Use of escape hatches / drop-out panels

Summary Information Sheet

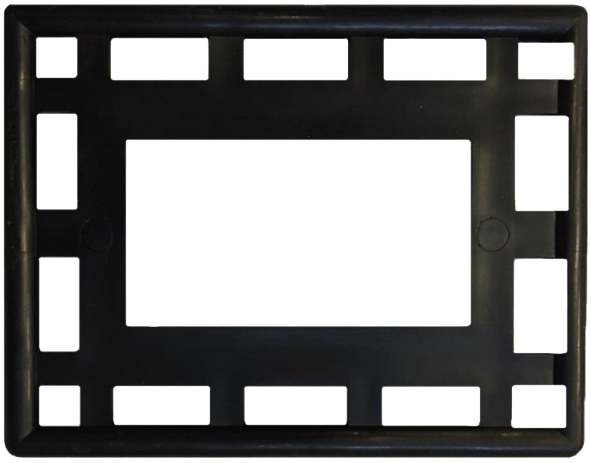
Pembrokeshire Sustainable Shellfish Initiative

The basic understanding is that use of escape gaps increases the survivability of juvenile lobsters by reducing damage and mortality through the fishing process, with the added advantage of increasing the efficiency of the fishing process due to spending less time clearing pots of undersize catch. In addition to juvenile lobsters other species are able to use this escape route. In some areas mandatory installation of escape gaps in all pots is required in order to allow under-sized lobster to escape. In Wales there is no current statutory requirement for the use of escape gaps although some fishers use them voluntarily.

The size of the escape gap is obviously dependant on the primary target species and its minimum landing size (MLS), but even so there still exists some variability in the sizes in use. Escape gap size is a compromise between allowing all undersized individuals to escape and retaining all individuals of ≥MLS. The Pembrokeshire Sustainable Shellfish Initiative (PSSI) trialled use of 82mm (width) by 43mm (height) gaps. The MLS for lobster in this area (whole of Wales in fact) is 90mm.

A social media thread on Fishing News had shown that male lobsters above 90mm MLS were able to escape from some escape hatches provided in England; this was a concern to participating fishers. The height of the escape gap rather than the width was seen to be the main limiting factor. Escape hatch samples were received from GT Products and tested (by trying to fit a male 90mm lobster through!).

The escape hatches went down well with all who trialled them. There was no negative feedback about them at all.



ESCAPE HATCH

Escape hatch used in the trial 82mm x 43mm for lobster of 90mm MLS.

The majority of participants reported that:

- Retention of juvenile lobsters decreased or was non-existent;
- Due to the lack of undersized lobsters, pot sorting time was reduced, thereby increasing efficiency;
- There was no noticeable change in catch of legal lobster.

Other studies in recent years in Wales (e.g. Pantin et al. (2015) and Wootton (2015)) have highlighted the positive benefits of using escape hatches.

As well as testing escape hatches for their escape capabilities, some escape hatches also had weak links incorporated into them in order to serve the dual purpose of providing a means to reduce ghost fishing potential. This is a legal requirement in many States in the USA and many studies have been carried out to explore impacts and effectiveness (e.g. Bilkovic et al. (2012)). The mechanism generally consists of a panel made of polyethylene plastic that is hinged at the top and held to the pot at the bottom with uncoated ferrous metal rings. Once the rings corrode and break, the panel is released to swing open or be pushed open by entrapped animals. "Escape cord" made of 100% natural fibre (e.g. sisal, cotton, jute, hemp) is also commonly used as a weak link although various studies (e.g. Swarbrick and Arkley (2002)) have shown it to be ineffective and susceptible to attack by shellfish; we didn't consider its use in the trial and wanted to explore other possibilities.

BLANK PANEL WITH BIODEGRADABLE ELEMENT

'Blank' hatch example fixed with cable ties (one side) and steel wire (three sides).

The same 'blank' hatch after 11.5 months. Wire has failed on two sides. Fouling by marine growth evident. (Only hauled twice between November and May).

Where participants did not want to use escape hatches due to wanting to be able to retain velvet swimming crabs as part of their catch (and/or prawns caught as by-catch), they were offered the opportunity of testing 'blank' hatches which incorporated the weak links. These were simply escape hatches but without the cut-away escape gap (also provided by GT Products).

Researchers in the USA have concluded that the only mechanism that would allow for adequate escape of trapped animals would be a panel that itself is fully biodegradable. They investigated and tested some alternatives and settled on Polyhydroxyalkanoate (PHA) panels (manufactured by www.mobjackbp.org). PHA is a biopolymer naturally produced by bacteria in the marine environment that can be moulded, and once placed in water is metabolised (eaten) by the bacteria present in water. Because of this nothing needs to 'detach' from the pots - the 'biopanels' cover an escape hatch/hole and simply dissolve away. PHA looks and feels pretty much like plastic. If regularly fished, the PHA will last more than a year, maybe two or three (Kirk Havens, Virginia Institute of Marine Science, pers. comm.). If lost and left on the bottom, out of sunlight, bacteria colonise and degrade the material enough to allow escape in about 6 to 10 months.

The trial found that fishers were not as keen to incorporate an anti-ghost fish mechanism into a panel as they were for one connected to the hook which they could better monitor. In addition not all fishers wanted escape hatches anyway, and to retrofit panels was time-consuming work. Use of a standard rated material like Ghost Buster hog rings (but a larger size to fit the thick plastic rimmed hatches commonly used in the UK) would give more consistency to timing of failure; the use in the trial of steel wire elements was considered too fiddly and variable to be practical for all. A recommendation from the trial, should a weak link be desired in a panel, is to further investigate the use of fully biodegradable (and environmentally neutral) PHA hatches.

More information on the Pembrokeshire Sustainable Shellfish Pilot Initiative can be found at: www.pembrokeshiremarinesac.org.uk/pssi.html
Or contact the project manager. Email: pembrokeshireSSI@gmail.com

@PembsMarineLife @PembrokeshireMarineWildlife

Pembrokeshire Sustainable Shellfish Initiative

Pembrokeshire Marine Special Area of Conservation Sir Benfro Forol Ardal Cadwaeth Arbennig
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