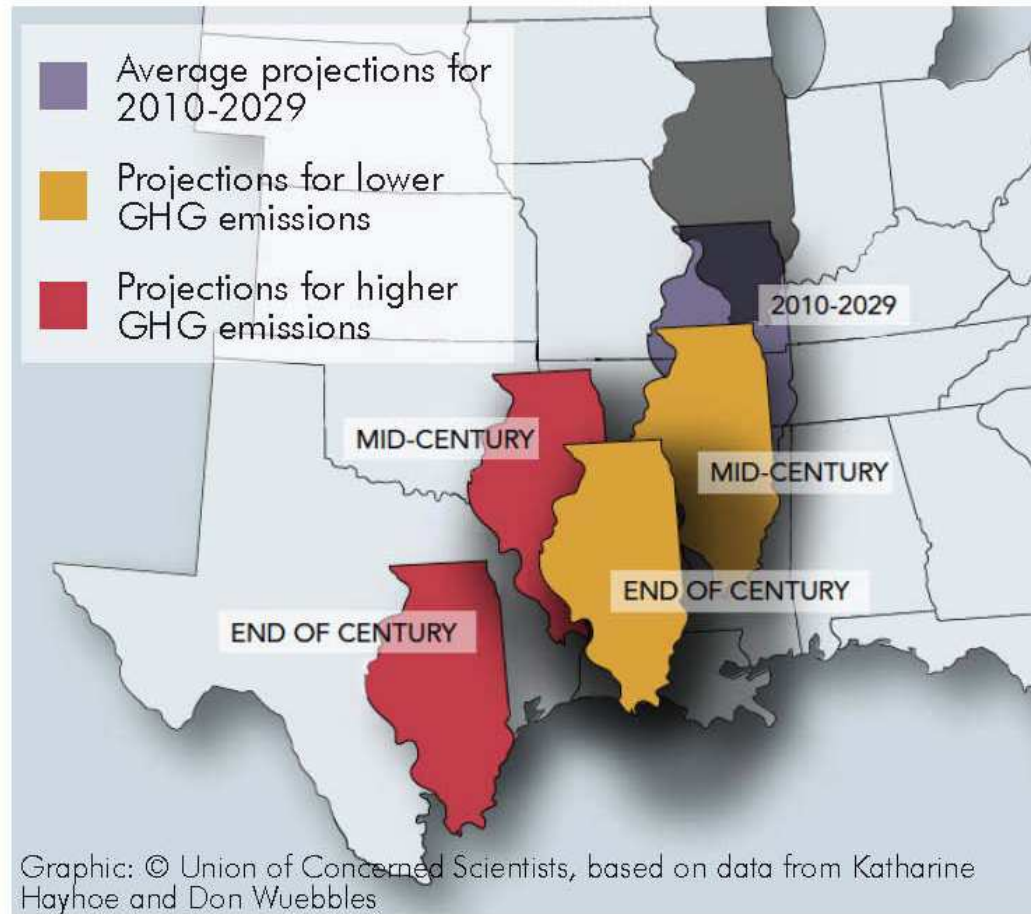


Plant Hardiness Zone



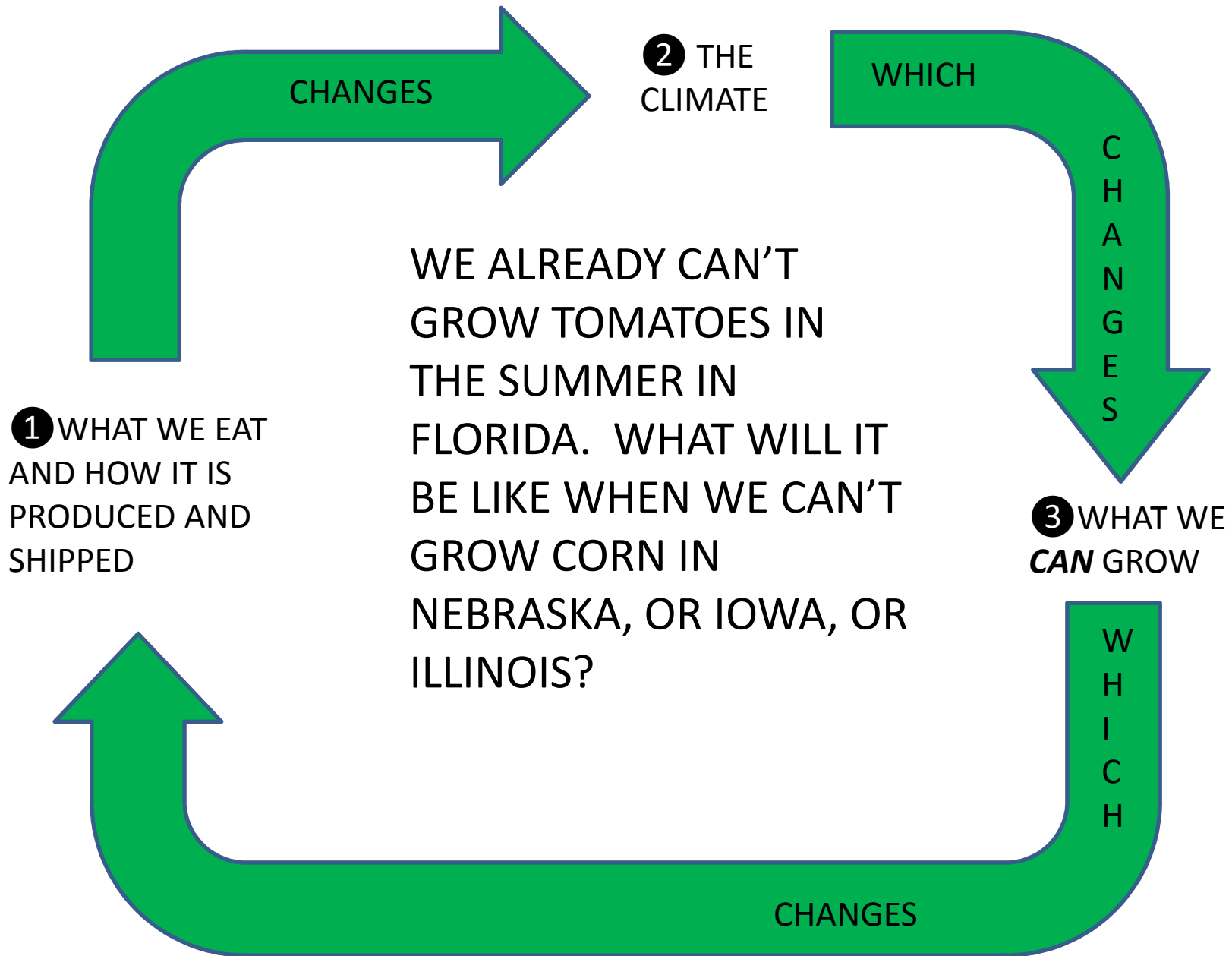
Since 1990, the Chicago region warmed one hardiness zone. Plants that once thrived here now fare better farther north. Even more recent data show that in the last 6 years, the region has become an additional ½ zone warmer.

Projected summer climate changes over this century for Illinois



Illinois=Texas?

Droughts, Floods, and...HEAT will impact what we can grow



Implications for Corn Production in the Midwest

Mean number of Growing Degree Days over 29°C and what it might mean for corn production. **Production moves out of Illinois, Iowa, and Nebraska.**

