

## Supplementary Information

### Influence of ecological traits on spatio-temporal dynamics of an elasmobranch community in a heavily exploited basin

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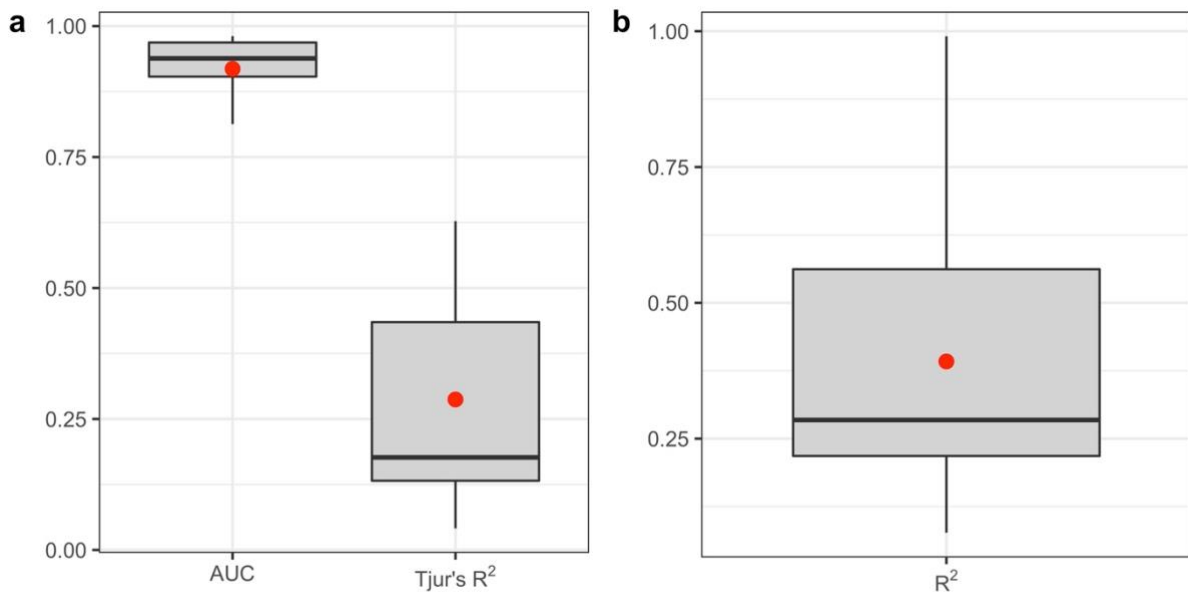
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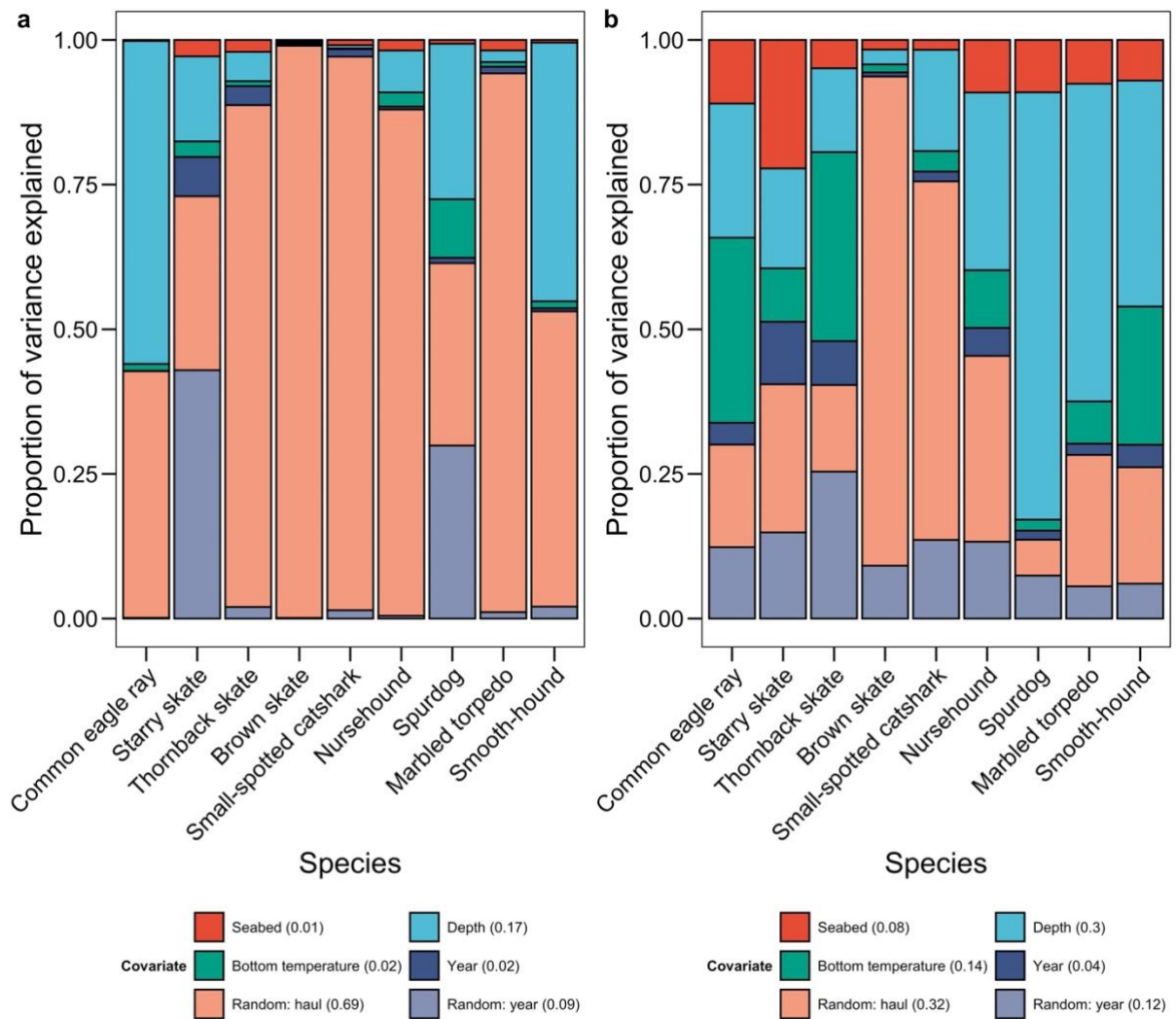
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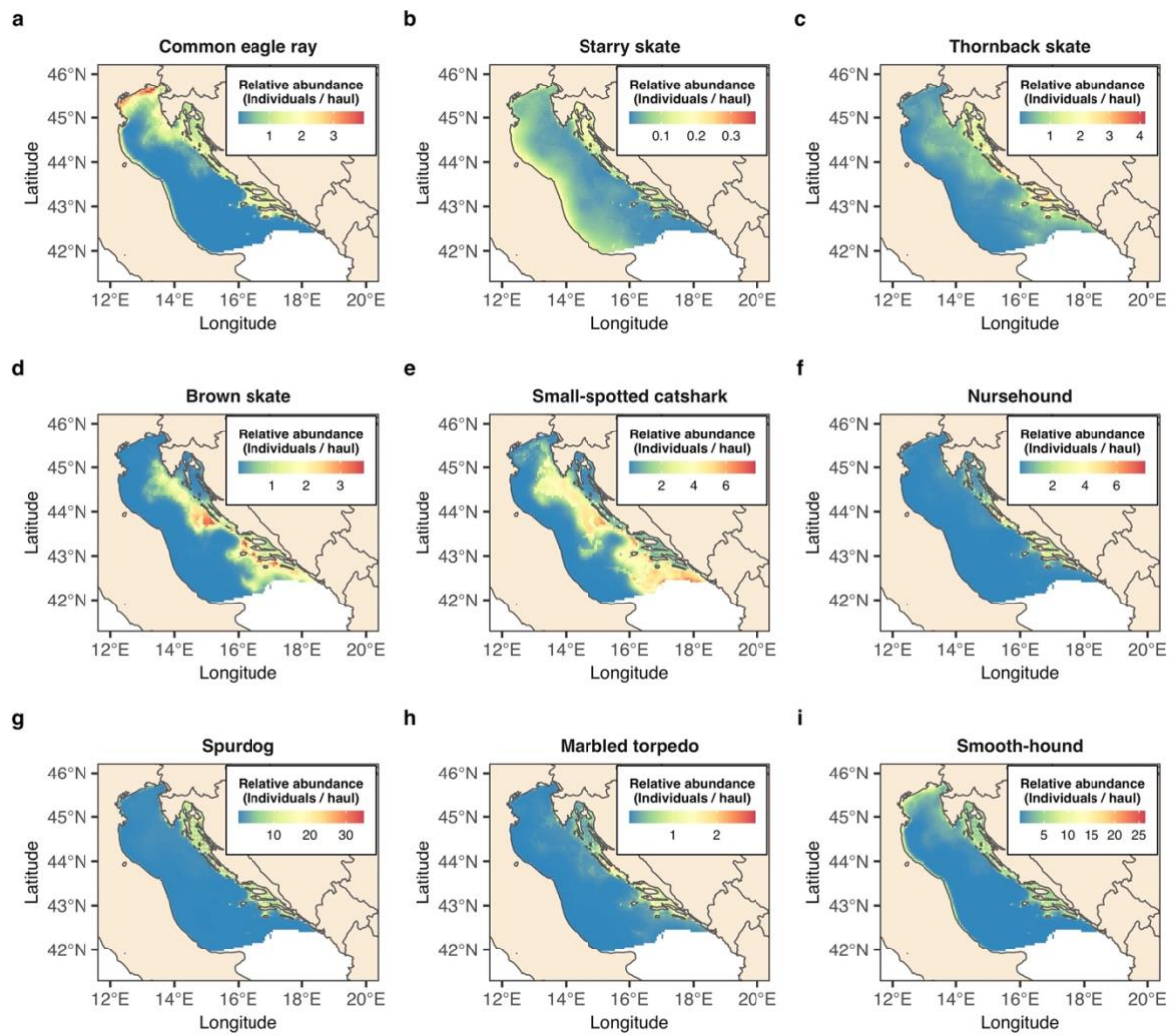
