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## Jurassic Greenways: Planning a Dinosaur Trail for the Connecticut River Valley

Robert L. Ryan<sup>1</sup>, Sarah Doyle<sup>2</sup>, LA 607 Studio<sup>1</sup>

<sup>1</sup>*University of Massachusetts, Amherst, Department of Landscape Architecture and Regional Planning*, <sup>2</sup>*Pocumtuck Valley Memorial Association*

### Introduction

Greenways often combine natural, historic/cultural, and recreational resources (Fábos 1995). However, there has been less integration with scientific interpretation, particularly in the area of paleontology and geology, except for a few notable examples. The current threat of global climate compels a look back in geologic time to how different landscapes, ecosystems, and human settlements evolved and adapted to rapidly changing climatic and environmental conditions. This study involves research and project development of a greenway and trail network that connects the important historical and cultural sites related to dinosaurs in New England's Connecticut River Valley of Massachusetts and Connecticut (USA). The project is a partnership of museums, cultural sites, and tourist businesses related to the discovery of dinosaur tracks and other significant paleo-geologic sites ([www.jurassicroadshow.com](http://www.jurassicroadshow.com)). The lead organization, the Pocumtuck Valley Memorial Association, a historic museum in Deerfield, MA ([www.deerfield-ma.org](http://www.deerfield-ma.org)), is developing an interactive web-site called the *Impressions from a Lost World* that is the beginning point for this project, which was conducted as part of a graduate landscape architecture studio at the University of Massachusetts, Amherst under the direction of Professor Robert L. Ryan.

### Background

The initial idea was to create an on-the-ground tour that would be enhanced by access to information via computer and mobile devices, connecting visitors to the region's rich history, culture, literature, and arts, as well as provide scientific information about the geologic development of the Connecticut River Valley, the dinosaurs that lived there, and the paleontologists that discovered dinosaur tracks in the mid-19<sup>th</sup> century, including Edward and Orra Hitchcock. First considered to be ancient bird tracks, the discovery of the tracks began the development of the modern science of ichnology (i.e., the study of fossil traces) and inspired a scientific and cultural renaissance in the region, including poems by Emily Dickinson. Currently, however, the dinosaur tracks and the story of their discovery is not well known to local residents and visitors alike, and the dinosaur tracks themselves are threatened by erosion, vandalism and new development. Thus, the project expanded to

include a greenway plan to interpret, connect, and preserve these artifacts that date from when dinosaurs walked the Valley over 200 million years ago.

### **Goals and objectives**

One of the challenges for the project is to reveal the ancient world of the dinosaur which is hidden under the modern landscape. The project entails telling the story of how the dinosaur footprints were discovered in the Connecticut River Valley and the more recent challenges to protect and preserve the landscape in which they are found. In addition, the project has an economic development goal of increasing tourism to the region by promoting these natural, historic and cultural resources along with the unique businesses that are associated with dinosaur tracks and geology. Thus, enhancing way-finding to existing tourist destinations and sites is a critical part of the project. This includes planning and designing multi-modal opportunities to experience these resources through walking, biking, and boating, as well as improved driving tours of the study area.

### **Method**

The studio used multiple methods to develop the Dinosaur Trail project. Initially, case studies were conducted of other large-scale greenway projects including the East Coast Greenway, Commonwealth Connections Greenway

Vision Plan for Massachusetts, as well as those that focused on geological and paleontological interpretation, such as the Dinosaur Valley State Park, Texas (<http://tpwd.texas.gov/state-parks/dinosaur-valley>). Insights from these case studies helped inform the project's greenway plan.

The studio class of 14 students was divided into four teams, one which covered the entire Connecticut River Valley study region, as well as three sub-area teams covering Franklin County and Pioneer Valley of Massachusetts, and state of Connecticut. Each team conducted an assessment of the region's natural/ecological, recreational/tourism, and cultural resources. This work was done using the respective state's GIS data bases, review of existing planning reports and studies, as well as fieldtrips. In addition, the class met with experts from local museums, academic institutions, and commercial enterprises devoted to geology and dinosaurs (see acknowledgements section).

The assessment work was used to determine key routes and connections for greenway trail proposals. In addition, focus areas were identified for design work at key nodes.