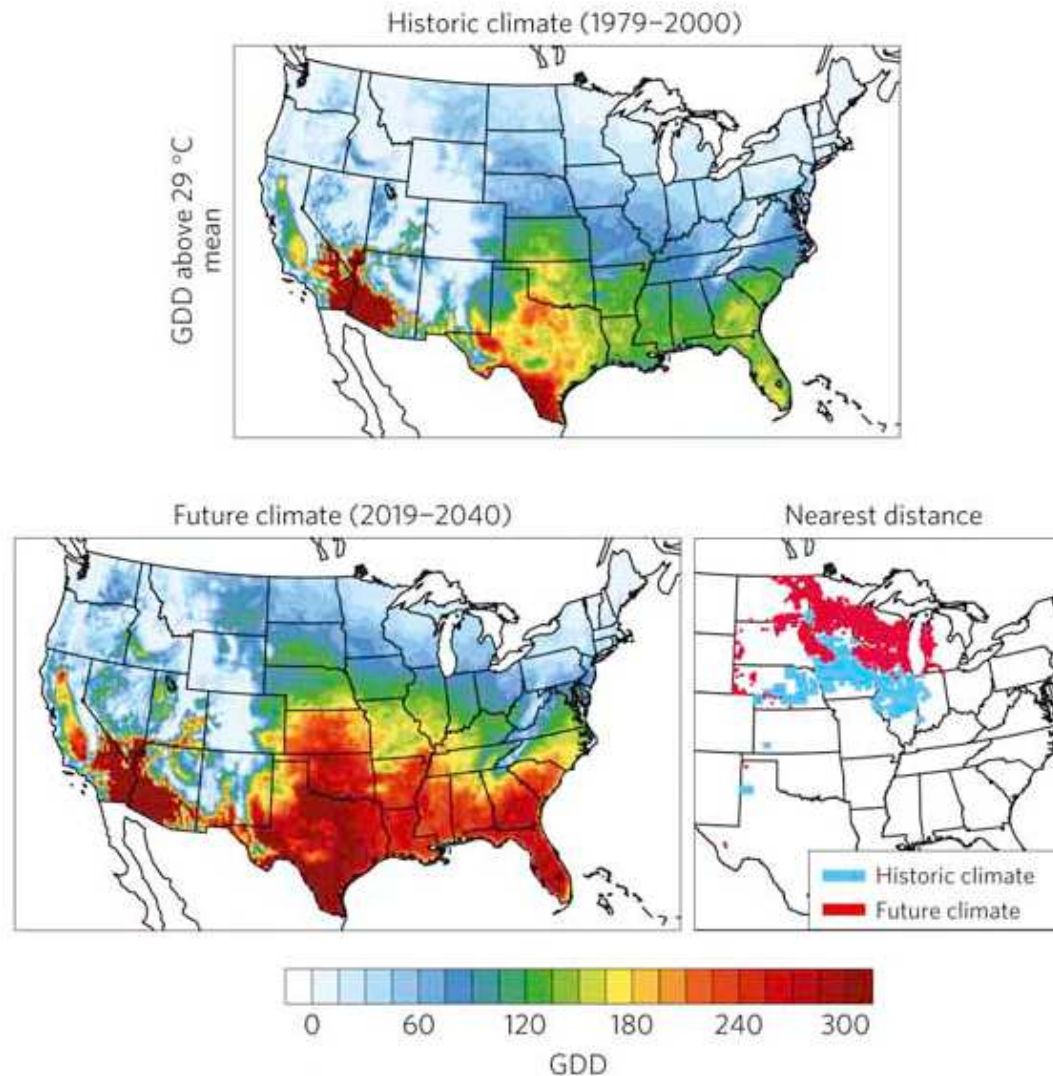


Figure 3.
Blue counties have a climate that supports significant corn production. That climate is projected to move northward in the future to the counties in red (which have very different soils!)

