

# Welfare issues in European sea bass and gilthead sea bream



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## Introduction

This summary covers ‘ongrowers’ (from approx. 10g (sea bass) or 20-50g (sea bream)) to slaughter weight. For a full overview and detailed information on welfare issues in the commercial production of sea bass and sea bream (including full references) please see document “Improving the welfare of farmed European sea bass and gilthead sea bream”.

## Physical wellbeing

Welfare Issue	Problem	Solution
Confinement/ overcrowding	Injury (descaling, snout and flank damage, fin erosion, cataracts, eye damage), poor water quality and social stress	Stocking density per cage shall not exceed 13 to 15 kg/m <sup>3</sup> for European sea bass and gilthead sea bream in the seawater phase, allowing for sufficient space for fish to live with one another with minimal injury and stress.
Inappropriate water temperature	<p>Confined fish are unable to behaviourally thermoregulate when water temperature is too low or too high, causing physiological stress.</p> <p>Fish are less tolerant to high/low temperatures when the water temperature changes rapidly.</p> <p>Low temperatures can lead to ‘winter disease’ in sea bream.</p>	<p>Fish should be reared in water within their optimal temperature range, and any deviations from this range should be short lived and still remain within the temperature range the species can tolerate. The optimal temperature range for both species is approx. 18-26°C, but sea bass can tolerate 2-32°C, and sea bream can tolerate 5-34°C.</p> <p>Changes in temperature should be gradual.</p> <p>Reduce feed rations as the temperature drops and provide winter feed diets to help mitigate the effects of thermal metabolic stress.</p>
Poor water quality	Leads to acute and chronic stress, reduced ability to osmoregulate, increased susceptibility to disease, poor body condition, fin erosion, gill damage, reduced growth and increased mortality rates	<p>Parameters affecting water quality are interrelated and include oxygen, ammonia, CO<sub>2</sub>, pH, temperature, salinity, suspended solids and water flow. Water quality parameters should be regularly monitored, and maintained within a range that sustains normal activity and physiology for sea bass and sea bream.</p> <p>For production in sea cages, this involves choosing a suitable site location, cage design and biofouling control to ensure good water exchange (primarily driven by tide, fish movements, weather and fish densities) but in some systems water quality parameters may be more easily and directly controlled.</p>

## Physical wellbeing

Welfare Issue	Problem	Solution
Disease	Many diseases are difficult to diagnose and classify at their early stages, which delays treatment/prevention	Fish should be monitored regularly for signs of health problems <sup>1</sup> by a trained member of staff. When identified, diseased fish must be either treated or euthanised without delay.
Exposure to air	Severe physiological stress; fear and discomfort	Live fish should not be taken out of water without it being absolutely necessary. If this is the case, each fish should not be out of water for more than 15 seconds.
Fasting	Hunger; physiological stress; fatigue	Fish must not be fasted for more than 48 hours this includes time for transport and holding time for processing. In hotter conditions this time should not exceed 24 hours.
Live transport (road)	Overcrowding; handling stress; water movement and changes in temperature; noise and vibrations in water; changes in light; build-up of waste. May all occur simultaneously, causing severe stress	For best welfare, fish should not be transported whilst alive, and should be humanely slaughtered on-farm. If live transport is absolutely unavoidable, water quality must be high and constantly monitored during the journey. Additional oxygen should be available in case of delays. Numbers of fish in each tank and stocking densities should be calculated in advance. Tanks should be insulated to ensure constant water temperature. A trained person must be present during the journey who is accountable for the welfare of the fish, and has knowledge of fish welfare principles. Handling should be kept to an absolute minimum during loading and unloading (e.g. through pumping), and sick/injured animals should not be transported.
Slaughter without effective stunning	Ineffective stunning or absence of stunning (e.g. use of inhumane methods such as chilling of conscious fish in ice slurry)	The use of a single method (i.e. percussive blow or electrocution) that both stuns (instantly) and kills is recommended. Electrical stunning is currently most practical for sea bass and sea bream. This can be followed by transfer of unconscious fish (i.e. where death is not instant) into ice slurry totes, providing fish do not regain consciousness after stunning. If any signs of consciousness are observed then stunning is likely to have been ineffective. If in any doubt as to whether a fish is unconscious, do not hesitate to repeat the stun or use an alternative back-up method, such as manual percussive blow or spiking.

<sup>1</sup> In sea bass and sea bream farming major health concerns include: pasteurellosis, vibriosis, winter disease (sea bream) and viral nervous necrosis (mainly sea bass).

## Mental wellbeing

Welfare Issue	Problem	Solution
Barren environment	Chronic lack of cognitive, sensory and physical stimulation	Provide environmental complexity and enrichments, e.g. sea bream can benefit from a substrate.
Long-term overcrowding (i.e. high stocking density)	Severe and chronic social stress (e.g. aggression); competition for food	Provide sufficient space and appropriate stocking density for fish to escape from one another.  Feed distribution methods should allow all fish access to sufficient feed and they should be fed to satiety.
Short-term overcrowding (i.e. during husbandry manipulations)	Severe and acute social stress, fear and vigorous attempts to escape	Avoid overcrowding wherever possible. When unavoidable, severity and duration of crowding should be minimised, and should never occur for longer than 2 hours.  Water quality, fish health and behaviour should be monitored throughout the crowding period.

## Natural behaviour

Welfare Issue	Problem	Solution
Aggression	Social conflict/competition may intensify when there is a lack of resources and space to escape, leading to increased injury and social stress	If distributed across the water surface, sufficient feed must be provided to discourage high levels of competition for access to food. Self-access feeders may lead to more dominant fish preventing others from feeding. Provide sufficient space and stocking density.
Restriction of behavioural expression	Freedom of movement to swim is severely restricted; lack of space to escape from one another	Provide appropriate space and shelter for fish to rest and escape from one another. Provision of coloured substrate for gilthead sea bream may be beneficial for welfare.