

International Statistical Ecology Conference 2016, Summer 2016, Seattle

By Andronikos Kafas

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The biennial International Statistical Ecology Conference 2016 (ISEC2016) took place in Washington, USA. Over 300 experts from around the world convened in Seattle from June 28th to July 1st 2016 to present research findings and discuss issues of interest to ecological statisticians and biologists.

The programme consisted of a four-day agenda covering the latest in statistics and ecological applications. Twenty theme sessions took place featuring a wide variety of topics, from Statistical theory to ecological applications. Sessions included talks around abundance estimation, movement ecology, population dynamics, statistical modelling, multi-species modelling, occupancy modelling, citizen science, species distribution modelling, big data, survey design, community dynamics, distance sampling and biodiversity.



Andronikos Kafas, a third year part-time PhD student of the University of Aberdeen, was supported by MASTS Small Grants to deliver an oral presentation on his PhD research in the field of offshore renewable energy and marine spatial planning. His talk, entitled “Spatio-temporal modelling of fishing effort pattern after displacement due to offshore wind developments using INLA”, presented his efforts developing an analytical tool to resolve inter-sectoral conflicts between commercial fisheries and offshore wind energy developments.

As part of his PhD research, he is developing an assessment framework for the planning and management of ocean space, as well as mitigation of space competition between marine resource users. In Scotland, spatial overlap between emerging offshore wind farms and commercial fishing activity may impede access to

traditional fishing grounds. Consequently, fishermen may re-allocate (displace) their fishing effort to alternative sea areas with lower profits and/or less reliability in catches. Inter-sectoral interactions between commercial fisheries and offshore wind energy developments in the East coast of Scotland are used as a case study to develop a fisheries displacement spatial modelling tool. His study develops a hierarchical spatio-temporal model for fishing effort distribution. The model involves a Gaussian Markov Random Field (GMRF) through the Stochastic Partial Differential Equations (SPDE) approach and adopts the Integrated Nested Laplace Approximation (INLA) algorithm. Multi-year spatio-temporal data for Scottish fishing vessels are sourced through the Vessel Monitoring System (VMS) and used in the model. The effect of relevant covariates as well as time and space dependence is modelled in a Bayesian framework. Validation of the model outputs is undertaken with current fishing patterns. The model provides highly disaggregated and quantitative evaluation of effort limitations resulting from closed areas (e.g. offshore wind farms) and incorporates predictions of how fishing efforts will be relocated with high resolution in time and space.

More information can be found on the [conference webpage](#). Statistics enthusiasts will be excited to hear that the home of the next International Statistical Ecology Conference will be St. Anderws, Scotland in the Summer of 2018.