

Additional advice to be included in the Interim Guidance for Boaters: Killer shrimp *Dikerogammarus villosus*

The following advice specifically relates to outboard engines as shrimps may work their way into crevices if engines are left in the water for extended periods of time. More information about the shrimp is available at: www.nonnativespecies.org/alerts/killershrimp

- The risk of shrimps entering crevices on an outboard engine can be minimised by reducing the amount of time the engine is in the water. When not in use and stationary for a period of time, the engine should be raised so it is completely out of the water (see photograph).
- Before the boat and engine are removed from the water it is recommended that the engine is run for 5 minutes at above three quarters throttle, as this assists in clearing any shrimp from within the exhaust system.
- When washing down the engine particular attention should be paid to the water intake, propeller and any crevices. If facilities are present to flush the engine, this should further reduce the risk. (NB please be aware that we do not know how effective flushing is in removing any shrimps in the engine although we are planning to test this).
- The RYA already recommends protecting the exposed blades of an outboard motor to reduce the risk of causing danger. The use of a propeller bag would not only protect the blades, but also capture any shrimps which may fall from the outboard whilst the boat is out of the water and being transported.
- When out of the water:
 - the boat and engine should be stored in a location where they will not drain into a water body (e.g. a drain, gulley, river, etc.) and the engine should be returned to its vertical (down) position to drain,
 - if the propeller bag is left on the engine, it should be checked regularly for shrimp,
 - if the propeller bag is not left on the engine, the bag should be turned inside out and checked for shrimp and dried for 48 hours. A bucket should then be placed under the engine to catch any shrimps.



If shrimp are found (alive or dead):

- please advise us immediately by email to alert_nonnative@ceh.ac.uk to help us in our efforts to contain the killer shrimp.
- let us know how many shrimp you found and where, this will help us keep track of shrimp movements.
- including a high quality photograph will help us confirm identification.
- if possible, flush the engine with water to remove any additional shrimp you can.
- wrap the shrimp in plastic and put them in a refuse bin. Do not pour them down a drain or put them into a water body.

Work is ongoing to assess further biosecurity measures and additional guidance may follow.