Tree mortality is of high concern globally, and may be exacerbated by an increasing frequency and intensity of meteorological extremes such as droughts and heat waves. Although tree dieback events have been studied in many parts of the world, and are increasingly detectable through high-resolution remote sensing as well as surveys like the Dead Tree Detective Citizen Science project (www.tinyurl.com/deathtreedetective), the precise factors that trigger vitality loss, and the mechanisms linking triggers such as dry soils or high tissue temperatures to physiological responses culminating in tree death, are notoriously difficult to pin down. This paucity of mechanistic understanding precludes the development of predictive models needed to preempt dieback events and account for effects of tree biomass reduction on the carbon cycle and climate system.

This project will apply emerging data-driven techniques from machine learning, spatio-temporal analysis in combination with ecophysiological modelling to study the causes behind observed tree mortality, focusing on contrasting cases in Australia and Scandinavia. The goal will be to establish links between climate and mortality, reflected in spatio-temporal datasets relating field observations of trees to land surface remote sensing and meteorological observations, taking into account spatial and ecological context.

The Hawkesbury Institute for the Environment within Western Sydney University is looking for a highly motivated and qualified candidate to undertake research as part of a programme for collaborative Dual Award PhD degree with Lund University in Sweden. Studies will commence in 2020 with initial placement at Hawkesbury campus of Western Sydney University, Richmond, NSW. A later, extended period of work will take place in Lund, Sweden. It is intended that the student will be enrolled at both institutions, and, if successful, will receive a PhD award from each. The research programme encompasses 3 years, with an additional year of coursework at Lund University.

WHAT DOES THE SCHOLARSHIP PROVIDE?

- Domestic students will receive a tax free stipend of $30,000 per annum and a funded place in the doctoral degree.
- International students will receive a tax free stipend of $30,000 per annum. Those with a strong track record will receive a fee waiver.
- All International students are required to hold an Overseas Student Health Care (OSHC) policy covering the duration of their studies in Australia. The HIE will provide funding for a single Overseas Student Health Cover policy.
- The project will also provide substantial benefits in terms of additional operational funding for project fieldwork and data collection, and travel and conference attendance.

CRITERIA

We welcome applicants from a range of backgrounds who are keen to apply their skills to the project topic. The successful applicant should:

- hold qualifications and experience equal to one of the following (i) an Australian Bachelor Honours degree, (ii) coursework Masters with at least a 25% research component, (iii) a Research Masters degree or (iv) equivalent overseas qualifications.
- demonstrate strong academic performance in plant biology, ecosystem ecology, forestry science and/or geomatics.
- be enthusiastic and highly motivated to undertake further study at an advanced level.
- possess excellent written and verbal communication skills.
- have proven skills in quantitative techniques such as spatio-temporal statistical analysis, machine learning or computer programming.
- International applicants must also meet English language proficiency.

HOW TO APPLY

- Contact Professor Ben Smith ben.smith@westernsydney.edu.au to discuss your eligibility, the project requirements and your intention to apply.
- Complete the application form via the link http://bit.ly/2Jy3ixC
- Compile your CV, contact information for two referees and a one-page proposal stating how your research interests align with the project aims.
- Ensure all documentation is certified according to Western Sydney University requirements.
- All applications and supporting documentation must be submitted directly to the Graduate Research School as follows:
  - Use the email subject line: Application_2020_002_HIE
  - Submit to grs.scholarships@westernsydney.edu.au

Closing date: 7 August 2019