

Environmentally Friendly Moorings October 2017 Workshop follow-up

Review of Private Mooring Trial (ongoing) conducted in the Isle of Man

Although I did not attend the recent workshop on Environmentally Friendly Moorings, I am referenced on p.8 of the Workshop Report as having conducted a test of a Hazelett system in the Isle of Man and hope that delegates and others interested may find the following comments, based on my own experiences, useful.

To put my own trial in context, I am operating a swinging mooring is situated on the East coast of the Isle of Man. Whilst sheltered from the prevailing (SW) winds, the open bay location is exposed to wind from other directions and is also subject to tidal movement and back-eddies. The mooring runs to a maximum depth of 10m with minimum depth at Spring tides of 3m. The system does not dry out and is used only in the summer season.

Previously, I was using a typical set-up with a chain rising from a concrete block on the seabed to a large buoy on the surface with a small pick-up buoy attached. Whilst this was generally satisfactory from a user perspective, it presented difficulties in terms of regular maintenance and could not be serviced without recourse to a lifting crane. I was attracted to a system offering more easy inspection and, given the exposed location, hoped for a system which might offer superior performance in more severe conditions.

As an alternative to chain, therefore, I have been trialling a Hazelett based system (with some modifications to their standard set-up) which has proved successful from a user perspective:

- The spar buoy is simple and safe to retrieve from a boat and, because of its design and floating characteristics, causes no scratching or scuffing to the hull of the boat when moored;
- The elasticity within the mooring set-up eliminates entirely the ‘snatch’ associated with chain moorings during heavy weather and helps the boat to maintain a very stable position over the mooring in rough conditions. As a result, loadings on deck fittings are reduced;
- In contrast to chain, the Hazelett system eliminates virtually all moving parts, so reducing wear on the majority of components;
- Inspection and maintenance of the buoy and majority of the riser can be carried out by easily lifting the mooring out of the water onto a dinghy at low spring tides – weed growth can be removed and checks carried out for evidence of abrasions or other damage. Whilst it is not possible to lift the lowest (elastic) section of the mooring or the block itself, these can be easily examined visually from the dinghy using a bathyscope;
- In contrast to chain systems which are heavy, the Hazelett riser is light enough for one person to carry with ease and there is no risk of injury through being caught or snagged in chain links;
- After initial installation of the concrete block (or, alternatively, helix anchor), the mooring system can be removed simply by a diver releasing the mooring from the block and floating the riser to the surface for simple recovery. Re-laying the mooring is a reverse of the procedure;

- Should there be a field of similar moorings, inspection of all the units can be simply carried out by a diver moving from one unit to the next with no need to lift moorings for inspection or repair;

and finally, of course

- Chain scour is eliminated completely with massive benefits to the marine environment around the mooring – indeed, the concrete block in my system has now lain on the seabed, undisturbed for a number of years, and is now itself a miniature, fully inhabited ‘reef’.

Although my comments are made as a boat owner / user, I suggest there are principally three levels of interest in eco-moorings which all need to be satisfied if these are to become viable alternatives to the chain systems with which we are familiar:

1. The boat owner and boat insurer who are primarily concerned that the valuable asset floating on the surface is safe in all prevailing weather, wind and tidal conditions;
2. The mooring provider (be it a boatyard or harbour authority) who is primarily concerned that the mooring system can be installed, maintained and recovered as well as, or better than, existing systems. Infrastructure (cranes, barges, etc) is already in place to deal with traditional mooring systems – handling eco-moorings may require different capabilities and may therefore be less attractive to some existing operators;
3. The ‘green warrior’ (pardon the phrase!) whose primary concern is elimination of the damaging effects of moorings systems to the marine environment and encouragement of protection and diversity of the same.

These interests may, to a greater or lesser extent, overlap but on the face of it there is as yet no uniformity of interest which will make the switch from traditional chain to eco-moorings obvious. So, for example, whilst present systems certainly help to protect the seabed, there is insufficient evidence to show that eco-moorings are safer than traditional chain systems so their adoption by boat owners is not a foregone conclusion. Thorough and detailed testing is needed (in a range of varied conditions) before meaningful assurances can be given as to safety.

As highlighted in the October 2017 Workshop, the questions of funding and co-ordination of effort become critical to future development and adoption of eco-mooring systems. Individual boat owners can only use what is available to them; insurers can incentivise use of certain systems but there needs to be available far more thorough performance data before eco-mooring systems can gain widespread adoption.

Similarly, existing infrastructure needs to be assessed to see whether, for example, moorings can be laid, inspected and maintained at a local level with the support facilities available. So, for example, if a local boatyard is currently able to supply and lay a trot of chain moorings, is it able to deal with the laying and recovery of eco-mooring which may require quite different equipment and methods of operation? - ‘Chain is easy’.

And finally, of course, there is the question of ‘who pays’ – both for the necessary research but also on an ongoing basis for inspection and maintenance since, typically, eco-moorings have a higher initial cost than traditional systems and (at least until longer term performance data is available) require more regular inspection.

It might seem obvious to place the burden of research and development on manufacturers but they may have a vested interest in promoting their own systems over others. Boat owners are clearly not in a position to

undertake widespread research – their experience (as mine) is limited to their own location and their enthusiasm to trial a new system may be tempered by the value of the boat tied to the top of it! In any event, thorough research needs to be taken to the level of equipment failure (ie. full destruction testing in the laboratory or testing tank), not just day to day usage.

Perhaps the insurance industry is, with the help of university research, the best candidate to drive the project forward but, equally, it has little to gain from taking on broadly unknown levels of risk in new systems when tried and tested chain systems are already in place.

These are difficult questions to which I have no answers. Some neutrally funded research and publicity, perhaps?

At a personal level, though, I have been delighted with the performance of the Hazelett system which gives me many of the benefits I was seeking when I first adopted it. Experience with my own system has not only given me a broad understanding of the advantages of many of the advertised systems but their shortcomings too.

Further modifications to my system are in hand to suit local conditions which, in every case, need to be carefully assessed. The Hazelett system, as with most eco-moorings, is unsuitable in locations where the mooring dries at low tide when exposed components risk being damaged. Similarly, as most eco-moorings are designed for areas with relatively small tidal range, particular difficulties arise around the British Isles where tidal ranges tend to be large. Prevailing winds, tidal currents and local eddies may also necessitate the addition of components (swivels, etc) in the system to overcome 'twist' which can otherwise cause damage to risers, albeit that such components may increase wear in the system – one of the specific issues I am trying to reduce.

There is not yet a perfect design for an eco-mooring to satisfy everyone's requirements but, hopefully, the co-operation initiated through the October 2017 Workshop will help to concentrate minds.

If I can assist with further input, I am happy to do so.

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Exposed location - severe conditions



Easy retrieval from the boat