

## Using Vulnerability Assessment Results to Inform Agency Decisions

The Massachusetts Division of Fisheries and Wildlife experience

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## Session Outline

- ◆ Focus on Massachusetts example
- ◆ A bit of background on our vulnerability assessment
- ◆ Focus on management, acquisition, regulation and monitoring
- ◆ Will use Red Brook Wildlife Management Area as an exercise
- ◆ Will talk about Regional Context
- ◆ Example exercise from the audience

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## My Project Goal

- ◆ To ensure that the wildlife conservation strategies detailed in the State Wildlife Action Plan (SWAP) are adapted for climate change impacts
- ◆ **Your Project Goal is to assess the vulnerability to climate change impacts of whatever is under your responsibility**

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Adapting to climate change impacts will require doing our best to understand the factors that drive both the impacts and our ability to respond

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In some cases, such as ocean acidification, there is no known adaptation option other than to reduce rates of change in GHG concentrations and climate

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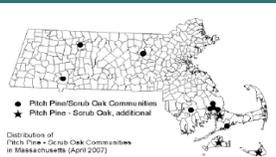
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**PITCH PINE-SCRUB OAK VULNERABILITY EVALUATION**  
*NHWCS category: Northeastern Interior Pine Barrens/North Atlantic Coastal Plain Pitch Pine barrens*  
*State ranking: 52*  
**Vulnerability score: 4 (both emissions scenarios)**  
**Confidence evaluation: Low[alt]**

**Rationale:** Its range extending south to New Jersey and Maryland, this community type reaches its northern limit on sandy, nutrient-poor, drought-prone soils in southern Maine, on Cape Cod, in the southern part of the Massachusetts coastal plain, and in the Connecticut River Valley (see Massachusetts's Natural Heritage and Endangered Species Program map below). It is therefore a southern community type that extends into southern and central New England. Its canopy is dominated by Pitch Pine, with an understory of Scrub Oak, Huckleberry, and Lowbush Blueberry. The system is fire-maintained and will revert to White Pine or oak-dominated forest in the absence of fire (NHESP, 2007).



**Figure 1. Distribution of Pitch pine-scrub oak communities in Massachusetts.**  
 Pitch pine-scrub oak occurs in significantly warmer climates to the south in New Jersey and Maryland. If the only determinant of its distribution were climate, it would be likely that its distribution in Massachusetts would extend under a warming climate. However, non-climatic factors, mainly the distribution of sandy, nutrient-poor soils; fire frequency; and development, are also important factors. These are likely to be the main limiting factors in any future spread of pitch pine barrens, not climate change. Based on this, a vulnerability score of 4 (extent of habitat may not change appreciably under climate change) has been assigned for both scenarios. The confidence score that we assign for this community type is Low. This is because its future distribution is dependent on uncertain human settlement patterns and responses to climate change. Urban development is already a major fragmenting factor affecting the forest type and it is unlikely that this pressure will ease over the next few decades. Also, as the summers warm and droughts become more frequent and prolonged, fire outbreaks may become more frequent and/or intense. How humans respond to this is a major uncertainty. If the societal response is increased fire suppression (to protect property and lives), it could result in fewer oak and fragmentation of this habitat type.

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### Using the Vulnerability Assessment Results

- ◆ **Management:** Develop site Management Plans for a limited number of Wildlife Management Areas
- ◆ **Acquisition:** Add results of the Vulnerability Assessment under threats in existing land acquisition process
- ◆ **Regulation:** Climate change impacts may require changes to existing regulations. Examples include: intermittent versus perennial stream designation, allowed wetlands protection measures
- ◆ **Monitoring:** Working with USGS to develop a plan that will include wetlands and other aquatic habitat types

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### In Summary

- Searches for adaptation solutions should consider consequences both for multiple sectors and for the short and the long term.
- In addition, a comprehensive understanding of the psychological, social, and political obstacles to adaptation is required, as well as an understanding of how to overcome them.
- Failure to do so frequently increases both vulnerability to climate change and the costs of adaptation over the longer term; it may also reduce incentives to explore more effective long-term solutions.

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### Regional Context

- ◆ Northeast Association of Fish and Wildlife Agencies Regional Conservation Needs
- ◆ U.S. Fish and Wildlife Service Landscape Conservation Cooperatives

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