**Teacher Notes for the BETTSI**

Tree thinking provides students with an opportunity to explore complex evolutionary concepts in a relatively concrete manner. We recommend using the BETTSI as a pre-assessment, to evaluate how much instructional time should be committed to address different basic tree-thinking skills. The BETTSI can also be used as a summative assessment, to evaluate and compare the effectiveness of explicit instructional approaches. Identifying and addressing potential issues in students’ tree thinking up front allows more productive discussions of evolutionary concepts. Basic tree-thinking skills include reading the tree correctly, understanding the basic topology of the evolutionary map, and then interpreting the tree, by layering in the evolutionary concepts represented by the topography to provide meaning to the diagram. Common issues in basic tree reading include reading across the tips of branches, and counting nodes. Common misconceptions in interpreting trees include conflating similarity and relatedness, and that longer branches imply no changes occurring through time. The table of misconceptions by question addresses the issue for each question. Answers to the questions are highlighted in this table.