

Humane electrical stun/killing of Crustacea

The RSPCA believes that electrical stun/killing is the most humane and effective method for killing crabs, lobsters, crayfish and langoustines. The electrical stun/killing method renders them immediately insensible with death ensuing (whilst insensible) within seconds.

The RSPCA recommendation to the general public, is not to buy live lobsters and crabs, but to purchase them pre-killed by one of the humane methods shown below. The protocol below is aimed primarily for those killing these animals commercially.

Personnel

Whichever way a crustacean is to be killed (whether by electro-stunning or mechanical) all personnel involved in the handling of crustacea must do so using the most humane methods during the procedures involved in:

- transporting
- storing
- killing.

Only trained competent personnel must be allowed to perform such tasks.

Training must have included:

- proper handling
- how to apply the chosen method of killing
- how to maintain any equipment involved in the killing process.

Protocol for the killing of Crustacea

Pre-killing handling

Where the animals are stored in water before killing they must:

- Not be subjected to rapid changes in water temperature (maximum immediate change of 5 degrees centigrade)
- Crabs must not be held out of water for extended periods (no longer than 6 hours, as their gills dry out and restrict oxygen exchange).
- Have adequate supplies of aerated water. The aim should be to keep the water above 80% saturation at all times.
- Be placed in good quality water (low levels of dissolved oxygen are a stressor for crustacea)
- The water in which the lobsters are stored should be kept as cool as possible in order to allow greater oxygen availability for them.
- Not be kept together with incompatible species or sizes, or similarly not store moulted and non-moulted animals together. Crustacea are not social animals and need their own space.
- They must not be fed whilst they are waiting to be killed
- All animals must be killed once they have entered the restaurant environment and must not be returned to the supplier or passed onto someone else
- Records to be kept of relevant information about the animals being held; for example, mortality levels, number of injuries, origin and arrival dates.
- Lobsters and crabs must never be stored in freshwater.

- Sick and/or injured animals must be removed from the water or holding area and must be killed humanely
- ¹Stocking densities; the most important factors used in calculating stocking capacity are, oxygen content of the water, water flow rate, temperature and tank floor area.
- A safe starting density would be 30 kg/m² for storage over a few days reducing to 5-10 kg/m² for longer term storage
- Any shed legs or claws must be removed from the water, as these can cause a rapid increase in ammonia levels in the water which can adversely affect the welfare of the animals
- Animals which are being held prior to being killed must be monitored constantly.
- Lobsters in particular do not like strong light, and so the ability to keep the lighting dimmed is essential.
- Lobsters are also sensitive to being disturbed, and so it is important that the environment where they are stored is not unduly noisy.

Signs of poor water quality are:

