

## **Insect evolution through a crisis: the Triassic-Jurassic of England**

### **Supervisors:**

**Prof Mike Benton (School of Earth Sciences, University of Bristol) – Main supervisor**

Dr Andrew Ross (National Museum of Scotland)

**Host Institution:** University of Bristol

**Project description:** Attempts to understand insect evolution through the end-Permian and end-Cretaceous mass extinctions have been hampered by substantial gaps between appropriate fossiliferous beds. However, the Late Triassic to Early Jurassic sediments of SW England preserved several insect-rich horizons both below and above the important end-Triassic levels. Although large collections were made in Victorian times, they have received sporadic attention. Many new species remain to be described and others that were named many years ago require re-study. It appears that some taxa may cross the Triassic/Jurassic (TJ) boundary, but many of the early localities have not been accurately dated.

The student will work on museum collections in Bristol, Taunton, Cardiff and London initially to establish the diversity of insects present, and to learn their anatomy and diagnostic characters. In this phase, the student will write formal anatomical and systematic descriptions and summaries of material that requires it, and will make comparisons with similar materials from Germany, and other parts of the world.

The final phase will consist of synoptic work to summarise distributions of different insect groups through time and explore patterns of extinction at the ETME and subsequent recovery, especially in phylogenetic, adaptive, and ecological terms. Comparisons of insect diversity and disparity through time will be made with times series of geological indicators, such as palaeotemperatures, oxygen and carbon dioxide levels, carbon isotopes, rock volumes, the sea level curve, and other metrics of palaeoenvironments and collecting opportunity.