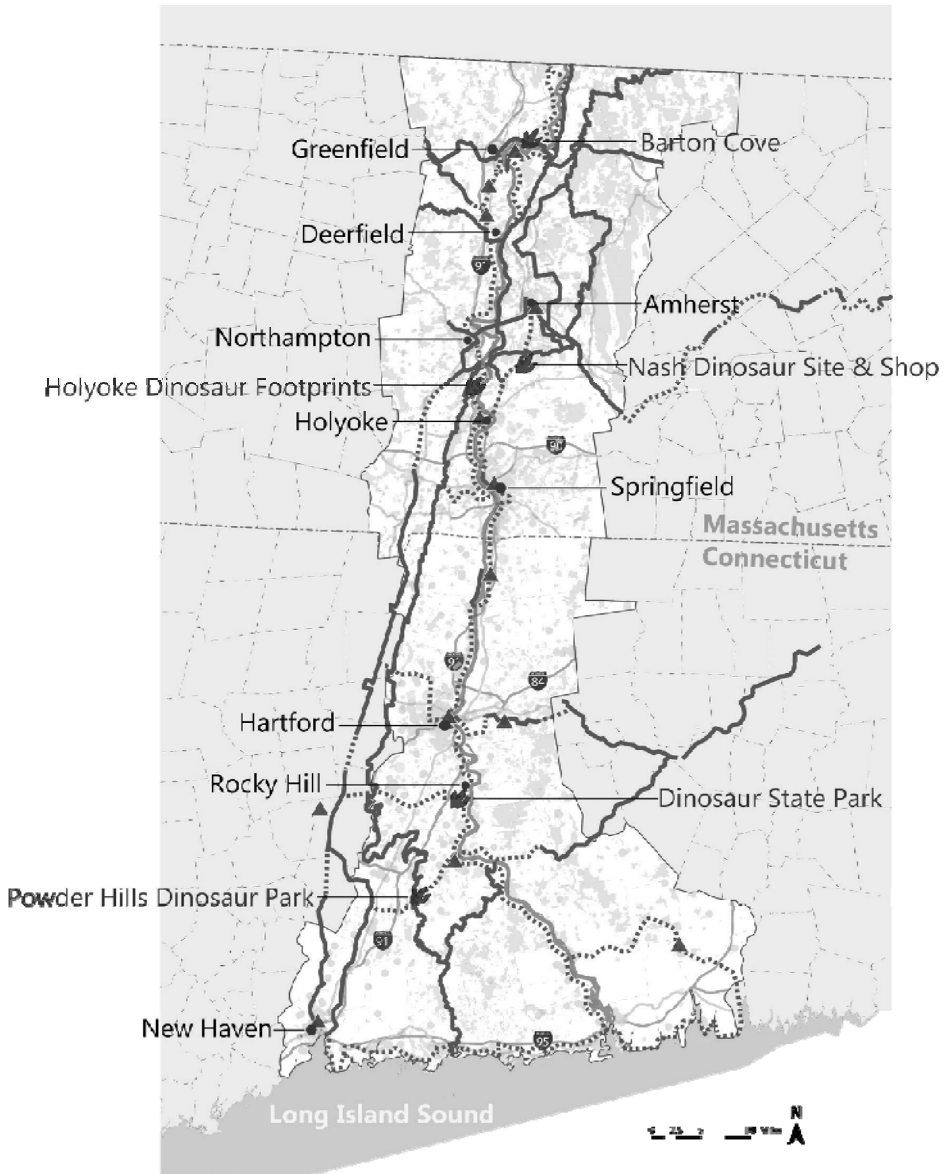
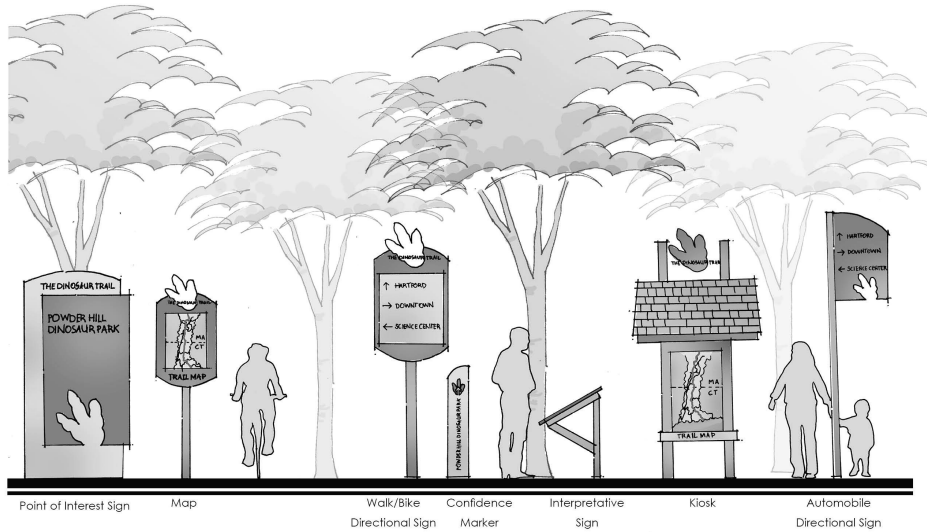


