



MASSWILDLIFE

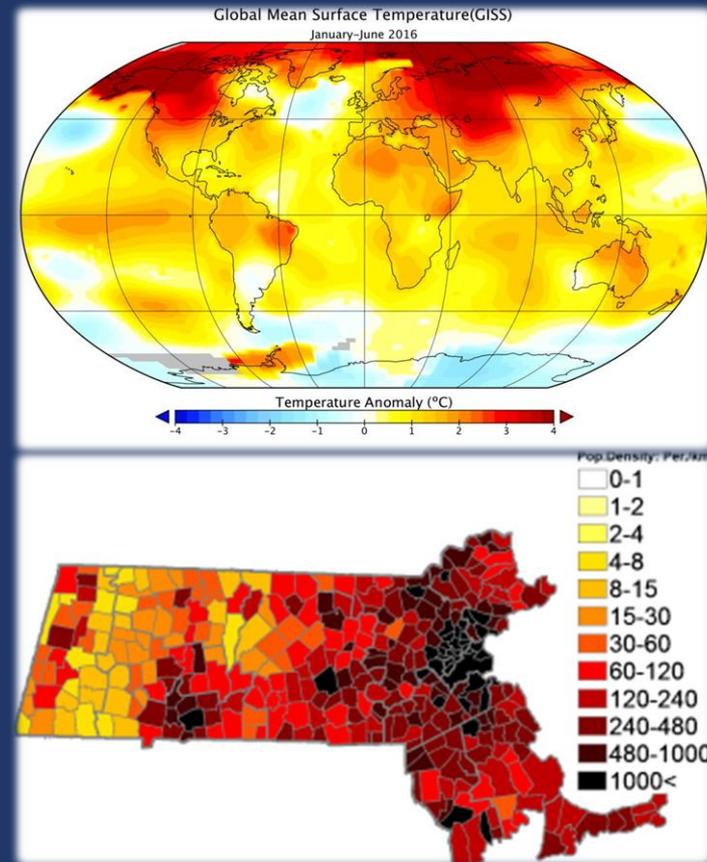


Drought and Coldwater Fisheries in Massachusetts

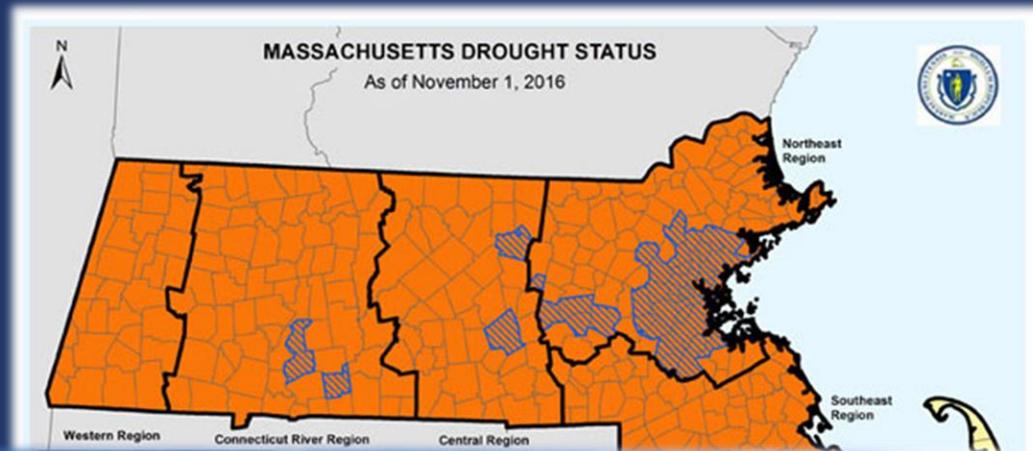
6 December 2016

Current Drought

- Periodic droughts occur naturally
 - Not as frequent or as severe in the NE
- Extremely low precipitation for extended period... exacerbated by:
 - Warming climate
 - Increasing human population



- Greater evapotranspiration losses
- Greater volume of water withdrawals
 - Historically low streamflow and groundwater levels statewide
 - Low or no water in rivers, streams, ponds, and many reservoirs



Effects on Coldwater Fisheries

- Restricted habitat
 - Confined to pools
 - Movement among habitats limited
- Leads to:
 - Increased competition (e.g., for food, space, spawning habitat, etc.)



- Increased risk of physical injury/abrasions and stress → parasitism/disease outbreaks, mortality
- Increased predation from both aquatic and terrestrial predators
- Elevated temperature, lower DO concentration, nutrients and pollutants can become concentrated



- Small, cold, groundwater-fed tributaries disproportionately affected
 - Tend to dry more quickly/severely
 - Last stronghold of native brook trout
 - Spawning/rearing habitat, thermal refuge for other coldwater fishes

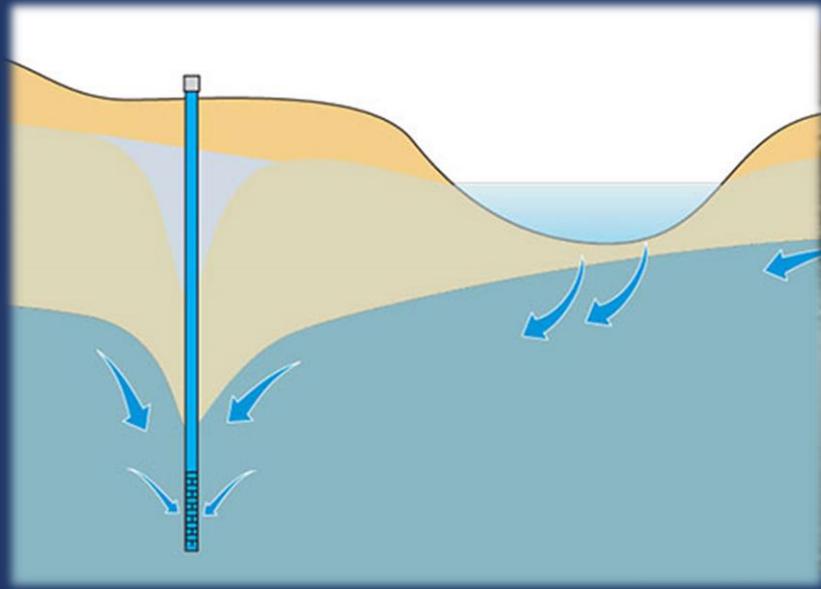


- Additional observations
 - Spawning runs
 - Stocking (locations, hatcheries)
 - Dams
 - Low water → perched culverts
 - Sedimentation
- Potential long-term impacts
 - Loss of year-classes
 - Local extirpation
 - Fewer “holdover” stocked fish



Restoration - Protection

- Impervious surfaces
- Road drainage, stormwater, sediment
- Water withdrawals



Restoration - Protection

- Dams
- Poorly-designed road crossings & undersized culverts
- Deforestation & vegetation removal





MASSWILDLIFE

Adam Kautza | PhD

Coldwater Fisheries Project Leader

Massachusetts Division of Fisheries & Wildlife

1 Rabbit Hill Road, Westborough, MA 01581

p: (508) 389-6302 | e: adam.kautza@state.ma.us

mass.gov/masswildlife | facebook.com/masswildlife