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Dr X

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Dear Dr. X / Editor,

Enclosed is our manuscript “Spatial separation of catches in highly mixed fisheries”. Please accept it as a candidate for publication as a Research Article in *Nature*.

**Summary of appeal to a general scientific audience**

The way humans exploit heterogeneously distributed wild animal populations is a research topic of huge significance as it supports food security, sustainability and managing natural capital. Wild capture fisheries are an example of a spatially and technically complex interaction as fisheries simultaneously catch different size classes of multiple populations which may have differing management or conservation goals. Understandings this multidimensional human-animal interface is a challenge highlighted by recent work looking at selective and unselective fishing (Reconsidering the consequences of selective fishing, Science 335: 1045 - 1047). While advances in understanding of spatial dynamics and computing have allowed development of the increasingly sophisticated models to understand species distributions (Space oddity: the mission for spatial integration, CJFAS 74: 1698-1716), it is necessary to distil this understanding to the key interactions of interest. In our manuscript we present a novel method to reduce the complexity of spatiotemporal dynamics inherent in wild capture fisheries to highlight how key spatial and species interactions drive catches. We approach the task while considering the significant policy changes in European fisheries in the context of supporting fisheries management in meeting future challenges, presenting the key interactions in a tractable and clear way for managers.

**Summary of appeal to a non-scientific audience**

In Europe, overexploitation of fish populations has resulted from ‘too many boats chasing too few fish’. Yet in recent years, capacity has reduced and stocks have begun to rebuild. Now, the major challenge facing managers now is addressing the need to ensure all species caught in mixed fisheries are sustainably managed. This challenge has recently been tackled through a significant policy change in Europe under the Common Fisheries Policy (CFP) where fishers will in future count all catch against quota (the ‘landings obligation’), rather than discarding over-quota catches as has happened in the past. While attracting a high media profile (e.g. Hugh Fearnley-Whittingstall’s fish fight campaign, [www.fishfight.net](http://www.fishfight.net/)), this has had little attention in high level journals yet has the potential to fundamentally change how fisheries impact on fish populations. The challenge in managing all populations in a way that is sustainable yet allowing fisheries to continue to pursue quota for populations that allow higher catches has put a sharp focus on the complexities of spatial processes and dynamics. Spatial mitigation through changes in fishing patterns has been highlighted by industry as an important adaptation to the new fisheries management system. We set out an approach which goes well beyond current practices and has potential to fundamentally alter the discourse on spatial avoidance as a tool to adapt to a challenging policy change, of great importance to European fisheries.

The manuscript is our original unpublished work and it has not been submitted to any other journals for review. Suggested referees are:

* A person
* Another person
* Probably not this person

**Manuscript details**

We estimate a final draft to be approximately 5,000 words or 5 pages in *Nature* with 45 references. There are four figures. The desired figure sizes are height x width in millimetres:

Figure 1:

Figure 2:

Figure 3:

Figure 4:

A supplementary Information section is included.

Yours sincerely,

Paul Dolder, Cóilín Minto and James Thorson