

Osher Lifelong Learning Institute at Auburn University

Class Schedule for "All About Birds"

Organized by David Newton, Volunteer

Six Study Group Sessions: 2:30 to 4:00 p.m., Mondays, March 27 – May 1, 2017

Location: Clarion Inn & Suites, 1577 South College St., Auburn, AL

Mar. 27, Wood Duck Breeding Ecology and Natural History – Speaker: Gary Hepp

Apr. 3, Wood Duck Heritage Preserve & Siddique Nature Park in Opelika – Speaker: Gene Hunter
Birds of the Gods – DVD narrated by David Attenborough

Apr. 10, North American Waterfowl – Speaker: Gary Hepp

Apr. 17, 1) Backyard Birding; 2) Hummingbird Nest: From Eggs to Fledge; 3) Birding Opportunities and the AU Kreher Preserve and Nature Center – Speaker: Lewis Scharpf

Apr. 24, Why Some Birds Count and Others Do Not – Speaker: Geoff Hill, AU Dept. of Biological Sciences
Graduate Student Research Project – Speaker, Chloe Josefson, Doctoral Student, Geoff Hill's AU Laboratory

May 1, Graduate Student Research Projects – Speakers, Roy Ge and Becca Koch, Doctoral Students,
Geoff Hill's AU Laboratory

NOTES:

- Plans calls for a brief break during each class period.
- We anticipate questions. We intend to have time for these questions at the conclusion of each presentation.
- The evidence concerning climate change on the reverse side should be useful in informing others about the potential impact on birds and other life forms.

Scientific evidence for warming of the climate system is unequivocal.

Source - Intergovernmental Panel on Climate Change (<https://climate.nasa.gov/evidence/> - Accessed March 21, 2017)

The current warming trend is of particular significance because most of it is very likely human-induced and proceeding at a rate that is unprecedented in the past 1,300 years.¹

Earth-orbiting satellites and other technological advances have enabled scientists to see the big picture, collecting many different types of information about our planet and its climate on a global scale. This body of data, collected over many years, reveals the signals of a changing climate.

The heat-trapping nature of carbon dioxide and other gases was demonstrated in the mid-19th century.² Their ability to affect the transfer of infrared energy through the atmosphere is the scientific basis of many instruments flown by NASA. There is no question that increased levels of greenhouse gases must cause the Earth to warm in response.

Ice cores drawn from Greenland, Antarctica, and tropical mountain glaciers show that the Earth's climate responds to changes in greenhouse gas levels. Ancient evidence can also be found in tree rings, ocean sediments, coral reefs, and layers of sedimentary rocks. This ancient, or paleoclimate, evidence reveals that current warming is occurring roughly ten times faster than the average rate of ice-age-recovery warming.³

The evidence for rapid climate change is compelling:

Sea level rise

Global sea level rose about 17 centimeters (6.7 inches) in the last century. The rate in the last decade, however, is nearly double that of the last century.⁴

Global temperature rise

All three major global surface temperature reconstructions show that Earth has warmed since 1880.⁵ Most of the warming occurred in the past 35 years, with 15 of the 16 warmest years on record occurring since 2001. The year 2015 was the first time the global average temperatures were 1 degree Celsius or more above the 1880-1899 average.⁶ Even though the 2000s witnessed a solar output decline resulting in an unusually deep solar minimum in 2007-2009, surface temperatures continue to increase.

Warming oceans

The oceans have absorbed much of this increased heat, with the top 700 meters (about 2,300 feet) of ocean showing warming of 0.302 degrees Fahrenheit since 1969.⁸

Shrinking ice sheets

The Greenland and Antarctic ice sheets have decreased in mass. Data from NASA's Gravity Recovery and Climate Experiment show Greenland lost 150 to 250 cubic kilometers (36 to 60 cubic miles) of ice per year between 2002 and 2006, while Antarctica lost about 152 cubic kilometers (36 cubic miles) of ice between 2002 and 2005.

Declining Arctic sea ice

Both the extent and thickness of Arctic sea ice has declined rapidly over the last several decades.

Glacial retreat

Glaciers are retreating almost everywhere around the world — including in the Alps, Himalayas, Andes, Rockies, Alaska and Africa.¹⁰

Extreme events

The number of record high temperature events in the United States has been increasing, while the number of record low temperature events has been decreasing, since 1950. The U.S. has also witnessed increasing numbers of intense rainfall events.¹¹

Ocean acidification

Since the beginning of the Industrial Revolution, the acidity of surface ocean waters has increased by about 30 percent.^{12,13} This increase is the result of humans emitting more carbon dioxide into the atmosphere and hence more being absorbed into the oceans. The amount of carbon dioxide absorbed by the upper layer of the oceans is increasing by about 2 billion tons per year.^{14,15}

Decreased snow cover

Satellite observations reveal that the amount of spring snow cover in the Northern Hemisphere has decreased over the past five decades and that the snow is melting earlier.¹⁶

References – See website at <https://climate.nasa.gov/evidence/>