Uncertainty

“As we know, there are known knowns. There are things we know we know. We also know there are known unknowns. That is to say, we know there are some things we do not know. But there are also unknown unknowns, the ones we don't know we don't know.”

- Former Sec. of Defense
  Donald Rumsfeld
What are the climate change impacts we know we’re dealing with in terms of adaptation and resilience?

The known knowns...
Air Temperature in the Northeast

More frequent days with temperatures above 90°F

Source: USGCRP (2014)

Warmer Water Temperatures and Changes in Fish

Warmer Long Island Sound reeling in southern fish

Study says changes consistent with global warming

By JUDY BENSON
Daily Staff Writer

In the classic 1948 film noir “Key Largo,” gangster Johnny Rocco dines on what was then a unique subtropical cuisine: pompano and champagne.

But in the 64 years since actor Edward G. Robinson so famously licked his chops over the meal, pompano have ceased to be a species found only in southern waters. In fact, it’s now conceivable that a southeastern Connecticut fisherman could serve such a meal from his own Long Island Sound catch.

“We’re getting some strange fish we haven’t seen before, and some that we used to get only occasionally we’re seeing more often,” said Jon Hillyer, owner of Hillyer’s Tackle Shop in Waterford, Tuesday. “A lot of guys are catching them by mistake while they’re fishing for bluefish or porgies, and some of them we can’t even identify. And some of the things we used to see, like tomcod and smelt, we don’t get any more.”

The shifting diversity of fish species in Long Island Sound is the subject of a study published last month

SEE LOCAL FISHERMEN PAGE A5

African Pompano

Atlantic Moonfish
Water Temperature: Interior rivers and streams

Examples of healthy riparian zones

Sea Level Rise (Global)
Global sea level rose about 17 cm (6.7 in) in the last century. The rate in the last decade, however, is nearly double that of the last century.

(Credit: go_greener_oz/ Flickr)
Bridgeport: MTR = 205 cm

1967 - 1980 = 2.0 mm yr⁻¹
R² = 0.081

1981 - 2013 = 4.3 mm yr⁻¹
R² = 0.532

New London: MTR = 78 cm

1967 - 1980 = -0.3 mm yr⁻¹
R² = 0.002

1981 - 2013 = 4.5 mm yr⁻¹
R² = 0.660

From Scott Warren, Professor Emeritus, Connecticut
Ocean Acidification

Since the beginning of the Industrial Revolution, the acidity of surface ocean waters has increased by about 30%.

Observed Change in Very Heavy Precipitation

1958-2012 National Climate Assessment 2014
The “Rain Bomb” Phenomenon

http://boredomtherapy.com/rain-bomb/
Stormwater System Overload

U.S. Drought Monitor
Connecticut

February 14, 2017
(Released Thursday February 16, 2017)
Valid 7 a.m. EST

Statistics type: Traditional Percent Area

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Estimated Population in Drought Areas: 3,574,093

View More Statistics

Intensity:
- D0 (Abnormally Dry)
- D1 (Moderate Drought)
- D2 (Severe Drought)
- D3 (Exceptional Drought)

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author(s):
Jessica Blunden, NOAA/NCEI

View drought planning resources

The National Drought Mitigation Center | 3310 Holdrige Street | P.O. Box 830988 | Lincoln, NE 68503-0988
phone: (402) 472-8707 | fax: (402) 472-2540 | Contact Us | Web Policy

USDA
More storms like this?

Disaster Declarations in CT Since 1954

- Of the 30 Federal Emergency and Major Disaster Declarations since 1954, 15 have occurred since 2004.

- Connecticut has had 9 Major Disaster declarations in the past 20 years, 5 have occurred since 2011

- Last Hurricane to hit CT?

Hurricane Bob in 1991

Courtesy National Weather Service
Erosion is not just a coastal issue

Loss of Tax Base

Photo Courtesy: USGS

Patsy Lynch/FEMA
New Strategy for UConn Extension to Best Meet the Needs of Stakeholders – the Climate Adaptation Academy

- What are the priority questions and issues?
- A fluid methodology to promote the exchange of ideas and information
- What are best practices for the issue?

CAA sessions held since February 2014 (over 700 attendees from 64 towns and 4 states)

- General climate adaptation outreach for municipal officials and the public
- Flooding—Impacts of Increased Precipitation on Connecticut Communities –What to Expect
- Emergency Responders and Technology
- Living Shorelines I—What Are They and How Do they Work
- Living Shorelines II—Lessons Learned from Existing Projects
- Living Shorelines III—A Design Charrette
- Legal Issues in the Age of Climate Adaptation
- Zoning Issues in the Age of Climate Adaptation
- Climate Change – Its Impacts on the Economy and the Way We Live
Adapt CT: climate.uconn.edu

CAA has morphed into something bigger: Adapt CT

Connecticut Sea Grant and CLEAR work to provide information, tools, trainings and workshop opportunities to assist municipalities, businesses and residents of Connecticut in their efforts to prepare for and adapt to the impacts of a changing climate.

Climate Adaptation Academy
Promoting an exchange of information between municipal officials, researchers, and other professionals.

Climate Corps
Harnessing student power to assist communities through a unique service learning experience.

Tools & Assistance
Providing useful resources and programs (homegrown and otherwise) for Connecticut residents, communities and municipalities.

Coastal Resources
Providing information on Connecticut's coastal natural resources, current issues and projects along our coast.
UConn Climate Corps
UConn Students in Action

Extension/CLEAR/CTSG
Environmental Science
Environmental Studies
Environmental Engineering

What Municipalities Need

- Data
- Recommendations for models/policies
- Understanding of costs
- How to phase in adaptation
- Money

Andrea Booher/FEMA
Building Resiliency Costs Money

What will it cost to address failures of a large number of septic systems in an area or road flooding?

How much resiliency can we afford?

Risk Management

Response requires participation from a wide range of municipal officials

- Mayor or First Selectman: budgeting, decision-making
- Planning Departments: Land use, environmental, transportation
- Engineering and Public Works: roads, stormwater systems
- Public Utilities: water and sewer systems
- EM: access to fires and other emergencies
- Public Health Health: heat related illnesses, infectious diseases
- Social Services: sheltering displaced persons
- Finance and Recreation

Local Residents AND
...And all the expertise and resources available through the individuals and agencies represented in this room.

Where we’re headed:

- Undergraduate Course Fall 2017 (focus on local climate impacts and adaptation issues)
- Spring 2018 Student Practicum
- CAA’s for 2017: Legal issues continued, Water issues in Middlesex Cty, Erosion issues with EJ Prescott Inc.
- Emergency Preparedness and Story Maps
- Continued work with municipalities on adaptation issues
Thoughts?
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