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Species distribution and multispecies spatial modelling in the Ross Sea

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The establishment of the world's largest Marine Protected Area (MPA) in the Ross Sea region of the Southern Ocean provides an opportunity to study to what extent large high-seas MPAs may provide important (and measurable) conservation benefits. One of the MPA aims is to avoid potentially adverse effects of fishing on the prey species of toothfish (*Dissostichus mawsoni*), a key risk that could have large impacts on the demersal ecosystem.

We present progress on the development of spatial population dynamics modelling methods for toothfish and their major prey species in the Ross Sea region. Such models can be used to examine the potential effects of fishing through the combined impacts of direct fishing mortality and predator-release on demersal fish communities. These impacts are especially relevant on the Ross Sea slope where demersal fish communities are dominated by toothfish prey species. As these models are spatially explicit, they can also be used as simulation platforms to assess the likely effectiveness of the Ross Sea MPA in meeting its objectives.