Phenological Mismatch

THEN

Temperature and Length
of daylight in sync

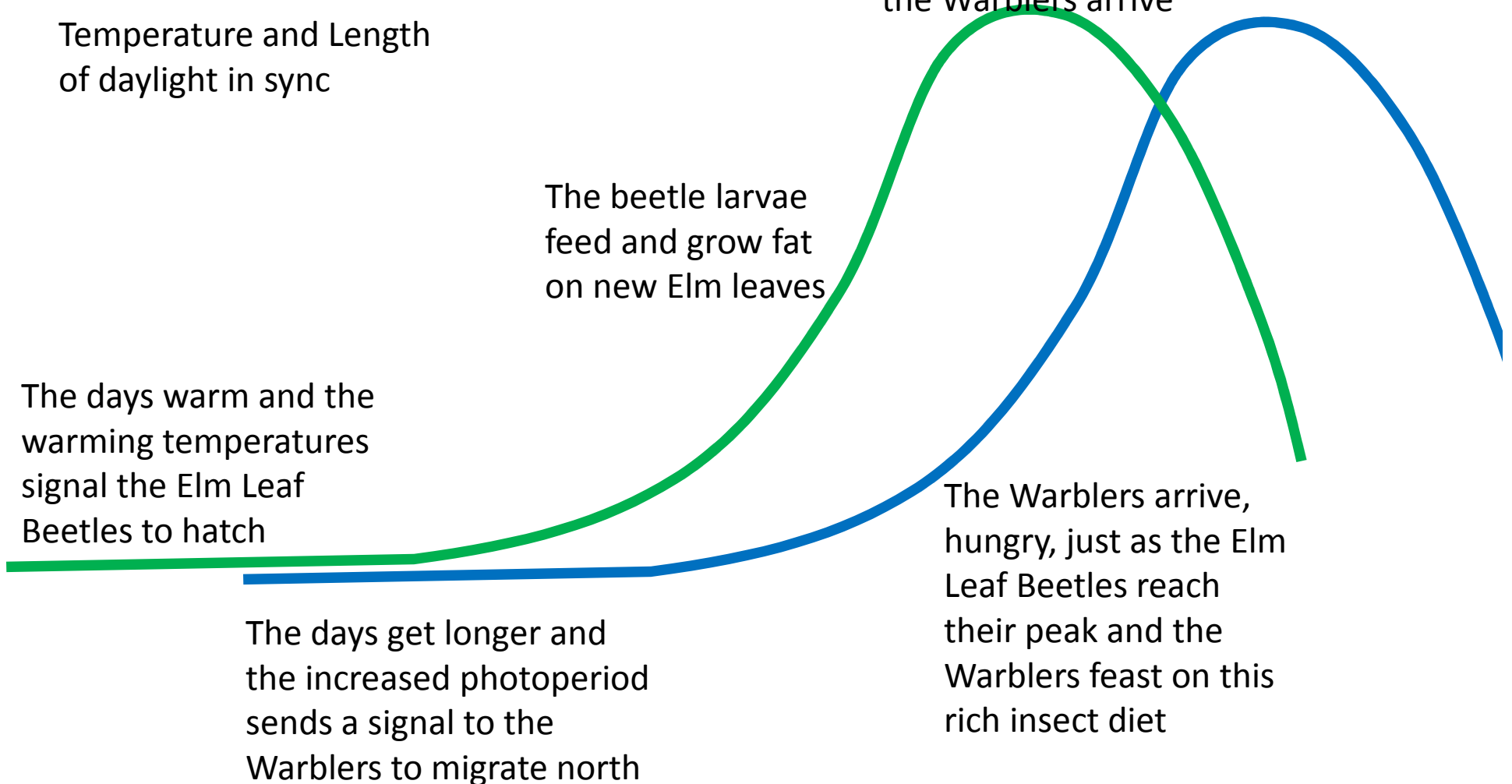
The days warm and the
warming temperatures
signal the Elm Leaf
Beetles to hatch

The days get longer and
the increased photoperiod
sends a signal to the
Warblers to migrate north

The beetle larvae
feed and grow fat
on new Elm leaves

As they reach their
