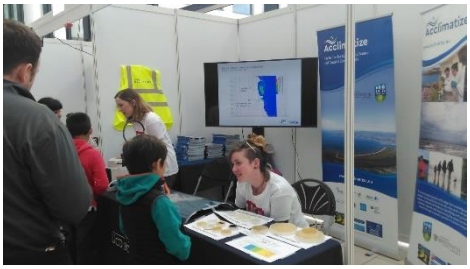
Richard Fitzgerald Memorial Award for Best Aquatic Environment Poster Presentation at Environ 2020

Winner Jayne Stephens, University College Dublin

Tide: A driver of faecal indicator bacteria levels in bathing waters

Faecal contamination of bathing waters poses a significant public health risk, which is why water quality is monitored in accordance with the EU Bathing Water Directive 2006/7/EC. Deterioration of bathing water quality not only negatively impacts public health, but also the local economy and the ecosystems of which these bathing waters are part. The Acclimatize project, focuses on 'at-risk' bathing waters in two complementary environments: a large-scale urban environment and a rural agricultural environment. The project contributes to the preservation and enhancement of the marine and coastal environment for everyone.



Jayne's research project is concerned with the biological and geographical origins of faecal contamination of two bathing waters in Fingal, which is measured by the determining the levels of faecal indicator bacteria (FIO.) Bathing water quality is strongly influenced by weather conditions, tides and particular rainfall and solar radiation. Transect studies were therefore performed during a 12-hour tidal cycle at each beach under different weather conditions Samples were analysed for *E. coli*, intestinal enterococci, somatic coliphages and *Clostridium perfringens* spores. Jayne's research showed that FIO levels vary by at least one order of magnitude in both bathing waters in a single day. These studies were carried out at the so-called compliance point where single samples are taken by local authorities. A study of the the nearby estuary showed that FOI levels rise during an outgoing tide in which water flows from the estuary into the sea. These studies indicate a clear tidal impact on FIO levels in the bathing waters examined and in the estuary.

The Acclimatize project is part funded by the European Regional Development Fund through the Ireland Wales Cooperation Programme. Jayne's research is funded by a grant from Fingal County Council