



Live blue swimmer crab handling guide

NSW crab fishery

2024

Live blue swimmer crab handling practices

This handling guide is designed for participants in the NSW blue swimmer crab fishery to optimise quality, sustainability and profitability. Drawing on learnings from our research trials, it outlines the best practices for handling, transporting and storing live blue swimmer crabs to maintain a premium product. For crabbers involved in the live trade, following these recommendations will help increase crab survival rates and ensure that only full, strong and healthy crabs reach the market, thereby maximising their value. Even if live trade is not the goal, the guidelines will still help to retain the quality of the catch at a premium.

The NSW fishery, which operates in estuarine and coastal waters such as the Hawkesbury River, Port Stephens and Wallis Lake district, is governed by strict regulations to protect the environment and ensure sustainability. Effective handling practices throughout the supply chain are crucial in supporting these regulations and preserving the ecological and economic sustainability of the fishery. Ultimately, keeping crabs in peak condition from capture to sale benefits all stakeholders, from fishers to consumers, helping to secure the best market value for the catch and promoting the long-term viability of the fishery.

FRDC project 2018-024 – Investigation and Improvement of Live Blue Swimmer Crab Handling in NSW



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Lift traps gently

Retrieve traps with a smooth, continuous motion to minimise harm to live crabs. Sudden jerking of traps from the sea bottom can stress and physically damage the crabs, potentially downgrading them from premium live product. Remove crabs gently from the pots and avoid forcefully bashing the trap to dislodge tangled crabs, as this can cause additional damage, bleeding and limb loss, further downgrading their quality.



Image 1 A live blue swimmer crab foaming from the mouth can indicate stress. Such crabs are best downgraded.

Sort crabs immediately

Carefully separate soft, injured or weak crabs, particularly those with any missing legs and claws. Newly moulted crabs are soft and easily stressed, making them more vulnerable to transport and temperature changes. Soft crabs will also have a low meat yield, resulting in a poor eating experience for consumers, and are best returned to the water. Injured, bleeding or foaming crabs will be compromised and are likely to die during live transport. While downgraded crabs can still be sold as green, it is recommended not to include them as part of your live shipment.

Tie crabs for live trade

Crabs intended for live trade should be tied promptly using rubber bands or cable ties, then returned to recovery tanks as soon as possible. While tying blue swimmer crabs is not usually required, our research found that tying the claws limits their movement and consequently the number of aggressive interactions between crabs. This reduces potential damage caused through fighting.



Image 2 A live blue swimmer crab with its claws tied with rubber bands to prevent fighting with other crabs. Cable ties are also an effective option for restricting claw movement.

Clear pots every 24 hours

It is advisable to clear crab traps at least every 24 hours. Crabs left tangled in traps for extended periods are more likely to experience excessive stress, reducing their chances of survival.

Hold crabs onboard in a flow-through tank

Carefully handled crabs have a much higher chance of survival. Never throw or drop live crabs into holding baskets or tanks. Place them gently and allow them time to recover in a flow-through tank.



Image 3 Handle crabs with care. Never drop or throw crabs into baskets.

Protect crabs from sun and breeze

It is best to hold crabs onboard in a covered tank with recirculating water from a pickup or deck hose. Alternatively, crabs can be held in crates lined with hessian and covered to minimise disturbance. Exposure to sun and even slight breeze can dehydrate and stress live crabs, potentially leading to death. Return live crabs to recovery tanks as quickly as possible to reduce stress and protect them from the effects of sunlight and breeze.

Always handle crabs with care to avoid unnecessary stress and injury. Stress triggers a rapid build-up of toxic metabolic waste in the crabs' systems, which can lead to significant mortalities.

Purge crabs prior to transport

Our research indicated that blue swimmer crabs are highly sensitive to handling stress, mainly due to the accumulation of stress-induced toxic waste in their bodies. Their only way to cope with such stress is by pumping clean water across their gills to dilute the toxic waste products. This is not possible when they are dry. We found a significant advantage in de-stressing live crabs by purging them in clean aerated seawater, allowing them to expel the waste and recover before further handling.

