



提升香港漁業競爭力 「水產養殖福利」新趨勢 — 首個香港《水生動物福利指引》 —

參考資料 Reference List

- [1] Food and Agriculture Organization of the United Nations. (2024). Fish and seafood consumption per capita, 2022. <https://ourworldindata.org/grapher/fish-and-seafood-consumption-per-capita>
- [2] Hong Kong Agriculture, Fisheries and Conservation Department. (2023). Blueprint for the sustainable development of agriculture and fisheries. https://www.afcd.gov.hk/english/Blueprint/files/AFBlueprint_Eng.pdf
- [3] Food and Agriculture Organization of the United Nations. (2024). The state of world fisheries and aquaculture 2024. <https://doi.org/10.4060/cd0683en>
- [4] Fish Welfare Initiative. (2024). Why fish welfare? <https://www.fishwelfareinitiative.org/why-fish-welfare>
- [5] Dyrevernalliansen. (2024). The future of fish welfare. <https://www.eurogroupforanimals.org/news/how-new-technology-could-improve-lives-farmed-fish-norwegian-case-study>
- [6] Fish Focus. (n.d.). Holistic health and welfare strategy helps drive up survival rates. <https://fishfocus.co.uk/holistic-health-and-welfare-strategy-helps-drive-up-survival-rates/>
- [7] Ahmed, N., Thompson, S., & Glaser, M. (2018). Transforming organic prawn farming in Bangladesh: Potentials and challenges. Journal of Cleaner Production, 172, 3806–3816. <https://doi.org/10.1016/j.jclepro.2017.06.110>
- [8] News & Market. (2019). 緊張的魚不好吃！首屆「水生動福」研討會：讓魚善終，食物更美味 [Stressed fish don't taste good! First "Aquatic Animal Welfare" Seminar: Humane endpoints for better food quality]. <https://www.newsmarket.com.tw/blog/126145/>
- [9] Sánchez-Velázquez, J., Peña-Herrejón, G. A., & Aguirre-Becerra, H. (2024). Fish responses to alternative feeding ingredients under abiotic chronic stress. Animals, 14(5), Article 765. <https://doi.org/10.3390/ani14050765>

- [10] Leal, E., Fernández, B., Guillot, R., Ríos, D., & Cerdá-Reverter, J. M. (2011). Stress-induced effects on feeding behavior and growth performance of the sea bass (*Dicentrarchus labrax*): A self-feeding approach. <https://core.ac.uk/reader/36060695>
- [11] Global Seafood Alliance. (2019). What is the impact of aquaculture on the environment? <https://www.globalseafood.org/blog/what-is-the-environmental-impact-of-aquaculture/>
- [12] BBC. (2019). Is there a problem with salmon farming? <https://www.bbc.com/news/uk-scotland-48266480>
- [13] Henriksson, P. J. G., Troell, M., & Rico, A. (2021). Interventions for improving the productivity and environmental performance of global aquaculture for future food security. *One Earth*, 4(9), 1220–1232. <https://doi.org/10.1016/j.oneear.2021.08.009>
- [14] Skare, M., Chan, S. S., Handeland, S. O., Løvdal, T., Lerfall, J., & Roth, B. (2021). A comparative study on quality, shelf life and sensory attributes of Atlantic salmon slaughtered on board slaughter vessels against traditional land-based facilities. *Aquaculture*, Volume 540, 736681. <https://doi.org/10.1016/j.aquaculture.2021.736681>
- [15] European Commission. (2021). Strategic guidelines for a more sustainable and competitive EU aquaculture for the period 2021 to 2030. <https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:52021DC0236>
- [16] Aquaculture Stewardship Council. (2024). ASC leads the way in aquatic animal welfare. <https://asc-aqua.org/blog/asc-ranks-top-animal-welfare-benchmark-aquaculture-certification-schemes/>
- [17] Eurogroup for Animals. (2024). Public attitudes to aquatic animal welfare. <https://www.eurogroupforanimals.org/library/public-attitudes-aquatic-animal-welfare>
- [18] PwC, Rabobank, & Temasek. (2021). The Asia food challenge: Understanding the new Asian consumer. <https://www.pwc.co.nz/industry-expertise/food-production/afc-report-202109.pdf>
- [19] Statista. (2024). Willingness to pay more for sustainably made or environmentally friendly products among consumers in Hong Kong as of December 2023, by age group. <https://www.statista.com/statistics/1449182/hong-kong-willingness-to-pay-more-for-sustainable-products-by-consumer-age/>
- [20] Freshwater Fisheries Research Centre, Chinese Academy of Fishery Sciences. (2009). 2009年水生動物壓力與福利國際學術研討會成功召開 [2009 International Symposium on Aquatic Animal Stress and Welfare successfully held]. <https://www.ffrc.cn/info/1066/6285.htm>
- [21] People's Daily Online. (2021). 全球水產養殖大會“十年一會”落地上海 預將發布兩項重要成果 [Global Aquaculture Conference “Once in a Decade” held in Shanghai, expected to release two major outcomes]. <http://finance.people.com.cn/BIG5/n1/2021/0917/c1004-32230261.html>
- [22] FAI Farms. (2025). Grass carp welfare online courses. <https://fai.academy/grass-carp-welfare-online-courses/>
- [23] Singapore Food Agency. (2024). Singapore aquaculture plan. <https://www.sfa.gov.sg/docs/default-source/singapore-aquaculture-plan/singapore-aquaculture-plan.pdf>

