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THE CHILLING TRUTH

AUTHOR: **DR SEAN TRACEY**
PHOTOGRAPHY: **TUNA CHAMPIONS**

Continuing on from the major feature in last issue about how to improve the eating qualities of your tuna, Dr Sean Tracey from the Tuna Champions project details the amount of ice you'll need to do the job properly. The results may surprise you.

Above: Dr Sean Tracey with a southern bluefin tuna off south-eastern Tasmania.

TUNA CHAMPIONS
Bluefin forever

Like all tuna species, the athletic southern bluefin has evolved for maximum efficiency, with the ability to elevate and maintain their body temperature well above the temperature of the water. This is why processing and chilling the fish as quickly as possible after catching and dispatching it is so important. If the fish is left to flap around on the deck, not only does the flesh get bruised, but the ongoing muscle activity heats the meat up and significantly reduces its eating quality.

Even when the fish is dispatched immediately after capture with a brain spike, those small muscle twitches that continue for some minutes after death generate heat and will keep the internal temperature up. This heat then degrades the eating quality of your tuna and if left unchecked can sometimes make it completely unfit to eat. The muscles can literally cook inside. That's why it is so important to brain spike, bleed and pith your tuna immediately after capture, so the nerves sending the electrical signals to the muscles are destroyed. To preserve the meat quality, it's then necessary to cool the internal muscle temperature.

TESTING TWO CHILLING METHODS

While we know it takes a lot of ice to bring down a tuna's internal body temperature, most anglers do not realise how much ice is sufficient and what the most effective method to use is. For this reason, we decided

Tuna Champions Ambassador Jonah Yick and IMAS researcher Jaime McAllister prepare the seawater and ice slurry in a Madfish Extreme Gear catch bag.

to put two popular chilling methods to the test while out filming for our Tuna Champions video series.

This involved catching two southern bluefin tuna in the cool waters off south-eastern Tasmania before immediately brain spiking, bleeding, pithing and gilling/gutting them. We then conducted tests to check each fish's internal meat temperature over a five- and six-hour period after capture. During these experiments the air temperature was around 22°C and the water temperature about 16°C.

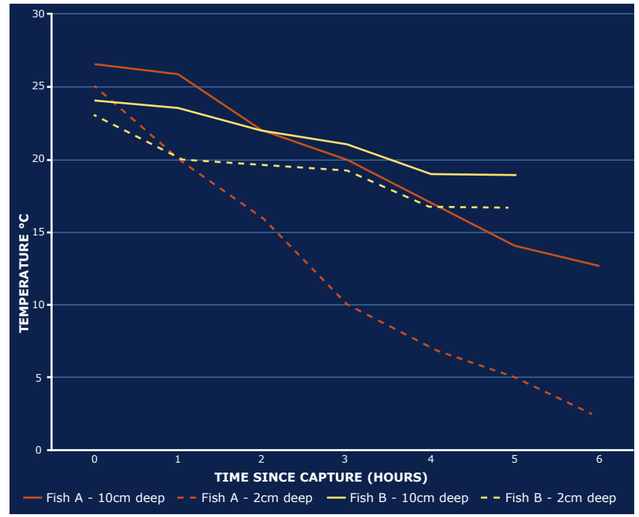
Fish A weighed about 35kg. Measured with a probe about 10cm straight down from its dorsal fin, this tuna showed an initial internal muscle temperature of 27°C near the core. A second shallower reading, only two centimetres down from the dorsal fin, showed a temperature of 26°C. This fish was fully submerged in a seawater and ice slurry kept at minus 1°C.

Fish B weighed around 25kg and registered an initial core temperature of 24°C at a depth of 10cm, with a temperature one degree cooler at the shallower depth of 2cm. This fish was covered with a wet towel, and the gut cavity was stuffed with ice which we topped up every hour. We used the deck hose to keep the towel wet.

SURPRISING RESULTS

Predictably, the ice slurry cooled Fish A down to a much lower temperature than the ice in the cavity of Fish B. What was surprising was how long it took for the temperature to come down, even in the ice slurry.

After two hours in the ice slurry, the core temperature of Fish A was still above 20°C, and its shallow muscle had only just come down to the 16°C temperature of the water it had been caught in. After six hours, Fish A registered 2.3°C at a depth of 2cm into the muscle tissue. However, its core temperature at 10cm deep was still up at 12.7°C.



The above graph shows the rate of cooling for the two southern bluefin tuna over the five- and six-hour periods from their time of capture. During these experiments, the air temperature was 22°C and the water temperature 16°C. The tests proved that the seawater and ice slurry achieved a far better and faster result.

Left: The core temperature of the southern bluefin tuna was recorded with a thermometer probe inserted 10cm straight down from the dorsal fin.

Meanwhile, the core temperature of Fish B did not get any lower than the 16°C water temperature it had been caught from, even after five hours!

The tests showed a clear case for taking plenty of ice on the boat and using a catch bag or cooler box large enough for the tuna to be fully immersed in a slurry. Even in the cool conditions, we went through about 40kg of ice for the two fish on the day of our tests. However, if we'd stored both tuna together in the ice slurry, we may have needed more.

Processing your tuna as soon as it's caught and getting it into an ice slurry will achieve far better eating quality meat, as well as a much longer shelf life. And that means you won't waste the fish you keep.

To discover more about processing your catch, visit *www.tunachampions.com.au*

> "The core temperature of Fish B did not get any lower than the water temperature it had been caught from, even after five hours!"

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