peak abundance,
the Warblers arrive

The Warblers arrive,
hungry, just as the Elm
Leaf Beetles reach
their peak and the
Warblers feast on this
rich insect diet



NOW

Temperature and Length of daylight out of sync

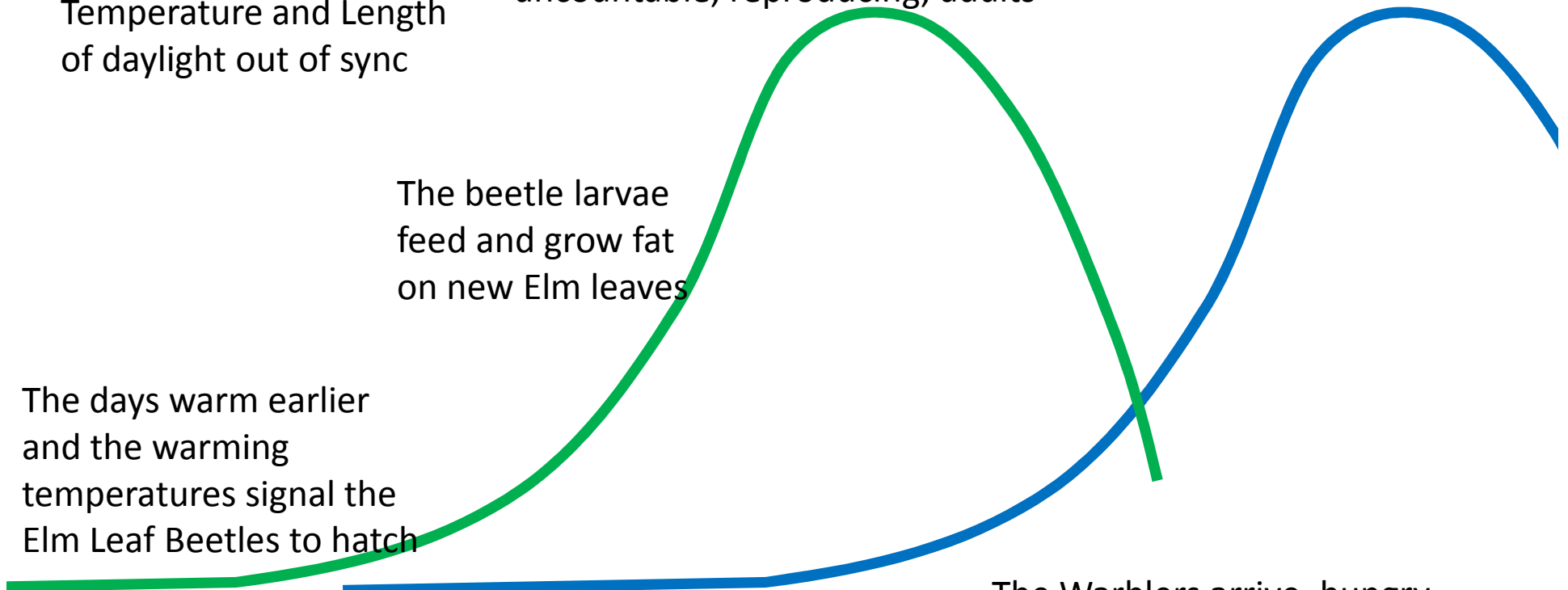
As they reach their peak abundance, no Warblers arrive. They survive to become uncountable, reproducing, adults