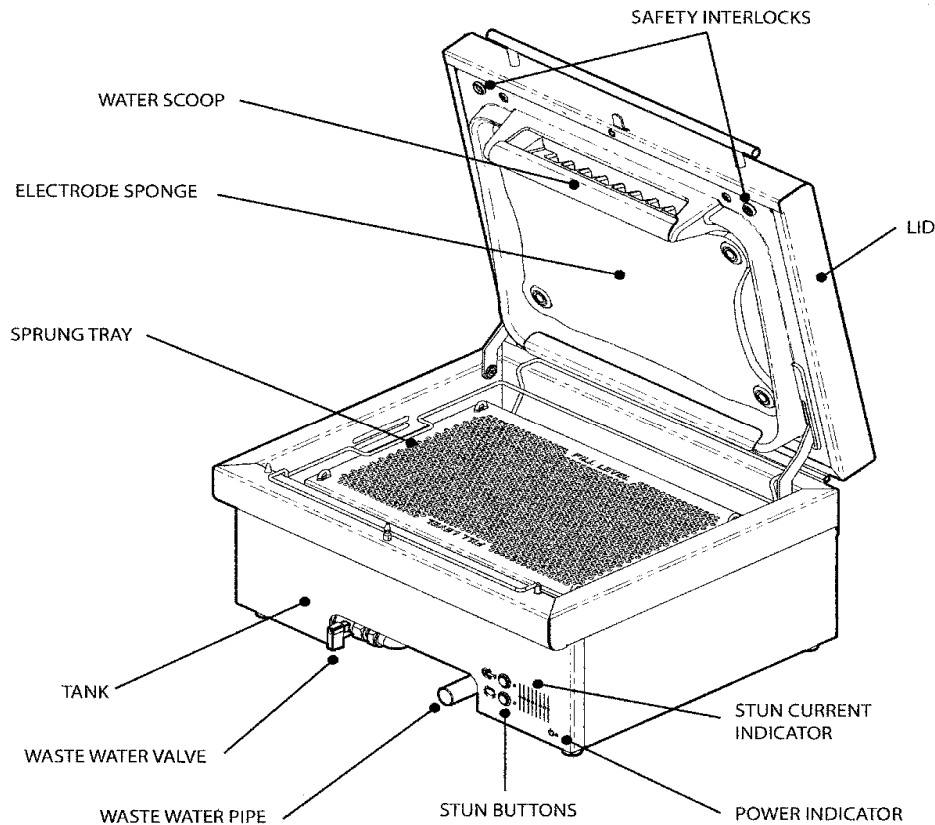
- Foam on the water surface
- Cloudiness
- Signs of slime/algae on the walls of the tank.

The electrical stun/killing method

1. It is important that the manufacturers instructions are followed at all times, and the machine cleaned on a daily basis and regularly serviced to ensure optimum function
2. It is important to ensure that this method is only used on crustacea which are of a size which fit comfortably onto the base tray of the machine
3. Animals which show signs of aggression and adopt aggressive postures which prevent the lid of the machine from closing (in particular as sometimes with Crabs), should be withdrawn and calmed before returning to the base tray
4. There must be an acceptable humane alternative back-up method of killing the animal should the machine malfunction or for some other reason not be usable.

¹ For a comprehensive overview see CEFAS laboratory Leaflet No.66 (Revised)
www.cefas.co.uk/publications/lableaflets/lableaflet66rev.pdf

The Crustastun humane shellfish electro-stun/kill machine



Mechanical destruction method

This method may be the most common method which is used in restaurants and hence it is even more important to have dedicated trained competent operatives perform these tasks.

It involves the rapid destruction of the nerve centres. No crustacean must be subjected to this method whilst it is fully sentient.

1. This method must only be performed when the crustacean has been chilled prior to being killed (crustacea are cold blooded and when their temperature is reduced they become insensible),
2. Chilling must be done in air, rather than immersing them into chilled freshwater which may induce osmotic shock. Ideally, the chilling gradient must be no more than 1.5 – 2 degrees Centigrade per hour. The idea is to manage the chilling of these animals so that they are not put into a very cold environment from an ambient environment, but that the chill is gradual.

Signs of insensibility in crustacea (they may vary from species to species)

- No resistance to handling, for example, there is no resistance to the movement of the tail or abdomen
 - No control of limb movement
 - No eye reactions when the shells are tapped
 - No reaction when they are touched around the mouth parts.
3. Any crustacea placed in a non-ambient environment must be regularly checked for signs of insensibility
 4. Having chilled the crabs and lobsters, and tested them for signs of consciousness, they are now ready for further processing.

Crabs

Crabs have two main nerve centres. One is located at the front of the animal under a shallow depression and the second lies towards the rear of the animal and may have a small hole positioned over it.

