

Mortality Management in Aquaculture

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INTRODUCTION

Effective mortality management in aquaculture is critical to maintaining fish health, protecting animal welfare and ensuring economic sustainability. Dead fish, or “morts,” are an inevitable part of any fish farming operation, but how they are handled can make the difference between a thriving aquaculture system and a failing one. This factsheet discusses the importance of proper mortality management, its benefits, the consequences of poor mortality management, practical strategies for handling mortality and waste management.

BENEFITS OF MORTALITY MANAGEMENT

One of the most essential aspects of managing fish mortality effectively is preventing the spread of disease. Dead fish often harbour pathogens and parasites that, if not removed quickly, can lead to significant disease outbreaks by infecting healthy fish.^[1] By routinely and promptly collecting morts, farmers can prevent the spread of disease and monitor for early signs of disease, injury, deformities or malnutrition.^[1] Early detection is essential for stopping the progression of potentially devastating fish health issues within a rearing unit.^[1]

Proper mortality management supports fish welfare and overall farm performance.^[2] Healthy fish effectively turn feed into biomass, resulting in lower feed conversion ratios (FCR), which maximizes the

return on feed investment.^[2] Conversely, poor fish health translates to high FCRs and poor [condition factor](#), significantly impacting profitability.^[2]

Routine mortality collection also plays a vital role in farm management. Farmers gain better insights into inventory levels by accurately tracking mortalities, which helps with planning harvest schedules, determining appropriate feed quantities and predicting biomass and fish density.

CONSEQUENCES OF POOR MORTALITY MANAGEMENT

Neglecting mortality collection can lead to both biological and financial consequences. Decomposing fish are breeding grounds for bacteria and parasites, increasing the risk of disease spread within and across tanks or net pens.^[2] This can result in financially catastrophic mass mortality events. Financial loss is also of concern outside of the direct loss of fish. Farmers are at risk of reduced productivity and financial losses when fish become sick and/or stressed, during which time they do not eat or grow efficiently, waste feed and may require costly fish health interventions.^[3]

Decaying morts degrade water quality by increasing ammonia and other harmful compounds, leading to elevated stress levels, susceptibility to disease, reduced productivity and higher mortality among fish.^[4] Dead

fish in a rearing unit can also attract scavengers and pests, further stressing fish and potentially introducing additional disease.^[4] From an operational standpoint, uncollected morts can clog outflow drains, causing tanks to overflow and block water flow through net pens, contributing to organic waste build-up. If not managed properly, this can lead to reduced water flow and compromised water quality.^[4]

MORTALITY COLLECTION STRATEGIES AND TECHNIQUES

Performing daily mortality checks, ideally first thing in the morning, ensures prompt detection and response, giving the farmer an evaluation of overnight events and allowing time for immediate action.^[5] Recording mortality data is essential, as it supports inventory control and provides historical records that can inform disease management, veterinarian consultations, feeding practices and overall farm performance.^[5]

Effective mortality management requires sufficient biosecurity.^[5] Mortality collection practices should include disinfecting collection tools after every use and assigning dedicated tools to each tank or net pen.^[5] Additional information on aquaculture biosecurity can be found online at the Ontario Animal Health Network's [Biosecurity for Aquaculture Producers course](#).

Tools for mortality collection vary depending on farm size. Small-scale farms may use dip nets (Figure 1), long-handled scoops, mechanical grabbers and siphons, while larger operations might employ automated mort collection systems, divers or fish pumps.^{[5],[6]} Fish pumps work by suctioning or pulling dead fish from the water and reduce fish handling.^[6] Automated systems are especially useful for maintaining consistent biosecurity because they limit direct contact with the water and fish, minimizing the risk of introducing pathogens or causing physical damage to healthy fish.^[6]

In certain instances, fish may become injured or diseased, requiring humane euthanasia. Guidelines for humane euthanasia can be found online in the government of Ontario document: [Humane Slaughter, Euthanasia and Depopulation for Salmonid Aquaculture](#).



Figure 1. Mortalities collected with a dip net. Photo courtesy of Ontario Ministry of Natural Resources.

MORTALITY WASTE MANAGEMENT

Fish mortalities should be stored in a watertight container in a cold and dark area prior to disposal.^[5] Freezing is preferred to preserve carcasses for diagnostic testing and prevent odours, scavengers and disease transmission.^[5] Proper disposal of dead fish is essential to maintain proper biosecurity and comply with environmental regulations. Guidelines for deadstock management in Ontario can be found at the Ontario Animal Health Network's [Deadstock Disposal Fact Sheet](#).

CONCLUSION

Effective mortality management is crucial to the health, productivity and sustainability of aquaculture operations. From preventing disease outbreaks to optimizing feed use and inventory management, routine and strategic mortality handling delivers measurable benefits. By understanding and implementing best practices, aquaculture operations can minimize biological risks, ensure animal welfare and improve their bottom line.

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