

Hazard and catch composition of ghost fishing gear revealed by a citizen science clean-up initiative¹

Authors: Susanna Huneide Thorbjørnsen, Ann-Elin Wårøy Synnes, Ingrid Disch Løset, Alf Ring Kleiven

Ghost fishing is the continued catch of fishes and invertebrates by lost fishing gear. It represents an animal welfare issue as well as a waste of both potential food and ecosystem resources. To investigate the hazard and catch composition of lost fishing gear along the Norwegian coast, recreational divers in collaboration with scientists conducted systematic reporting of retrieved lost fishing gear. Through this citizen science project, a total of 12,101 gear items were retrieved and reported, including traps, gillnets and fyke nets. Members from 71 dive clubs contributed.



Photo of the parlour trap by Geir Eliassen.

Brown crab was the species most often captured in lost fishing gear. Lobster, cod and wrasse were also regulars (Figure 1).

Wrasse traps had the highest catch rate of animals.

98.4 % of the reports from divers correctly identified the gear type (three levels: traps, gillnets and fyke nets).



Photo of the brown crab.

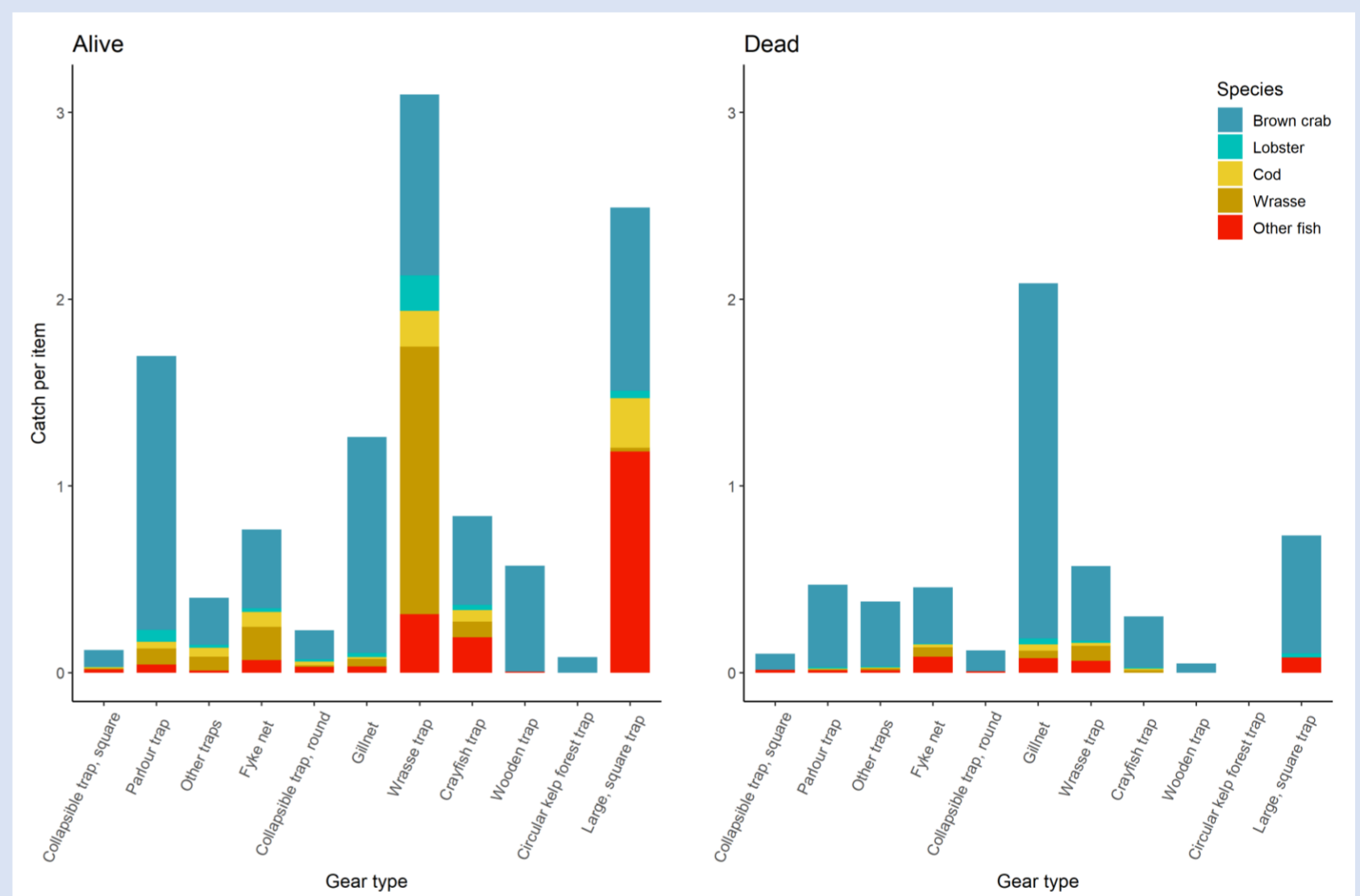


Fig. 1: Average number of live (left panel) and dead (right panel) individuals caught per gear item for all gear types. Colors represent species/animal group.

