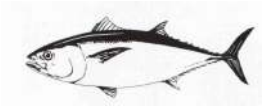

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STRESS and it's effect on SBT

STRESS: Its role in fish health

Stress, is a condition in which an animal is unable to maintain normal bodily functions because there are adverse factors in its living space, which threaten its survival.
Stressors can be broken up into three broad categories:
Chemical: low dissolved oxygen; water pollution; poisons occurring in old or badly stored feed and; accumulation of fish faecal products.
Biological: stocking density; social interaction (pecking order); predators; micro-organisms (eg. bacteria and algae) parasites and disease.
Physical: temperature; light; sounds; farm husbandry (eg. capture and transport of stock; harvesting and disease treatment).

FISH response to stress

The stress response of fish will depend on the nature of the stressors.
Stressors resulting in acute stress, such as those associated with husbandry and handling practices or predator attack, will lead to an **alarm reaction**. This **alarm reaction** is more commonly identified as "fight or flight" response, and will cause, through the secretion of hormones and in preparation for emergency action:

- An **increase in the blood sugar** (glucose) (fig.1).
- A **body salt imbalance**: in saltwater this can result in dehydration.
- **Red blood cell release** from the spleen, **blood pressure increase**, and through higher oxygen requirements, **increased breathing rate**.
- As oxygen becomes short due to increased swimming activity, a **build up of lactate and** hence **acidity** in the blood and tissue (fig.1).

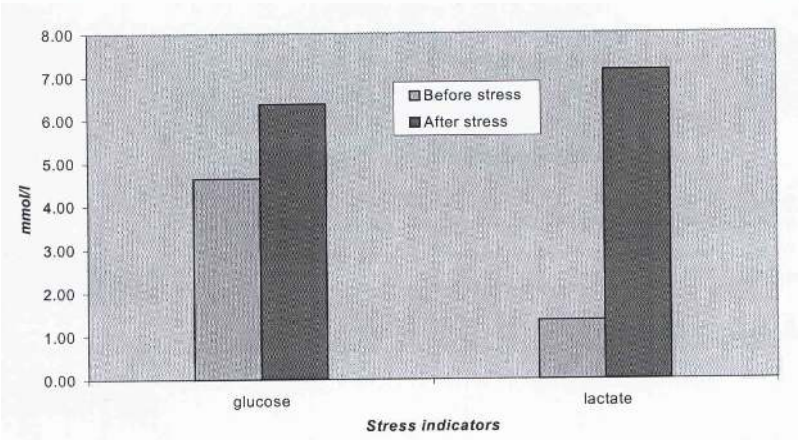

Figure 1: Blood levels of Glucose and lactate in tuna following physical stress

KEY PIONTS:

- Adopt practices that minimise stress from capture to slaughter.
- Responses to stress in SBT are undesirable, effecting growth rates and product quality.
- Always monitor fish stocks for stress and react to the signals in a timely manner.

Below: Diver swimming SBT to harvest vessel

PREVENTING fish stress and fish death

You cant eliminate fish stress. On the farm, you minimize stress through **good management practices.**
The most powerful tools available to the fish-farmer are regular stock observation combined with water quality monitoring (i.e. Temperature and dissolved oxygen).

What to look for?

- ↗ Fish behaviour and appearance that is indicative of stress (in SBT: Milling not schooling and individuals that are light blue).
- ↗ Micro-organism populations in and around farms (i.e. algae blooms).
- ↗ Dissolved oxygen and water temperature fluctuations.

In situations of high stress, such as low dissolved oxygen, FISH SHOULD NOT BE FED