

Synthesis of genetic diversity patterns in Europe and Eastern North America

Activity Report for short visit on 23-25th of March 2016

A central challenge in comparative study and meta-analysis across multiple studies is differences in experimental designs and data collection (opportunistic and sparse sampling, non-random spatial sampling). These lead to biases and inability to compare datasets. In plant phylogeographic studies, the influence of historical climatic fluctuations on range-wide genetic diversity patterns has been examined mostly within individual tree taxa and with an idiosyncratic array of study designs. Although a latitudinal decrease in genetic diversity is a general result across these studies, the generalizability and robustness of this pattern across diverse taxa and among continents is not known and warrants quantitative synthesis. Meta-analyses and comparative analyses however, are lacking despite the relevance of these studies in the light of species range shifts under current climate warming.

Our short visit at NIMBioS was conceived to synthesize numerous published and unpublished phylogeographic studies in eastern North America (ENA) via statistical modelling and both traditional and novel population genetics approaches, in order to quantitatively compare patterns with that found in Europe. During our visit, we were able to identify limitations posed by idiosyncrasies in sampling designs and data collections across these published studies, and work through some of the challenges posed by these limitations. This allowed us to estimate genetic diversity parameters for comparative analyses between Europe and ENA. We are currently writing the manuscript and expect to have the paper submitted within a month or so.

Three people participated in this short visit meeting: **Candice Lumibao** (Department of Ecology, Evolution and Behavior, University of Minnesota-Twin Cities), **Sean Hoban** (The Morton Arboretum) and **Jason McLachlan** (Department of Biological Sciences, University of Notre Dame)