The beetle larvae feed and grow fat on new Elm leaves

The days warm earlier and the warming temperatures signal the Elm Leaf Beetles to hatch

The days get longer, as before, and the increased photoperiod sends a signal to the Warblers to migrate north

The Warblers arrive, hungry, but the Elm Leaf Beetle larvae are gone. No feast for the Warblers to carry them on to their nesting sites.



Related Museum Tools –Climate Change and Food: <http://climatechicago.fieldmuseum.org/learn>

GUIDE TO A CLIMATE-FRIENDLY DIET

Did you know you can help reduce climate change simply by changing some of your eating habits? The American food system is responsible for a lot of the carbon dioxide and other greenhouse gases we produce overall. This means that the meals we eat have a big impact on our climate. Since we all eat,

HERE ARE A FEW STEPS

1. EAT LOCAL & SUSTAINABLE

In addition to considering where your food comes from, you should also consider *how* it was made. Sometimes, conventional agriculture emits more carbon than shipping food away. For example, “conventional” agriculture uses large amounts of chemical fertilizers that deplete soil and require large amounts of resources and energy to produce. Conventional agriculture includes chemicals which disrupt plant and animal life, and intensive tilling (turning over the soil), which uses a lot of fuel. Other ways of growing food, including organic agriculture, use less water, sunshine, and farming methods that have been used for many centuries (see box below).

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CLIMATE CHANGE AND FOOD DISCUSSION GUIDE

All the Climate Change and Food tools mentioned in this document are available at: climatechicago.fieldmuseum.org/learn.

GUIDE TO A CLIMATE-FRIENDLY DIET

This two-page document explains how our food system contributes to climate change, offers ways we can reduce our diet’s negative impact on the environment, highlights local climate-friendly food traditions, and provides links to local resources (climatechicago.fieldmuseum.org/learn).

THREE VIDEOS:

Food Culture (1 minute)
 This video on the cultural and environmental significance of Chicago residents’ food traditions invites the viewer to reflect on how their own food choices affect the planet. It was created for The Field Museum’s Restoring Earth exhibit (restoringearth.fieldmuseum.org/).

