

## **2020 NJ Scientific Report on Climate Change (issued June 30, 2020 by the NJ DEP)**

- [Six minute summary talk](#) by NJ DEP, recorded during a 5/7/2020 webinar by the NJ DEP (6 minutes)
- <https://www.nj.gov/dep/climatechange/docs/nj-scientific-report-2020.pdf> (205 pages)

KEY FINDINGS (4 pages): extracted from the Exec Summary of the June 30, 2020 NJ Scientific Report on Climate Change:

### **TEMPERATURE Key Findings:**

- New Jersey is warming faster than the rest of the Northeast region and the world.
- Since 1895, New Jersey's annual temperature has increased by 3.5° F.

Historically unprecedented warming is projected for the 21st century with average annual temperatures in New Jersey increasing by 4.1° F to 5.7° F by 2050.

- Heatwaves are expected to impact larger areas, with more frequency and longer duration by 2050.

Climate change could result in a 55% increase in summer heat-related mortalities.

### **PRECIPITATION Key Findings:**

- Annual precipitation in New Jersey is expected to increase by 4% to 11% by 2050.
- The intensity and frequency of precipitation events is anticipated to increase due to climate change.
- Droughts may occur more frequently due to the expected changes in precipitation patterns.
- The size and frequency of floods will increase as annual precipitation increases.
- Tropical storms have the potential to increase in intensity due to the warmer atmosphere and warmer oceans that will occur with climate change.

### **SEA-LEVEL RISE Key Findings:**

- Sea-levels are increasing at a greater rate in New Jersey than other parts of the world.
- By 2050, there is a 50% chance that sea-level rise will meet or exceed 1.4 feet and a 17% chance it will exceed 2.1 feet. Those levels increase to 3.3 and 5.1 feet by the end of the century (under a moderate emission scenario).
- "Sunny day flooding" will occur more often across the entire coastal area of New Jersey due to sea-level rise.
- It is extremely likely that Atlantic City will experience "sunny day flooding" 95 days a year, and a 50% chance it will experience 355 days a year, by 2100 (under a moderate emission scenario)

### **OCEAN ACIDIFICATION Key Findings:**

- Since the industrial age, ocean pH levels have declined and the ocean is now 30% more acidic.
- If carbon dioxide emissions continue at current rates, ocean pH levels are expected to fall, creating an ocean that is more acidic than has been seen for the past 20 million years.
- Southern New Jersey counties rank second in the United States in economic dependence on shelled mollusks, which will suffer from increasing ocean acidity.

### **AIR QUALITY Key Findings:**

- The effects of climate change are likely to contribute to an increase in air pollution, lead to increased respiratory and cardiovascular health problems, like asthma and hay fever, and a greater number of premature deaths.
- Environmental degradation from climate induced increases in air pollution will reduce visibility and cause damage to crops and forests.

### **WATER RESOURCES: SUPPLY AND QUALITY Key Findings:**

- Water supplies will be stressed from the increase in the growing season and extreme temperatures expected due to climate change.

- Rising sea levels may lead to increased saltwater intrusion in New Jersey aquifers where wells are over pumped.
- Freshwater intakes and aquifer recharge areas may be threatened if sea-level rise pushes the salt front further upriver.
- Combined sewer overflow communities may be further challenged as sea level rise and/or increased rain events submerge discharge points that are currently above the waterline.
- Surface and groundwater quality will be impaired as increased nutrients and contaminants enter waters due to runoff from more intense rain events.

### **AGRICULTURE Key Findings:**

- The productivity of crops and livestock are expected to change due to the climate-induced changes in temperature and precipitation patterns.
- New Jersey may become unsuitable for specialty crops like blueberries and cranberries in the future as higher temperatures reduce necessary winter chills.

### **FORESTS Key Findings:**

- The persistence of Southern pine beetle in New Jersey represents an early example of the destruction of invasive pests that can occur due to climate change impacts.
- Wildfire seasons could be lengthened, and the frequency of large fires increased due to the hot, dry periods that will result from increased temperatures.

### **WETLANDS Key Findings:**

- Some freshwater wetlands may be lost due to inundation with saltwater.
- Some New Jersey tidal wetlands may not gain elevation at a rate that equals the rate of sea-level rise and thus some are expected to be lost to increased rates of sea-level rise.
- Increased flooding and salinity are projected to lead to a loss of 92% of brackish marshes, 32% of tidal swamps, and 6% of tidal fresh marshes in the Delaware Estuary by 2100.

- Atlantic white cedar, a globally rare species, is expected to lose habitat in New Jersey because of rising sea levels.

### **TERRESTRIAL CARBON SEQUESTRATION Key Findings:**

- The loss of coastal wetland and forest habitats to climate change will result in carbon losses and increase New Jersey's net greenhouse gas emissions.

### **TERRESTRIAL SYSTEMS Key Findings:**

- Climate change is likely to facilitate expansion of invasive plant species.
- 29% of New Jersey's bird species are vulnerable to climate change, including the American Goldfinch which is the state bird of New Jersey.
- Saltmarsh Sparrows, a globally endangered species, may reach quasi extinction population numbers by 2040 due to habitat loss from sea-level rise.

### **FRESHWATER SYSTEMS Key Findings:**

- Freshwater fish, like brook trout, that need cold-water habitats are expected to lose habitat as water temperatures increase due to climate change.
- Reptiles with temperature-dependent sex determination could experience changes in sex ratios as New Jersey temperatures increase.

### **MARINE SYSTEMS Key Findings:**

- Current climate changes could result in more "dead zones" from hypoxic events, which are of particular concern for summer flounder which is New Jersey's largest recreational fish species.
- Many commercially important shellfish species including hard clam, scallops, and oysters will develop thinner and frailer shells due to ocean acidification.
- As temperatures increase, environmental conditions in New Jersey estuaries may improve for invasive species like the clinging jellyfish.