



(<https://www.globalseafood.org>).



# Handbooks help salmon farmers improve fish welfare during crowding

6 November 2025

By Responsible Seafood Advocate

## New handbooks aim to help salmon farmers monitor and manage fish welfare during crowding – a critical, high-stress stage in aquaculture

Food research institute Nofima and the Institute of Marine Research have released two handbooks on measuring and monitoring salmon welfare during crowding – one for tanks and another for marine net pens.

Crowding occurs when fish are moved or treated, temporarily increasing density and reducing water volume. The new handbooks update existing frameworks and tools for assessing welfare before, during and after this process. They include guidance for monitoring conditions above and below the waterline and introduce an underwater crowding intensity risk scale – the first of its kind – developed for remotely operated vehicle operators through research led by the Institute of Marine Research.

"We have received many inquiries about this from the industry in Norway and abroad, so there is clearly a need for more information," said Chris Noble, project manager from Nofima.



Nofima and the Institute of Marine Research have released two handbooks on measuring and monitoring fish welfare during crowding – one for tanks and another for marine net pens. Photo credit: Frank Gregersen/Nofima.

The recommendations provide practical guidance for operators, though careful observation and data collection remain essential, the authors noted.



<https://link.ctbl.com/aquapod>



## Time to play: Farmed fish respond to environment enrichment

Animal welfare on fish farms encompasses health, diet, water quality, husbandry, handling and slaughter. Add environment enrichment to the list, like a Scottish salmon company, which keeps its fish healthy by keeping them busy.



Global Seafood Alliance

0

Recordings of the launch webinar are [available on Nofima's website](#) (<https://nofima.com/projects/crowdmonitor/>), which will soon host the handbooks, posters and fact sheets. The publications are currently available in English and will be translated into Norwegian this winter. Noble and Lars Helge Stien of the Institute of Marine Research plan to host another webinar in April 2026 to gather feedback and, if needed, release an updated edition.

The handbooks were developed through the CrowdMonitor project, funded by the Norwegian Seafood Research Fund (FHF), with contributions from Cermaq Norway and Grieg Seafood.

### Author



## RESPONSIBLE SEAFOOD ADVOCATE

[editor@globalseafood.org](mailto:editor@globalseafood.org) (<mailto:editor@globalseafood.org>).

Copyright © 2025 Global Seafood Alliance

All rights reserved.