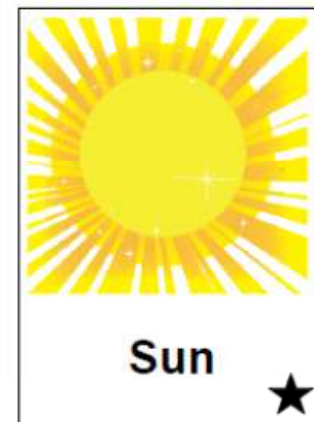
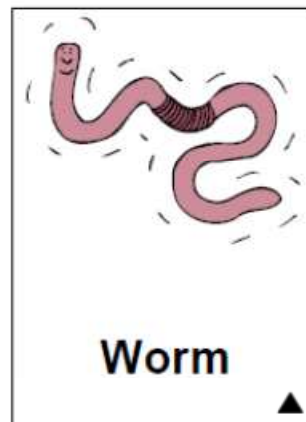
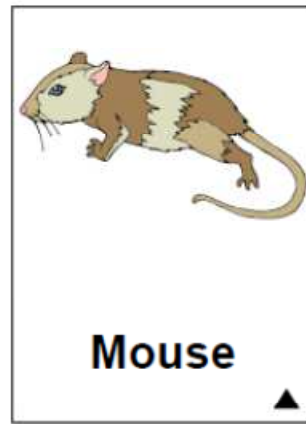
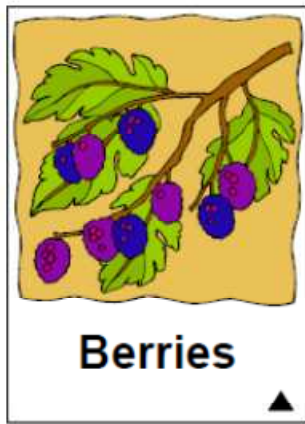
Telling Our Stories: Creating Green Communities (11 minutes)
 Master Storytellers from In the Spirit perform stories of climate-friendly activities in Chicago, many related to food and agriculture (<http://vimeo.com/35764542>).

Vegan Soul (6 minutes)
 Chef Tsadakeeyah discusses the rich food heritage of Chicago’s African-American community and the expanding role of food and gardens in the community today (<http://vimeo.com/35585628>).


DISCUSSION QUESTIONS:

Related CBG Tools –Climate Change and Food:

4-6: 3.6 Ecological Mismatches



Related CBG Tools –Climate Change and Food: 7-9: 3.4 Seed Dispersal and Plant Migration


CHICAGO BOTANIC GARDEN

Student Handout Part 1: Seed Dispersal Predictions
What are some ways that seeds can disperse away from their parent plant?

Observe 3 seeds and fill in the chart below. By looking at a seed's structure, try to predict how it might disperse.

	Plant Name (if found)	Sketch	Dispersal Type (wind, animal, other?)	Reasoning for dispersal choice
Seed 1				
Seed 2				
Seed 3				

1. What seed characteristics did you focus on to predict how it was dispersed?
2. Why did you feel those were the most important in making your decision?
3. Explain how could you determine if your predictions in the chart were correct?

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Related CBG Tools –Climate Change and Food: 4-12: Unit 4 Faces of Climate Change & Ecological Footprints



<p>Dr. Annabeth Clark – 40 years old I am a physician who works at Stroger Hospital in Chicago, IL. I was just a med student doing my ER rotation during the heat wave in 1995 that killed over 700 people, but now I am an attending physician and I have recently noticed an increase in deaths due to heat waves. I have seen many people come and go throughout my career, but it is difficult to accept this especially because I feel so helpless. I cannot fix our planet as easily as I can fix a broken bone.</p>	
<p>Physical Impacts Global – The average temperature of the Earth has increased since the Industrial Revolution back in the 1850s. The past 25 years have produced temperatures higher than any others in the past 1000 years. Also, high temperatures used to arrive later in the year and not as often as they are now. Regional – No one in the ER wants to relive what happened back in 1995. We simply could not handle all of those people. Urban areas tend to be affected more because concrete absorbs heat during the day and releases it at night which prevents the cooling that is needed to help people cope with extreme day time temperatures. In 2003, 35,000 people died in Europe due to a heat wave. Could that happen here?</p>	<p>Economic Impacts Here at Stroger we help anyone who walks through our doors. If patients cannot afford medical care, the County pays for them by using tax dollars. Many Cook County residents were outraged over the sales tax increase in 2008, and I can only imagine what will happen if more and more people need treatment due to heat-related symptoms. Where will the hospital get its money? Will residents want to pay to help us again? Will they even be able to?</p>
<p>Social/Cultural Impacts As usual, it seems like the working-class people of our city will once again be hit the hardest by this new threat of climate change. Cities are usually warmer than the surrounding suburbs or rural areas and many residents in the city simply can't afford air-conditioning. This isn't right. We need people to see that this issue affects us all.</p>	<p>Ecological Impacts We are fortunate here in Chicago to only be experiencing a rise in heat-related symptoms and not any infectious diseases. <i>I wonder what is happening in tropical locations where disease is already a problem. How will doctors help people who live in areas where diseases such as malaria already take so many lives?</i></p>