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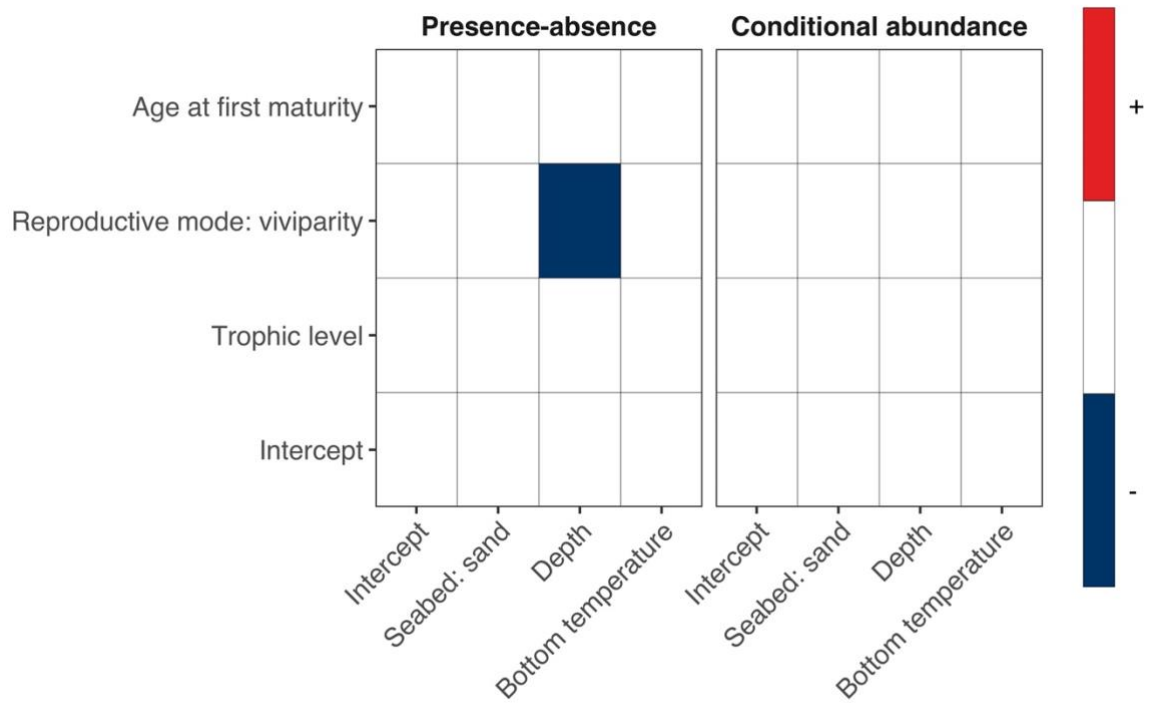
**Figure S1. Boxplots showing the explanatory power.** The panels show the results for the presence-absence (PA) model (a) and for the conditional abundance (ABU) model (b). Data point represents species-specific values. Red dots represent mean values.