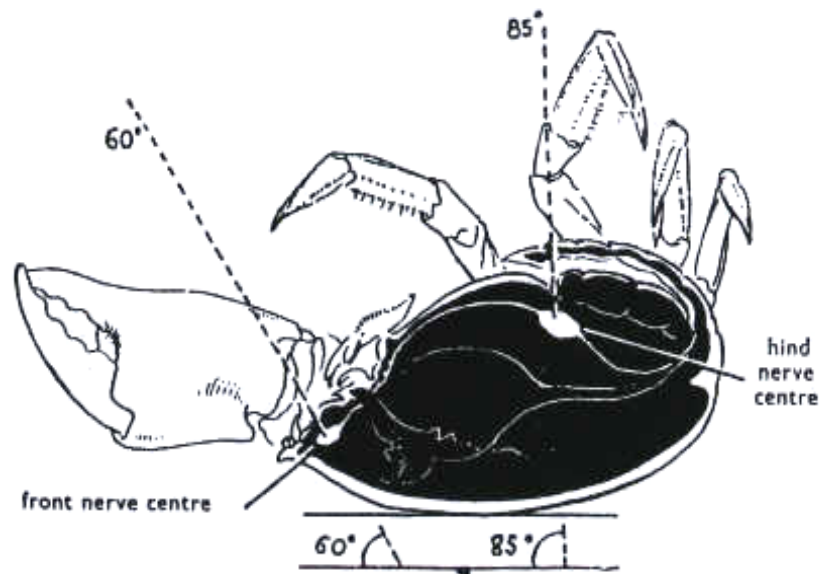


Fig. 1. – A crab cut in half lengthways to show the position of the two nerve centres and the direction in which the awl should pierce each of them (diagrammatic). The crab is lying on its back. *Humane Killing of Animals*, UFAW, 1988.

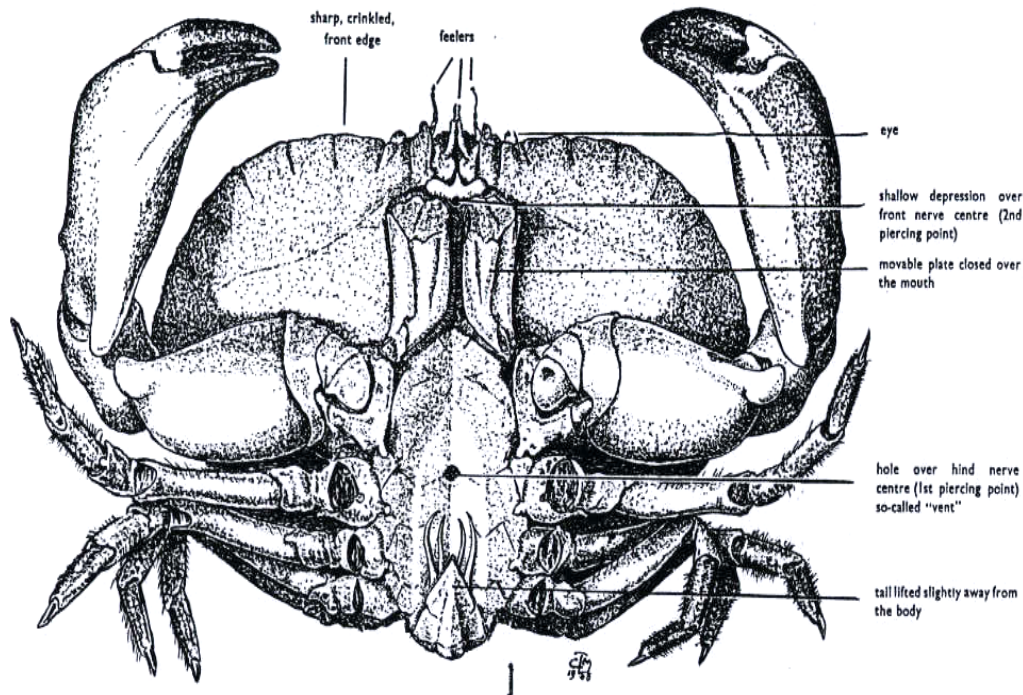


Fig. 2 – Underside of a crab showing the points to be pierced.
The tail must be turned back to reveal the hole over the hind nerve centre
(First piercing point) *Humane Killing of Crabs and Lobsters*, UFAW, 1978.

