

Fishers' behavioural responses to severe weather events: Understanding economic implications and the potential for risk transfer to the insurance industry

Supervisors

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Project description

Climate modellers find it exceedingly difficult to predict future storminess, especially in the oceans. However, changing storm intensity and frequency may severely affect fishing industries¹, exacerbating existing hazards in this occupation. In the UK, the 2013-14 winter was one of the stormiest on record. The fishing industry was severely disrupted, with vessels tied-up in port, a lack of fish on markets, hardship among fishing communities, and severe damage to boats and harbour facilities. The UK Government launched a 'Storm Damage Gear Replacement Scheme' to facilitate recovery of the industry, with damages estimated at millions of pounds. There is potential to mitigate similar economic losses in the future by transferring some risk to the insurance sector through development of 'Index-based Weather Insurance' products. These pay out if a variable moves above a threshold established *a priori* using historic data series. Such products allow quick settlement of claims and reduce disruption to fisheries, building resilience and aiding adaptation.

Knowledge of how fishers respond to adverse weather is currently limited, particularly in the context of complex social and ecological factors influencing fishers' decisions². This project will advance our understanding through an interdisciplinary approach and unique partnership between academia, government

and industry to address three objectives:

1. Use case studies of fishing fleets in three southwest UK ports to test a prototype model of weather disruption to fishing activity, developed by the insurance company Willis Limited and Cefas. Information from government databases regarding fishing vessel location (VMS, logbook data) will be used to identify behavioural responses to adverse weather (e.g. storms, high winds, high waves) among vessels of different designs and sizes.
2. Validate model findings through collection of primary data on fishers' decision-making, through structured interviews with fishers in the same three ports. Interviews will identify areas where individual decision-making may deviate from model predictions, and explore potential for wider applicability of the model.
3. Based on findings, explore how future climate change might exacerbate disruption to the fishing industry, and examine the practicability of developing Index-based Weather Insurance products.

The empirical data generated will contribute to an improved knowledge base for fisheries management, in the context of global challenges to natural resource governance, risk management and sustainable food production. The project will address an issue of immediate interest to both fishers and policy makers, and will support the development of financial products aimed at enhancing resilience and sustainability within the fishing industry.

1. Cheung WWL, Pinnegar J, Merino G, Jones MC, Barange M. Review of climate change impacts on marine fisheries in the UK and Ireland. *Aquat Conserv Mar Freshw Ecosyst.* 2012;22(3):368-388.

2. Turner RA, Gray T, Polunin NVC, Stead SM, Stead M. Territoriality as a Driver of Fishers' Spatial Behavior in the Northumberland Lobster Fishery. *Soc Nat Resour.* 2013;26(5):1-15.



Bad weather at [Brixham](#) harbour, Devon – March 2013, Simon Armstrong © Cefas Crown Copyright.