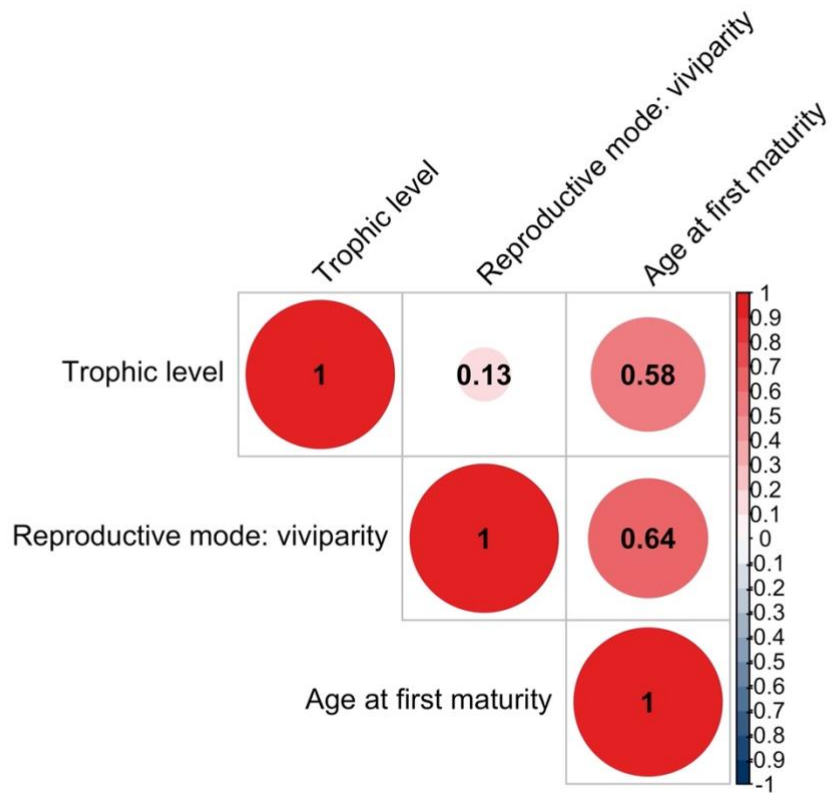
**Figure S2. Variance partitioning among the explanatory variables included in the models.** The panels show the results for the presence-absence model (a) and for the conditional abundance model (b). The explanatory power is measured by  $T_{jur} R^2$  for the presence-absence (PA) model and  $R^2$  for the conditional abundance (ABU) model. The mean variance proportions averaged over the species are reported in brackets alongside the legend. ‘Random: haul’ indicates haul-level spatial random effects, while ‘Random: year’ represents temporal random effects.