- [24] Huang, C.-Y., & Council of Agriculture, Executive Yuan. (2020). 水生動物福利 消費指南 - 產業端 [Aquatic animal welfare consumption guide - Industry].
https://www.fa.gov.tw/upload/fa/files/web_structure/1658/%E6%B0%B4%E7%94%9F%E5%8B%95%E7%89%A9%E7%A6%8F%E5%88%A9-%E7%94%A2%E6%A5%AD%E7%AB%AF%E6%93%8D%E4%BD%9C%E6%8C%87%E5%8D%97.pdf
- [25] Huang, C.-Y., & Council of Agriculture, Executive Yuan. (2020). 水生動物福利 消費指南 - 消費端 [Aquatic animal welfare consumption guide - Consumers].
https://wm.moa.gov.tw/upload/fa/files/web_structure/1659/%E6%B0%B4%E7%94%9F%E5%8B%95%E7%89%A9%E7%A6%8F%E5%88%A9-%E6%B6%88%E8%B2%BB%E7%AB%AF%E9%81%B8%E8%B3%BC%E6%8C%87%E5%8D%97.pdf
- [26] World Organisation for Animal Health. (2021). Meeting: Regional collaboration framework on aquatic animal health in Asia and the Pacific.
<https://rr-asia.woah.org/en/events/3rd-meeting-of-ad-hoc-steering-committee-of-the-regional-collaboration-framework-on-aquatic-animal-health-in-asia-and-the-pacific/>
- [27] Wahlteiz, S. J., Stacy, N. I., Hadfield, C. A., Harms, C. A., Lewbart, G. A., Newton, A. L., & Nunamaker, E. A. (2022). Perspective: Opportunities for advancing aquatic invertebrate welfare. *Frontiers in Veterinary Science*, 9, Article 973376.
<https://www.frontiersin.org/journals/veterinary-science/articles/10.3389/fvets.2022.973376/full>
- [28] UK Government. (2022). Animal Welfare (Sentience) Act 2022.
<https://www.legislation.gov.uk/ukpga/2022/22>
- [29] European Parliament. (2016). EU animal welfare strategy, 2012-2015.
[https://www.europarl.europa.eu/RegData/etudes/BRIE/2016/589831/EPRS_BRI\(2016\)589831_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/BRIE/2016/589831/EPRS_BRI(2016)589831_EN.pdf)
- [30] World Organisation for Animal Health. (n.d.). Aquatic animal health code.
<https://www.woah.org/en/what-we-do/standards/codes-and-manuals/aquatic-code-online-access/>
- [31] Aquatic Life Institute. (2024). 2024 aquaculture certification schemes benchmark: Aquatic animal welfare.
<https://www.ali.fish/certifier-campaign-resources/aquaculture-certification-schemes-benchmark-2024>
- [32] Tesco PLC. (2024). Tesco farmed decapod crustacean welfare policy.
<https://www.tescopl.com/sustainability/documents/policies/tesco-farmed-decapod-crustacean-welfare-policy>
- [33] M&S. (2024). Aquaculture and wild caught decapod welfare.
<https://corporate.marksandspencer.com/sites/marksandspencer/files/marks-spencer/Aquaculture/MS-Decapod-Welfare-Policy-2024.pdf>
- [34] Lidl Great Britain. (2019). Sustainable fish and seafood policy.
<https://corporate.lidl.co.uk/sustainability/seafood>
- [35] John Lewis Partnership. (2025). Aquaculture & fisheries.
<https://www.johnlewispartnership.co.uk/csr/our-strategy/aquaculture.html>
- [36] World Health Organization. (n.d.). On Health. <https://www.who.int/health-topics/one-health>
- [37] United Nations. (2015). The 17 Sustainable Development Goals. <https://sdgs.un.org/goals>