Dispatching a chilled desensitised crab using the mechanical method.

The recommended method is to lift the abdominal flap (tail flap) and insert a knife or awl all the way through the hind nerve centre, followed by a repeat of the process on the front nerve centre via the shallow depression at the front of the body

This procedure must take no more than 10 seconds.

Lobsters

Lobsters have a chain of nerve centres (ganglia) running all along the central length of their body. All except one are beneath the midline on the animal's under-surface. The brain, at the top end of the chain, is reached through the head rather than the under-surface (See fig. 3) These nerve centres must be destroyed by rapidly cutting through the midline, lengthways, with a large sharp knife.

The lobster should be on a flat surface, on its back, with claws tied. Hold it around the top of its head with a firm pressure to restrain movement. A large, sharp knife should be used for the cuts, e.g. a French cook's knife. Note the midline on the lobster's under-surface. Keeping the midline direction, place the knife on the head beneath the mouth parts (See Fig. 3). Cut through the head via this point to pierce and destroy the brain. Take care not to push the knife all the way through the head.

Then cut through the under-surface midline to pierce and destroy the rest of the chain in two stages, starting at the midline near the junction of the tail and the thorax. The first cut is directed directly forwards toward the head and the second backwards down the midline towards the tail.

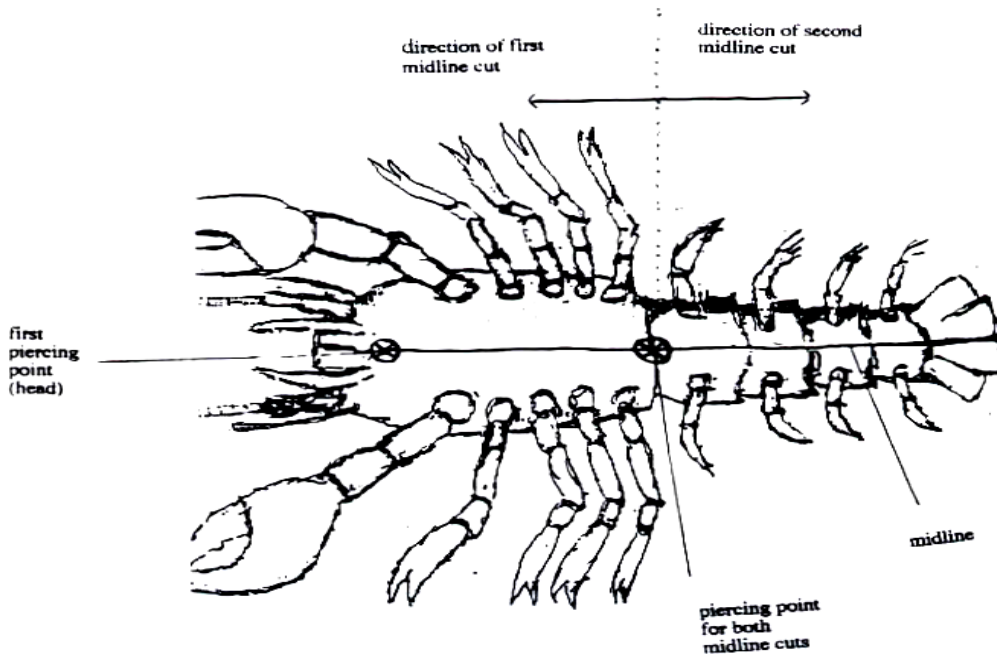


Fig. 3 - (Diagram by Charles Notin, completed and annotated by Dr David Robb)

This procedure must not take more than 10 seconds.

Unacceptable methods of killing crustacea

- Cutting the lobster across the body and thus separating the head from the tail without first destroying the nerve centres
- Cutting crabs into sections without first destroying the front and rear nerve centres
- Boiling them alive
- Leaving crabs/lobsters in freshwater to drown
- Removing flesh from live animals
- Serving live crustaceans.