



THE RISE AND FALL OF CLEANER FISH



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How has cleaner fish usage evolved in Norwegian salmon farming from 2014 to 2024, and what factors have driven the industry's transition away from this biological control method?

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BACKGROUND

Salmon lice (*Lepeophtheirus salmonis*) are ectoparasitic copepods that represent a major challenge for Norwegian aquaculture.

Cleaner fish—primarily wrasse species (*Labridae*) and lumpfish (*Cyclopterus lumpus*)—were introduced in the early 2010s as a biological control method, promoted as an environmentally friendly alternative to chemical treatments.

However, concerns about cleaner fish welfare, high mortality rates (80–90%), variable efficacy, and impacts on wild populations have prompted industry transitions toward alternative delousing technologies.

CONCLUSION

The industry has fundamentally shifted away from biological control toward mechanical and thermal treatments, which comprised over 50% of interventions by 2024.

Production Areas 3 and 4 exemplify the challenges: highest mortality rates, greatest aquaculture density, and most restrictive regulatory status.

METHODOLOGY

Mixed-method approach combining qualitative document analysis and quantitative trend analysis.

Analyzed: deployment trends, mortality patterns, industry structure, alternative treatment methods.

Table 1: Annual cumulative mortality risk and Total number of deaths at sea to cleaner fish in Norway from 2020 to 2024. Source: (Fiskehelsesrapporten 2024, 17.10.2025)

Annual mortality of cleaner fish	2020	2021	2022	2023	2024
Total number of deaths at sea - in millions	39.0	31.3	20.0	14.8	12.7
Annual cumulative mortality risk (%)	90.3	90.2	86.6	80.7	82.1

Use of farmed and wild cleaner fish in Norway (number in 1000 individuals)

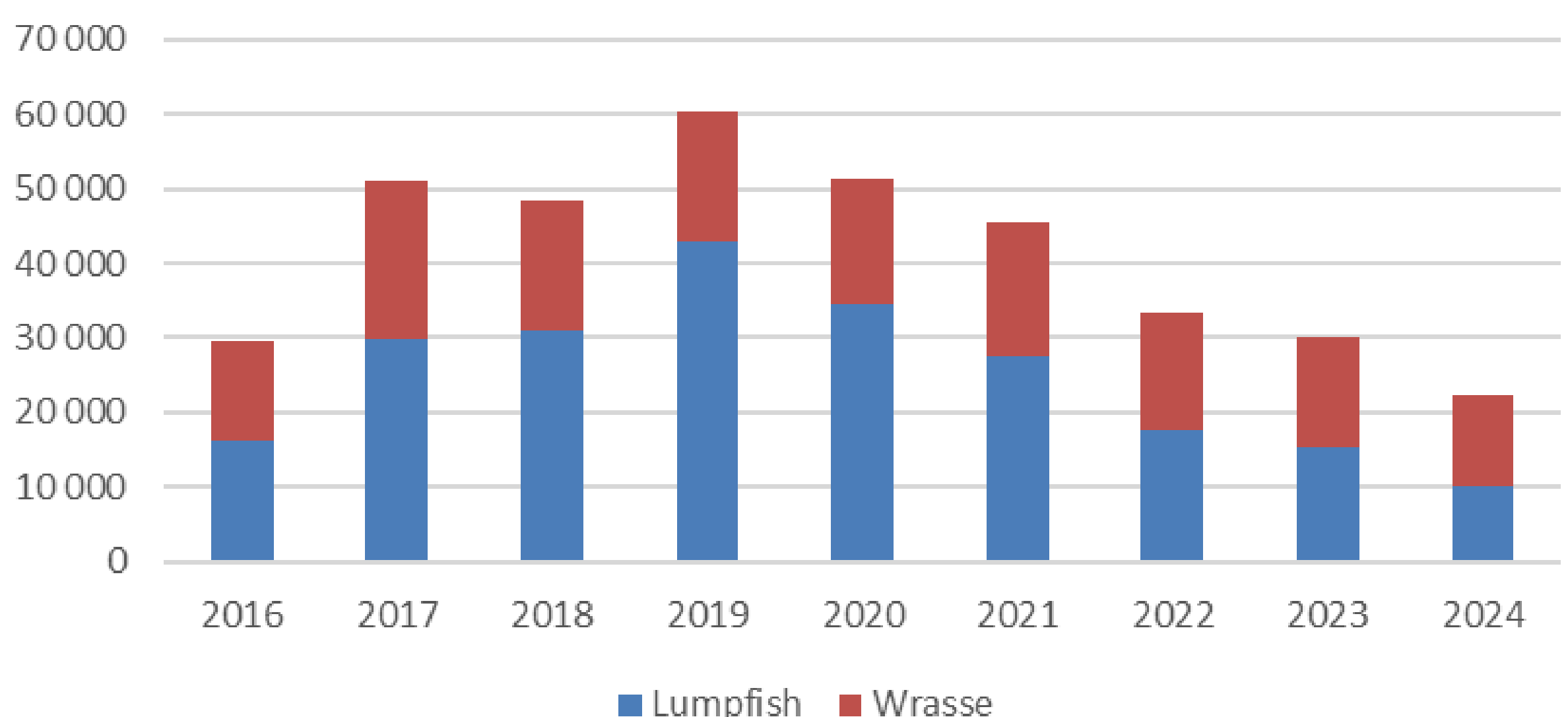


Figure 1: Use of farmed and wild cleaner fish in Norway from 2016 to 2024. Numbers from Fiskeridirektoratet (n.d), Akvakulturstatistikk – andre arter (offisiell statistikk).

MAIN FINDINGS

Cleaner fish usage peaked in 2019 with 60 million before a 63% decline to 22 million by 2024.

86% mortality average cumulative risk (2020–2024).