Figure 1. Dinosaur Trail Plan (T. Kamei/R. Tang)

## Results/ Discussion

The project's planning approach was to embed the proposed Dinosaur Trail within the larger emerging greenway network and make new proposals to increase network connectivity. Fortunately, the region has been at the forefront

of greenway and trail planning with such projects as the New England Greenway Vision Plan ([www.umass.edu/greenway](http://www.umass.edu/greenway); Ryan et al., 2002). The project team of 14 graduate landscape architecture students (see list below) planned a multi-modal trail network that incorporates pedestrian, bike, boating, and automobile travel modes (Fenton et al., 2015). The trail stretched 160 km (100 miles) from New Haven, Connecticut on Long Island Sound to Northfield, MA near the Vermont border (Fig. 1). The team developed logos and signage to create a unique identity for the trail and enhance way-finding (Fig. 2). The virtual world of the planned interactive web-page allowed the greenway team to create simpler signage where visitors can use their cellphones to connect to more in-depth stories and resources.



**Figure 2. Design for dinosaur trail pathway (Emilie Marques Jordao)**

The planning team developed new linkages to the dinosaur track related sites from the existing trail network. A series of themed loops for driving, walking and biking, and boating are planned to give visitors and residents different alternatives based on geography as well as interest. The team used GIS, site reconnaissance, and advice from geologists to map the existing and potential locations of dinosaur tracks and show areas that are threatened by suburban sprawl.

The cultural resources connected by the greenway include dinosaur related museums such as the Peabody Museum of Natural History, Yale University; and Beneski Museum, Amherst College. In addition, festivals were used to generate interest in the dinosaurs and teach children and their parents about these valuable resources (Fig. 3).



**Figure 3. Jurassic Road Show booth at Dinosaur Days Festival, Granby, MA**

Long distance trails exist in the region including the 215 mile long New England Scenic Trail that runs along the forested hillsides, including the Mt. Holyoke and Mt. Tom Range ([www.newenglandtrail.org](http://www.newenglandtrail.org)). The Farmington Canal trail follows the route of a historic canal from New Haven, CT to Northampton, MA. The new canal park in S. Hadley, MA became an important node on the dinosaur trail, as it provided one of the few sites to see the canal remains. The Connecticut River Paddler's Trail, an existing blueway trail for canoers and kayakers was used to connect sites along the river ([www.connecticutriverpaddlerstrail.org](http://www.connecticutriverpaddlerstrail.org)). Spur trails were then developed to these access points, such as Barton Cove in Gill, MA which has a historic dinosaur track quarry from the 1800's, as well as the Dinosaur Tracks site owned by the Trustees of Reservations (Fig. 4 and 5). Scenic byways such as the Franklin County scenic farm byway through the region's historic agricultural areas also provided the framework for driving tours.

Challenges of planning the trail included the amount of development in particular areas, especially the southern half of the study area; private land ownership, especially along the river; and balancing providing access to the dinosaur tracks, while providing protection from vandalism. In addition, there needed to be a balance between providing signage for visitors, while minimizing visual disturbance to these scenic areas. The virtual tour idea based using smart phone connected to the project web-site was seen as a compromise to achieve the multiple goals of wayfinding as well as interpretation.



**Figure 4. Connecticut River and Mt. Holyoke Range with rock formations that include dinosaur tracks and other fossil traces**



**Figure 5. Dinosaur tracks outlined in chalk at Trustees of Reservations site, Holyoke, MA**

## Conclusion

The Dinosaur Trail project highlights the importance for greenway planners of forming new partnerships with museums, science educators, and scientists (i.e., palaeontologists and geologists). The project also provides new insights and ideas for holistic economic development projects for tourism that bring together regional and local planning agencies, non-profit organizations, and business interests. The shifting geo-political landscape calls for these type of creative approaches to preserving and interpreting ancient resources in a rapidly changing world.

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**LA 607 Studio Project Team:** Kellie Fenton, Tasuku Kamei, Yue Li, Yanhua Lu, Maozhu Mao, Emilie Marques Jordao, James Prendergast, Michalagh Stoddard, Ruoying Tang, Nelle Ward (report editor), Jing Wang, Yuqing Wu, Yi Yang, Yu Yu.

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