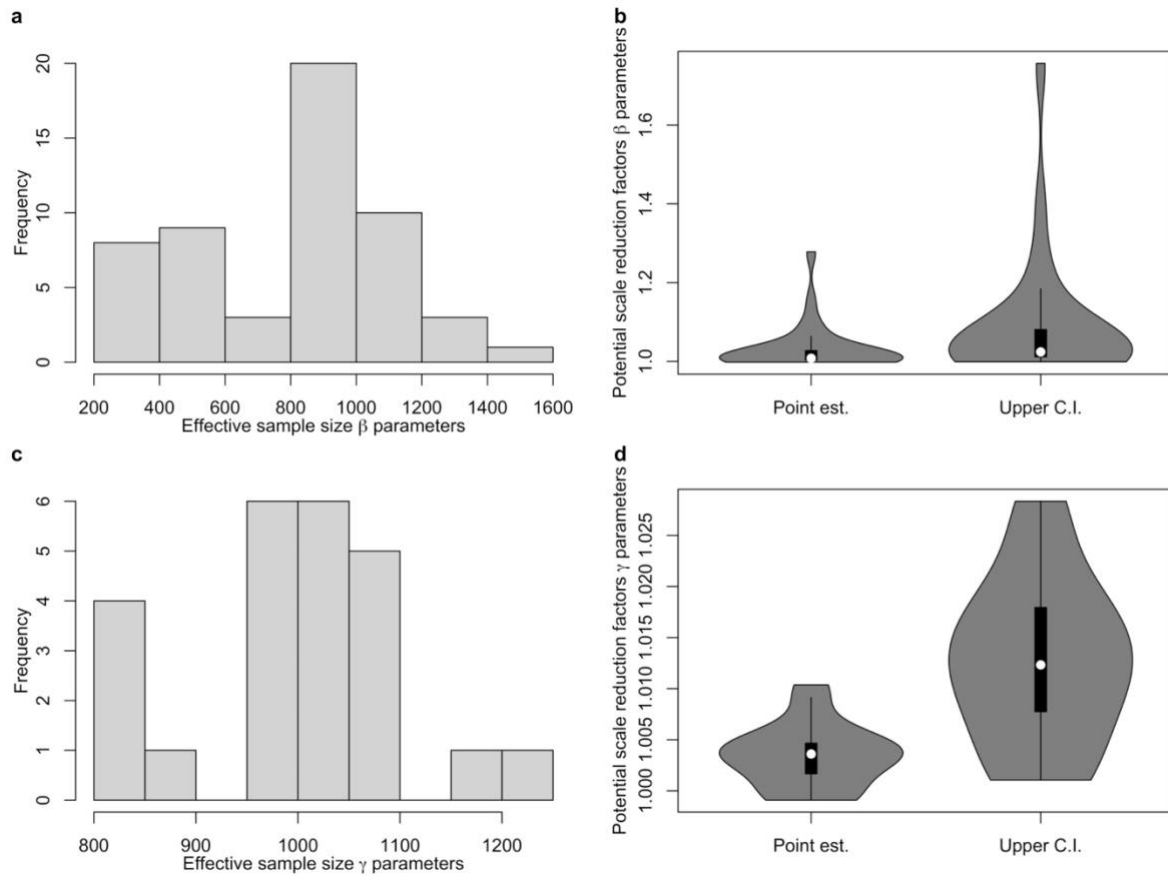
**Figure S3. Predicted species mean abundance across the study area.** Predictions refer to the year 2019. In the predictions, the swept area value was fixed to the mean of the trawl hauls used in the study (i.e., 0.047 km<sup>2</sup>).