De-stress dips make a significant difference

Our results revealed a significant difference in mortality rates between crabs receiving a de-stress dip and those that did not. Up to 76% mortality was seen when there was no de-stress step in the process, whereas crabs receiving the de-stress treatments experienced significantly lower mortality.

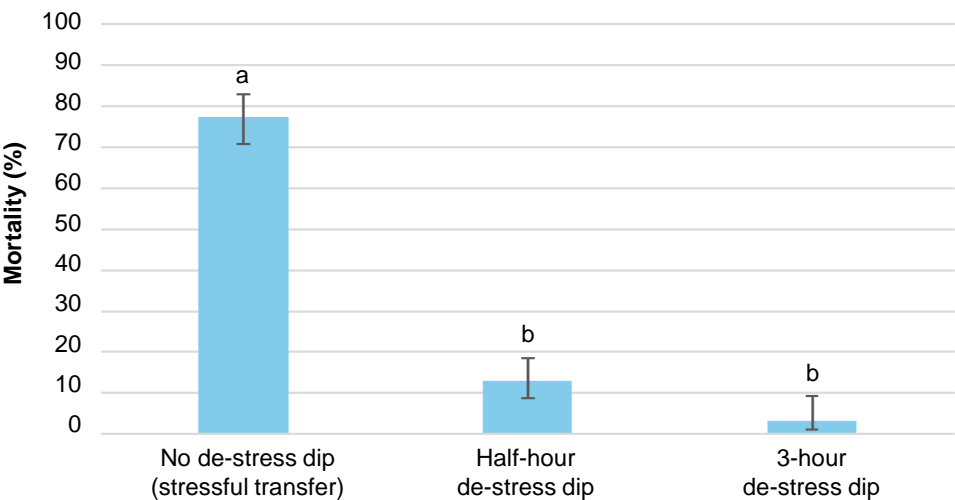


Figure 1 Blue swimmer crab mortality rates with and without a de-stress dip. Up to 76% mortality was observed when there was no de-stress step in the process. Statistically significant ($P < 0.01$) differences are indicated by non-identical subscript letters.

We recommend an overnight purge as the most effective method, with a minimum of a three-hour purge. During this time, the crabs should not be checked, graded or disturbed in any way.

Warning!

Allow live blue swimmer crabs to de-stress in a recirculation tank prior to any live transport.

Once crabs have been graded, place them in a lidded basket and allow it to float in a recirculation tank or tub containing clean aerated seawater to allow the crabs to de-stress (preferably overnight or minimum three hours).

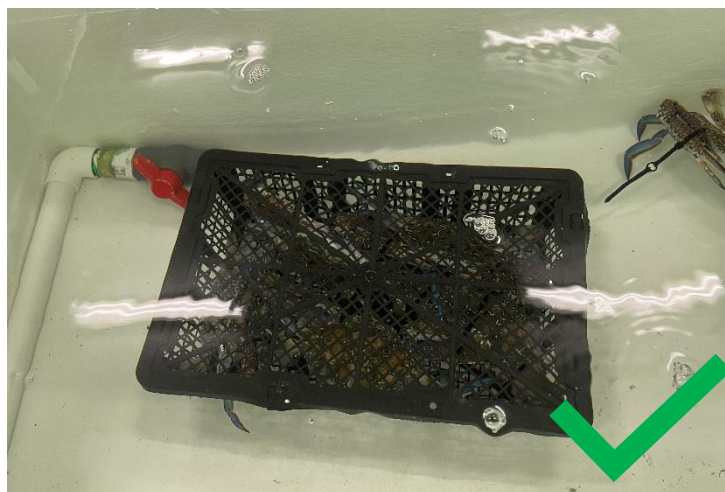


Image 4 De-stress crabs before transfer or transport by floating lidded baskets in a recirculation tank containing clean aerated seawater, preferably overnight or for minimum three hours.



Image 5 Small volumes of crabs can be purged in a tub containing clean aerated seawater, preferably overnight or for minimum three hours.

Warning!

Allow live blue swimmer crabs to destress in a recirculation tank prior to any live transport.

The image below shows a stressed crab being returned to the water in a recirculation tank. The circle indicates the yellow-brown toxic liquid being expelled from the crab's mouth as it attempts to dilute the toxins.



Image 6 Blue swimmer crab expelling yellow-brown toxins during the de-stress dip.

