

## **FACTSHEET No. 4**

### **KILLING OF SHELLFISH FOR HUMAN CONSUMPTION**

The Shellfish Network has produced this factsheet in order to point out the various methods at present employed to kill shellfish. It in no way endorses the killing and eating of these animals.

New South Wales Agriculture Animal Welfare Unit recommends that all crustacea are immersed in a salt water/ice slurry for a minimum of 20 minutes (although this is probably far too short for animals used to our colder northern water and the Universities Federation for Animal Welfare [UFAW] suggests longer) before cutting, pithing, boiling or broiling. This should ensure that the animal is dead or stunned before procedures that may cause pain are carried out. If this is not practical, it is suggested that the main nerve centres be destroyed, but still better after the immersion as above.

Lobsters: 'There is no method we can locate which provides a reliable, quick or painless death'. (C.E.A.S.E. See Sources).

#### Boiling:

The most common method of killing lobsters is by plunging them in boiling water, or by gradual heating. For some dishes, the living animal is cut up or grilled. Other methods include cutting through the spinal cord via the abdomen and splitting the lobsters open from head to tail; placing them in salt water solution. Placing them in ice slurry *may* not kill them, merely slow down their responses and they may even suffer during this process.

When plunged into boiling water lobsters which are in full vigour behave wildly, whipping their tails and trying to escape. Experiments carried out by the late Dr. John Baker for the Humane Education Centre (The Humane Killing of Lobsters and Crabs, 1975) concluded that these were not reflex actions, but indications of pain. He showed that death could take up to 7 minutes. Dr. Baker also researched bringing 14 lobsters slowly to the boil. The lobsters flipped violently as the temperature increased. The three lobsters heated in tap water regurgitated at least twice during the first ten minutes. Baker noted shaking, trembling and other unco-ordinated movements; a general struggling, writhing or convulsive movement of the whole body without locomotion. 'The experiments recorded here give no support to the opinion that slow heating results in the gradual and peaceful onset of unconsciousness. On the contrary, the animal becomes active and seeks at first to get away by normal locomotion; abnormal movements then supervene and violent flips are usually witnessed as the lobster struggles to escape' Baker stressed that in order to make a scientific study of humane killing, it is necessary to work with animals in a state of full vigour. If this is not done, every experiment is open to the objection that it is impossible to know how much, if any, of the results of an experiment are to be attributed to the procedure intended to render the animal unconscious, and how much to the reduced vitality of the animal before the experiment started.

### Electric Shock:

Dr. Baker worked for some years on a form of electric stunning tank with the intention of rendering the animals unconscious before killing. He reported that with the electric shock experiment, 'In every experiment except one the lobster gave the normal escape reaction, a flip of the tail at the instant of switching on. This was scarcely half a second in duration. The animal shot backwards and in some cases slight muscle movements were observed.' He goes on to say that it is possible to 'reduce the vitality of the lobster almost to extinction' as the creature is probably unconscious throughout the period of exposure to the current. To be certain, the period should be as short as possible, ie 15 seconds or less and the full 240v should be used. Dr. Baker's tank was never marketed, but a new prototype version, called the Crustastun, has been developed by Bristol University and Silsoe Research Institute. This renders lobsters and crabs unconscious in a fraction of a second and they remain insensible to pain long enough to be cooked by boiling. It is hoped eventually to extend its use to other shellfish. The Crustastun is an improvement on the humane methods currently available, and a lot of interest has been shown by commercial concerns, a prototype is in process of being tried out commercially.

### Cutting:

As the lobster has a chain of nerve centres all along the from mid-line from head to tail, all of these have to be cut through to ensure that it is unable to feel pain. The only reliable cutting method prior to boiling or grilling is therefore to cut through and remove (pith) the entire midline. New South Wales Agriculture (Guidelines 1994) say that two cuts should be made, one starting in the midline near the tail/chest junction and cut towards the head, the second from the midline near the tail/chest junction, cut towards the tail. It is essential that any cutting should be carried out by a skilled operator.

Other methods, such as immersion in cold tap-water or in a saturated salt solution, prior to killing by boiling in water, have all been researched with various results. Ice slurry is recommended as more humane than these, although, as stated above, placing the animal in ice could also cause it pain from ice crystal formation. There is also disagreement as to how long the lobster needs to be immersed in the slurry, with NSW Guidelines recommending twenty minutes. However, UFAW's view is that this is too short a time, but has no clear view on the length of time the animal should be in the slurry. In a deep-freeze cabinet UFAW recommends two hours, each lobster or crab placed in a plastic bag and the freezer set at -20° C. (The freezing compartment of a domestic refrigerator would not be cold enough). According to Dr. David Robb of Bristol University, cooking procedures should be started immediately after any freezing method, otherwise there is a risk that the animals may come out of torpor. The risk of pain through ice crystal formation has been put forward in relation to this freezing method also (C.E.A.S.E. – 'Let's Call the Whole Thing Off').

Crabs: These creatures have two main nerve centres at the middle front and rear. Since, like lobsters, crabs react violently when put live into hot water and often shed legs or claws, they should be killed or stunned before boiling, for which the methods recommended are: by rapid destruction of these nerve centres with a thick pointed pithing instrument; rapid removal of the carapace (top shell) and destruction of the

front and rear nerve centres, or the freezing methods. Again, the first two should only be carried out by a skilled operator. The crabs should never be cut into sections before the nerve centres are destroyed, and should preferably have been stunned by freezing first. Crabs can also be killed by drowning in fresh water but this method is not recommended. The animals should be boiled immediately after killing. (see sources, UFAW and NSW)

The method used to pass an electric shock through lobsters was also researched by Dr. Baker to stun crabs. His summary states: 'Crabs that have been electrically shocked in this way do not appear to experience pain when placed at once in sea water at a temperature of about 100° C.'

### Other Shellfish:

Boiling in seawater is the traditional method of killing all crustacea, or in the case of eg mussels, steaming. It is argued that the smaller ones such as shrimp, prawns and crayfish will die in a matter of a few seconds in boiling water, but as with the larger animals, in the absence of evidence of their level of conscious awareness of pain, they should be given the benefit of the doubt. 95% of species are invertebrates, and most have the capacity to detect and respond to noxious or adverse stimuli (stressful or dangerous situations). For example, they respond to changes in temperature beyond the normal range, contact with noxious chemicals, mechanical interference and electric shock by withdrawing or escaping. Many invertebrate animals have elaborate nervous systems and sensory systems. Their nerve cells under a microscope appear very similar to our own. Even the simplest invertebrates exhibit such responses. Some invertebrates have special sensory receptors called nociceptors which respond specifically to noxious stimuli. They respond to pinching, squeezing or cutting. These *may* be simple reflexes, but since pain is a subjective experience it is unlikely that any clear-cut scientific criteria will be found to decide. It seems justifiable, therefore, on compassionate grounds, to refrain from subjecting any creature to possible pain or stress.

### Sources

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