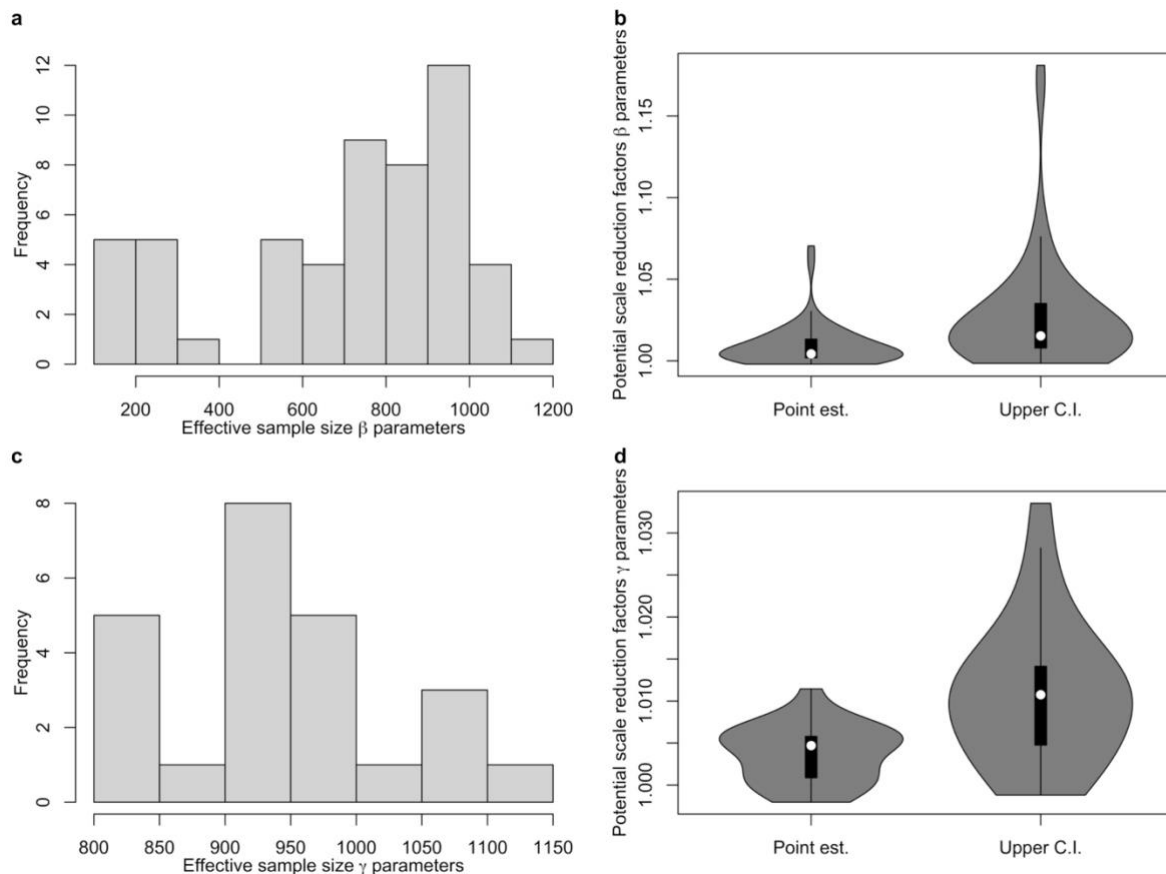
**Figure S4. Heatmap of the estimated  $\gamma$  parameters (regression slopes) which link species traits to species niches.** The left panel represents the presence-absence (PA) model while the right panel the conditional abundance (ABU) model. Blue color indicates parameters that are estimated to be negative with at least 95% posterior probability, while responses that did not gain strong statistical support are shown in white.