If the crab is unable to sufficiently dilute the toxins, the build-up in its system may become fatal.

Maintain optimal water quality

To preserve the health and value of live crabs, it is essential to maintain the quality of water in recirculation tanks within specific parameters.



Image 7 Monitor water quality on a daily basis to prevent build-up of toxins.

It is best to monitor these basic parameters daily until you understand what volume of crab can be held without exceeding these water quality parameters:

- Seawater temperature: 18 °C to 25 °C
- Oxygen: saturated
- pH: 7.9 to 8.1 (use sodium bicarbonate to increase pH, if necessary)
- Salinity: 30–35 ppt (bubble off chlorine with an air stone overnight before adding town water to the tank when diluting salinity)
- Ammonia: <0.1 mg/L
- Nitrite: <0.3 mg/L
- Nitrate: <50 mg/L (regular water exchanges to dilute).

Important!

Crabs should not be allowed to free range prior to transfer or transport. The act of catching the crabs individually for transfer / transport will cause new stress for the crabs. You will need to start the de-stress cycle again.

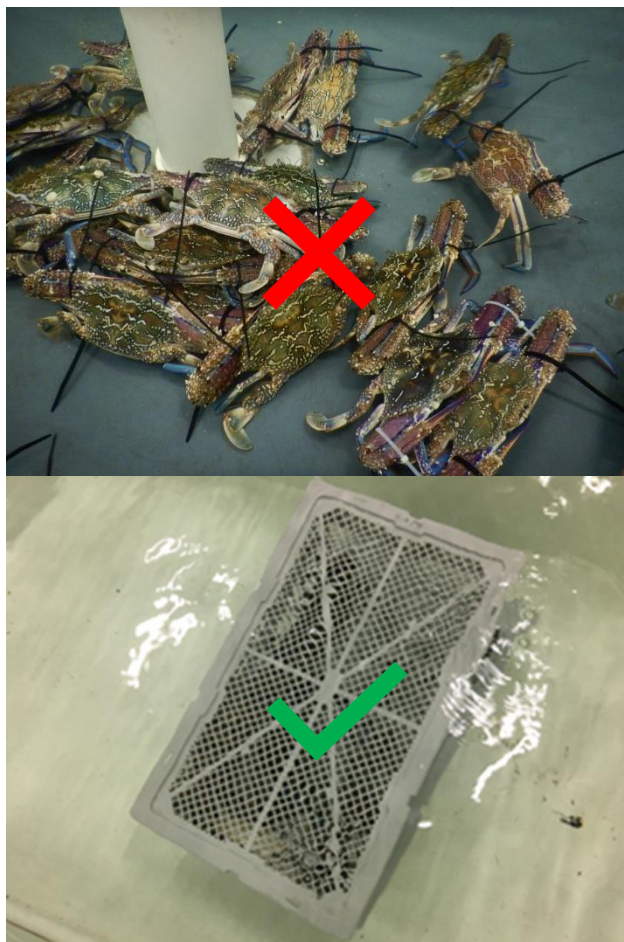


Image 8 Do not allow crabs to free range prior to transfer or transport (top). Place them in lidded baskets for the de-stress process (bottom) and keep them in the same baskets for shipping.

Graded crab should be de-stressed in a lidded basket submerged in a recirculation tank or tub containing clean aerated seawater, preferably overnight or for a minimum of three hours prior to any transport. Mortality checks should be carried out the night before or at least three hours before transporting crabs. Crabs should be gently removed from the tank with the lid intact so as not to disturb them. This will keep them calm. Crabs should be shipped in the lidded baskets and not transferred to another container.

Warning!

Do not chill crabs prior to transport

Crabbers asked if it is feasible to dip crabs in cold water to subdue them prior to transport. However, our trials showed that rapid temperature changes can kill blue swimmer crabs.

We found that holding crabs at 20 °C and then dipping them in chilled seawater at 10 °C for either 10 or 120 minutes was stressful for the crabs, resulting in 16% mortality. Dipping crabs in 15 °C water gave better results, with a 10-minute dip not causing any mortality and a 120-minute dip resulting in 3% mortality at this temperature.

