

Filling the gap: Using fishers' knowledge to map the extent and intensity of fishing activity.

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## Filling the gap: Using fishers' knowledge to map the extent and intensity of fishing activity

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### Highlights

- Local Knowledge (LK) from fishers can provide a reliable source of fishery spatial data.
- LK data highlights important fishing grounds in the absence of empirical data sources.
- A trade-off between accuracy and error reduction is required in analysis grid cell size.

## Abstract

Knowledge of the extent and intensity of fishing activities is critical to inform management in relation to fishing impacts on marine conservation features. Such information can also provide insight into the potential socio-economic impacts of closures (or other restrictions) of fishing grounds that could occur through the future designation of Marine Conservation Zones (MCZs). We assessed the accuracy and validity of fishing effort data (spatial extent and relative effort) obtained from Fishers' Local Knowledge (LK) data compared to that derived from Vessel Monitoring System (VMS) data for a high-value shellfish fishery, the king scallop (*Pecten maximus* L.) dredge fishery in the English Channel. The spatial distribution of fishing effort from LK significantly correlated with VMS data and the correlation increased with increasing grid cell resolution. Using a larger grid cell size for data aggregation increases the estimation of the total area of seabed impacted by the fishery. In the absence of historical VMS data for vessels  $\geq 15$  m LOA (Length Overall), LK data for the inshore fleet provided important insights into the relative effort of the inshore (<6 NM from land) king scallop fishing fleet in the English Channel. The LK data provided a good representation of the spatial extent of inshore fishing activity, whereas representation of the offshore fishery was more precautionary in terms of defining total impact. Significantly, the data highlighted frequently fished areas of particular importance to the inshore fleet. In the absence of independent sources of geospatial information, the use of LK can inform the development of marine planning in relation to both sustainable fishing and conservation objectives, and has application in both developed and developing countries where VMS technology is not utilised in fisheries management.



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