**Figure S5. Pearson pairwise correlation coefficients for the traits included in the analysis.** Red colour indicates positive coefficients, which are reported inside the circles.



**Figure S6. Model diagnostics for the presence-absence (PA) model.** The panels correspond to the  $\beta$  parameters (a-b) and to the  $\gamma$  parameters (c-d). The panels on the left measure MCMC in terms of the effective sample size and the panels on the right in terms of the potential scale reduction factor.



**Figure S7. Model diagnostics for the conditional abundance (ABU) model.** The panels correspond to the  $\beta$  parameters (a-b) and to the  $\gamma$  parameters (c-d). The panels on the left measure MCMC in terms of the effective sample size and the panels on the right in terms of the potential scale reduction factor.

**Table S1 References for the traits considered in the analysis.**

Species	Reproductive mode references	Trophic level references	Age at first maturity references
Common eagle ray	Beukhof et al. (2019)	Jacobsen et al. (2013)	Ebert & Dando (2020)
Starry skate	Beukhof et al. (2019)	Beukhof, Esther et al. 2019	Ebert & Dando (2020)
Thornback skate	Beukhof et al. (2019)	Ebert & Bizarro (2007)	Ebert & Dando (2020)
Brown skate	Beukhof et al. (2019)	Ebert & Bizarro (2007)	Ebert & Dando (2020)
Small-spotted catshark	Beukhof et al. (2019)	Cortes (1999)	Beukhof et al. (2019)
Nursehound	Beukhof et al. (2019)	Cortes (1999)	Beukhof et al. (2019)

Spurdog	Beukhof et al. (2019)	Cortes (1999)	Ebert & Dando (2020)
Marbled torpedo	Beukhof et al. (2019)	Jacobsen et al. (2013)	Ebert & Dando (2020)
Smooth-hound	Beukhof et al. (2019)	Cortes (1999)	Ebert & Dando (2020)