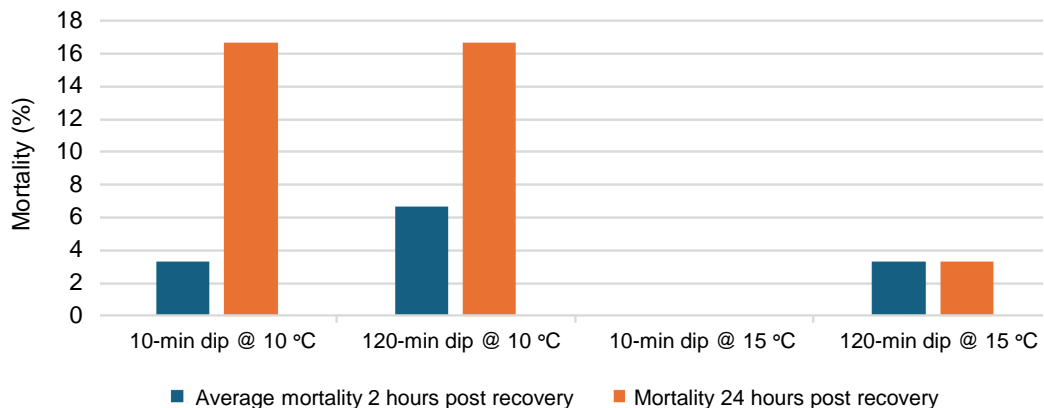


Figure 2 Mortality rate of live blue swimmer crabs exposed to cold water dips for different temperature and time combinations. Dipping crabs in 10 °C water resulted in 16% mortality.

We also noted that subjecting crabs to a cold dip made them go limp, making it difficult to gauge their strength and liveliness prior to transport. We found no benefit in using cold dips for crabs before transport.



Image 9 Dipping crabs in cold water can cause temperature shock and associated mortalities.

Blue swimmer crabs can survive short periods out of water

Our research indicated that live blue swimmer crabs can survive for up to 6 hours out of water, provided they have been purged overnight and have not experienced additional stress. The crabs must remain undisturbed in a lidded basket. This basket can then be gently placed into a Sydney Fish Market lobster tub with a lid for transport at room temperature (18 °C to 25 °C). This potentially gives the crabbers a short window to transport their crabs to a live market facility without the use of a specialised wet truck.



Image 10 After purging, live blue swimmer crabs can be placed in a lobster tub while still in a lidded basket.

Keep crabs at 18 °C to 25 °C during transport

A temperature range of 18 °C to 25 °C is optimal to ensure that live blue swimmer crabs have the best chance to reach consumers in premium market condition. A healthy crab packed in an appropriate box and kept at this temperature will provide the best financial return to all industry sectors.

Live blue swimmer crabs should be kept in holding tanks until the last possible minute. Crabs to be transported should remain covered in an air-conditioned vehicle to keep the temperature stable.

Return blue swimmer crabs to a recirculation tank as soon as possible after transport

For the best recovery results following transport, lower crabs gently back into water of a similar temperature and allow air bubbles to be purged from the mouth. If air bubbles get caught in the gills, the crab will most likely die.

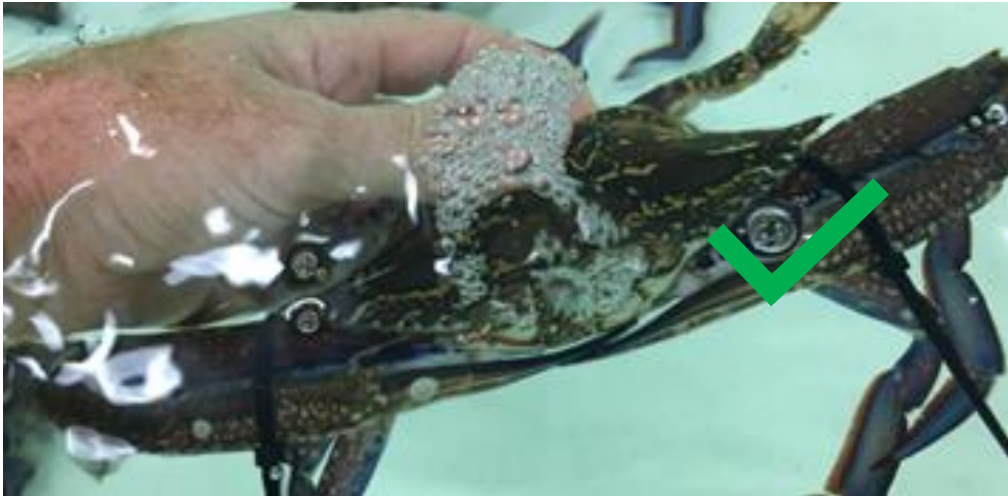


Image 11 Return crabs gently to water after transport and purge air bubbles from the mouth.

