

Improving the welfare of farmed pangasius



© Praksit/Dreamstime.com



Introduction

This summary covers 'ongrowers' (fingerling pangasius between approximately 5-20 g and slaughter weight of 1-1.5 kg). For a full overview and detailed information on welfare issues in the commercial production of pangasius (including full references) please see document 3: Improving the welfare of farmed pangasius at rearing.

Physical wellbeing

Welfare Issue	Problem	Solution
Confinement/ overcrowding	Injury (snout and flank damage, fin erosion, cataracts, eye damage).	Stocking density should be 10kg/m ³ to allow for sufficient space for pangasius to live with one another with minimal injury and stress. Low stocking density will reduce the physiological load on the water, reducing the risk of low water quality.
Feed suitability	Starvation and risks of death, lack of energy reserves. Aggression between individuals.	Feed should be suitable for the life stage and allow pangasius to express natural behaviours. The distribution methods should allow all the fish access to feed to avoid aggression and fish should be fed to satiety.
Inappropriate water temperature	Confined fish are unable to behaviourally thermoregulate when water temperature is too low or too high, causing physiological stress.	Pangasius are native to waters of 27 to 30°C and rearing should be restricted to these regions with this temperature profile. Increase in temperature reduces dissolved oxygen in the water which increases the risk poor water quality. Reduced water temperature (<25°C) increases the risk of infection by the <i>Ichthyophthiriasis</i> parasite.
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 by a trained member of staff. When identified, diseased fish must be either treated without delay or humanely euthanised.
Poor water quality	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 rate.	For highest welfare ensure regular water exchange within ponds and good water flow through cages or nets. Water parameters (e.g. suspended solids, turbidity, pH, ammonia nitrogen) should be regularly monitored.
Low dissolved oxygen	Low levels of dissolved oxygen force pangasius to air-breathe which is energetically costly.	Dissolved oxygen should be maintained above 2.5 mg/l at all times at all depths and in all areas of the ponds/cages/nets. Aeration or water exchange can be used to achieve this.

Welfare Issue	Problem	Solution
Exposure to air	Severe physiological stress; fear and discomfort.	Removing fish from water is one of the most severe stress events and induces a high cortisol response. 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. Air-breathing is energetically costly for pangasius, reducing the energy available to cope with subsequent stressors such as crowding and transport.
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.
Live transport	Overcrowding; handling; water movement and changes in temperatures; noise and vibration in the water; changes in light; build-up of waste. May all simultaneously occur, causing severe stress. Lack of sufficient water may cause exhaustion and asphyxiation resulting in high mortality.	For best welfare, fish should not be transported whilst alive, and should be humanely slaughtered on farm. If live transport is absolutely unavoidable, sufficient water must be provided to maintain equilibrium until the end of transport and 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 density should be calculated in advance. Water temperature should be constant for the entire journey. 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.
Pre/post transport transfer	Overcrowding; crushing, handling; asphyxiation. May all simultaneously occur, causing severe stress, injury and death.	Transferring pangasius using pumps instead of dry brailing can prevent most of the stress and injuries associated with dry brailing. If pumping is not possible, transfer by wet braille should be short and water quality must be maintained for the duration of the transfer.
Selling at wet market	Pangasius sold at live markets experience prolonged crowding, are likely to be kept in water of low quality, experience prolonged periods out of water, are subjected to rough handling and are slaughtered without stunning.	Fish should not be sold and slaughtered at live markets. Fish should be stunned and slaughtered in slaughtering facilities which are equipped to ensure high welfare for the entirety of the slaughtering process.

Physical wellbeing

Welfare Issue	Problem	Solution
Slaughter without effective stunning	Prolonged pain; suffering; stress and fear particularly for inhumane slaughter methods such as immersion in ice slurry or asphyxiation.	<p>Exposure to air as slaughter method must be phased out. The use of a single method (i.e. percussive blow or electrocution) that both stuns (instantly) and kills is recommended. Percussive or electrical stunning followed by separate kill method is also acceptable, providing fish do not regain consciousness after stunning. Acceptable post-stun kill methods are: effectively performed percussion, decapitation, spiking/coring or gill cut (following an effective percussive stun only).</p> <p>If any signs of consciousness are observed, then stunning is unlikely to have been effective. 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.</p>

Mental wellbeing

Welfare Issue	Problem	Solution
Crowding	Severe and often chronic social stress; decreased water quality.	Provide sufficient space and appropriate stocking density for fish to escape one another. Pangasius during the grow-out phase are not known to school and older pangasius are solitary but further research on their behaviour is needed.
Barren environment	Chronic lack of cognitive, sensory and physical stimulation.	There is evidence that enrichment may be beneficial for pangasius but further research to confirm positive welfare is required.

Natural behaviour

Welfare Issue	Problem	Solution
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 one another.
Swimming behaviour	Inability to express natural behaviours. Although pangasius are active fish and rarely remain inactive, they are slow swimming but scare easily resulting in fast erratic swimming which can cause injury.	Enrichment can improve the expression of natural behaviours. Green coloured backgrounds have shown to increase swimming behaviour however further research is needed to better understand the best enrichment to use.
Feeding behaviour	Pangasius are bottom feeders however commercial feed floats.	High quality homemade feed should be used as it sinks which allows the fish to express natural feeding behaviour. If homemade feed cannot be provided, pangasius should be trained to feed at the surface.