

## Notes on survey-based spatial indicators for monitoring fish populations



This paper presents the spatial indicators used in the European project FISBOAT. These are statistics intended to capture spatial patterns of fish populations, using fish density data collected during scientific surveys. To handle diffuse population limits, indicators are designed not to depend on arbitrary delineation of the domain. They characterize the location (centre of gravity and spatial patches), occupation of space (inertia, isotropy, positive area, spreading area and equivalent area) and microstructure. Collocation between different populations is summarized by a global index of collocation. These spatial indicators have the potential to be used in a monitoring system to detect changes in spatial distribution. They could be helpful for relating the spatial distribution properties of fish stocks to their dynamics, their habitats, or to climate change.

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