If it is not possible to return and care for crabs individually, the next best way is to hold them in the transport mesh basket and gently lower the basket into the recirculation tank, watching for the crabs to purge the air from their gills.

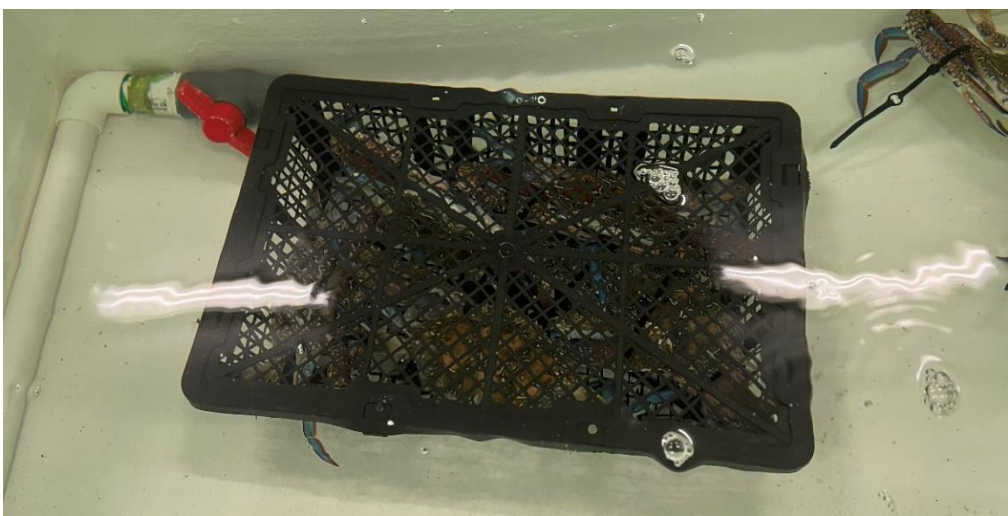


Image 12 Alternatively, return crabs gently to water in mesh transport basket for purging.

Water

Crabs are highly sensitive to contaminated water and can die if exposed. To maintain their quality, always use clean, aerated seawater. Avoid seawater from potentially polluted sources like shallow creeks, waterways, areas near fuelling stations or industries that might contaminate the water. Do not keep crabs in tanks located below deck where they might be exposed to bilge water, which may contain traces of oil and fuel.

Ongoing hygiene

Ongoing hygiene is crucial. Keep the deck, mats, traps, holding containers, and any other surfaces that come into contact with crabs clean to avoid contaminating the live product. The boat should be thoroughly cleaned before each fishing trip and maintained in a clean condition throughout. Use only 'food safe' cleaning and sanitising products, and always follow the manufacturer's instructions when using them.

Legislation

This live handling guide is intended to help you manage your crabs effectively for live trade. However, it does not replace the need to understand and comply with NSW fishing regulations.

Summary

- Handle crabs with care. Lift traps gently and do not drop or throw crabs into baskets.
- Clear pots every 24 hours to reduce stress.
- Sort crabs and tie claws immediately.
- Hold crabs in flow-through tanks onboard using deck hose or water pickup. Alternatively, use aerated water and replace manually.
- Keep crabs out of sunlight and breeze.
- Hold crabs in well-maintained recirculation tanks. Monitor water quality.
- De-stress graded crabs in lidded baskets submerged in recirculation tanks or tubs with clean aerated seawater, preferably overnight or for a minimum of three hours.
- Transport in lidded baskets at 18 °C to 25 °C. Avoid sudden temperature changes.
- Return to water ASAP and purge air from gills.



More information

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