The parlour trap is the most hazardous trap.

The relative risk of ghost fishing from different gear types along the Norwegian coast was investigated (Figure 2). The resulting hazard ratio (values ranging from 0-1) is a product of both how well the gear catch and the amount of gear. Following this, the gear type with the lowest hazard ratio will have a normalised hazard ratio of 0 and the gear type with the highest hazard ratio will have a normalized hazard ratio of 1.

Recreational divers restore the sea floor and provide valuable data.

Retrieving lost fishing gear from the sea floor requires a specialized effort. Recreational divers have provided a highly valuable dataset, presenting the current composition of both lost gear and its catch to citizens, policy makers and researchers. Reporting in defined categories (e.g. species categories, see figure 1) gave standardized data. This was better than allowing for reporting in free text fields. Machine learning can be used to analyze image data collected by citizen scientists².

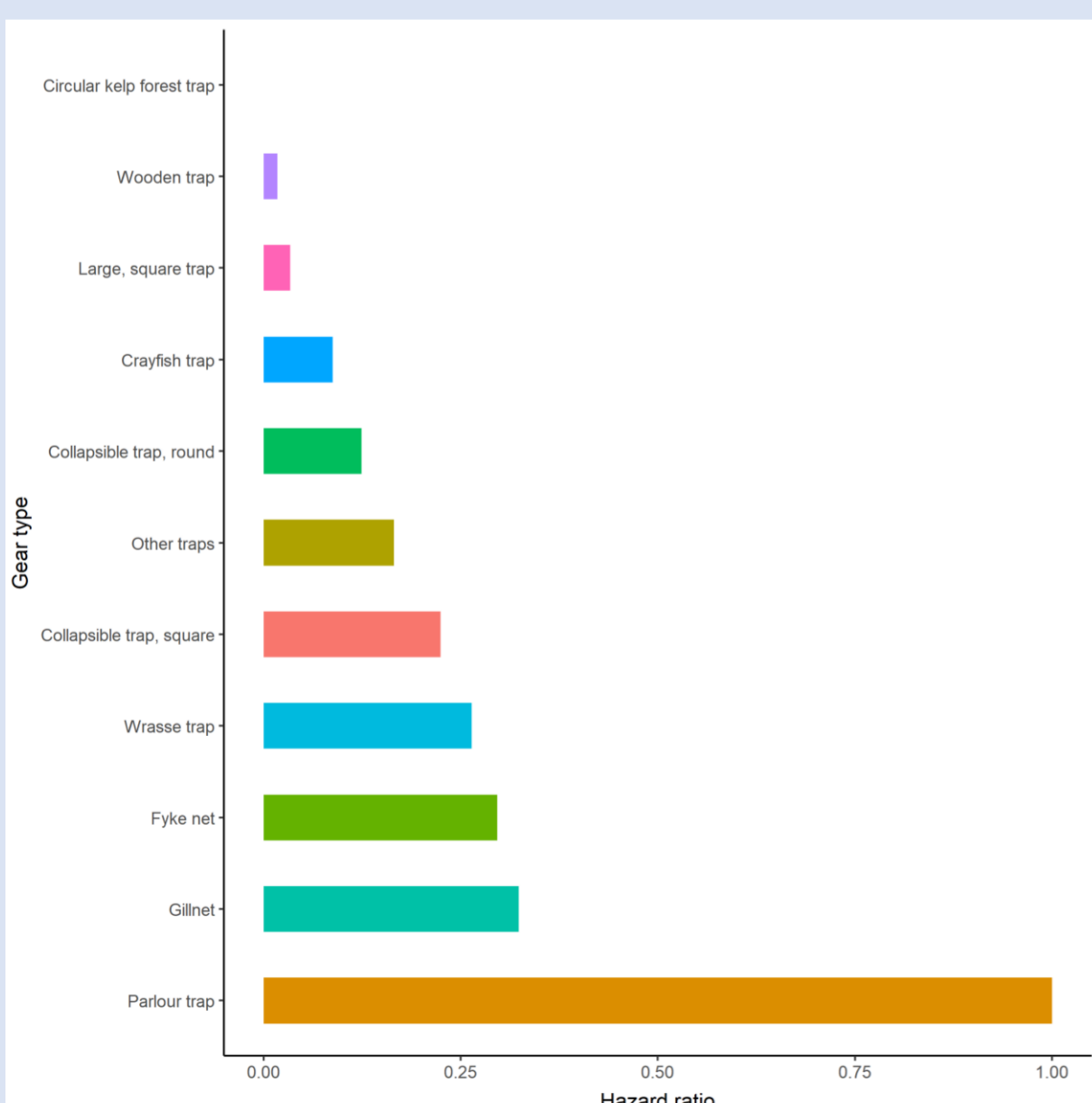


Fig. 2: Normalized hazard ratio for the different gear types.

Contact: susanna.t@hi.no

