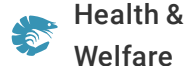




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# Microbiome of parasite can impact salmon health, scientists say

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By Responsible Seafood Advocate

## Everything that lives inside the parasites can influence salmon health, study findings say

When salmon ingest parasites, the parasite may not be the only factor that determines the impact on the health of the fish, according to research findings from the NTNU University Museum in Norway. The parasites' own microbiomes – everything that lives inside the parasites – sometimes also plays a role in the host's health.

“We investigated the microbiome of the tapeworm *Eubothrium* and the effect that this microbiome has on the farmed salmon it infests,” said Dr. Jaelle C. Brealey, a postdoctoral fellow at NTNU's Department of Natural History.

Understanding the relationship between parasites and the health of farmed fish is important for aquaculture. The researchers said the results were “startling”: The tapeworm has a microbiome that is distinct from the microbiome in the salmon. In biologists' terms, this means that the tapeworm is likely a separate holobiont that lives inside another holobiont, namely the salmon and its microbiome.

This means that the different fungi, viruses and bacteria in the tapeworm could interact with the fungi, viruses and bacteria in the salmon. But how this might happen is currently unclear.



Researchers took samples from farmed salmon, as part of a study to understand the relationship between parasites and the health of farmed salmon. Photo courtesy of Martin Nielsen, HoloFish/NTNU University Museum.

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“We’re gradually beginning to understand the importance of the microbiome in the parasites,” said Dr. Brealey.

Understanding how the parasite’s microbiome affects the health of its host is one of the researchers’ priorities. But the study is in the “very early stages.”

“Overall, little microbiome research has been done on parasitic worms in general, and tapeworms in particular,” said Dr. Brealey. “This is despite the fact that they pose a major health problem, not only for fish, but also for other species like humans.”

**Read the full study** (<https://journals.asm.org/doi/10.1128/mbio.00679-22>).

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