- [38] Mellor, D. J., Beausoleil, N. J., Littlewood, K. E., McLean, A. N., McGreevy, P. D., Jones, B., & Wilkins, C. (2020). The 2020 Five Domains Model: Including Human-Animal Interactions in Assessments of Animal Welfare. *Animals : an open access journal from MDPI*, 10(10), 1870. <https://doi.org/10.3390/ani10101870>
- [39] Sneddon, L. U. (2019). Evolution of nociception and pain: Evidence from fish models. *Philosophical Transactions of the Royal Society B*, 374(1785), Article 20190290. <https://royalsocietypublishing.org/doi/10.1098/rstb.2019.0290>
- [40] Uren Webster, T. M., Rodriguez-Barreto, D., Consuegra, S., & Garcia de Leaniz, C. (2020). Cortisol-related signatures of stress in the fish microbiome. *Frontiers in Microbiology*, 11, Article 1621. <https://www.frontiersin.org/journals/microbiology/articles/10.3389/fmicb.2020.01621/full>
- [41] Sneddon, L. U. (2015). Pain in aquatic animals. *Journal of Experimental Biology*, 218(7), 967–976. <https://doi.org/10.1242/jeb.088823>
- [42] Braithwaite, V. (2010). Do fish feel pain? *Fishcount*. <https://fishcount.org.uk/fish-welfare-in-commercial-fishing/fish-sentience/do-fish-feel-pain>
- [43] Elwood, R. W. (2025). A history of pain studies and changing attitudes to the welfare of crustaceans. *Animals*, 15(3), Article 445. <https://doi.org/10.3390/ani15030445>
- [44] Mather, J. A., & Dickel, L. (2017). Cephalopod complex cognition. *Current Opinion in Behavioral Sciences*, 16, 131–137. <https://doi.org/10.1016/j.cobeha.2017.06.008>
- [45] Aquatic Life Institute. (2022). Key animal welfare recommendations for aquaculture. <https://www.ali.fish/welfare-guides/aquaculture-welfare-guide>
- [46] Cabrera-Álvarez, M. J., Arechavala-Lopez, P., Mignucci, A., Oliveira, A. R., Soares, F., & Saraiva, J. L. (2024). Environmental enrichment reduces the effects of husbandry stressors in gilthead seabream broodstock. *Aquaculture Reports*, 37, Article 102256. <https://doi.org/10.1016/j.aqrep.2024.102256>
- [47] Aquaculture Advisory Council. (2022). Using ethology to improve farmed fish welfare and production. https://aac-europe.org/wp-content/uploads/2023/06/AAC_ethology-and-welfare_final_with-annex.pdf
- [48] Barrett, L. T., & Oppedal, F. (2025). Characterisation of the underwater soundscape at Norwegian salmon farms. *Aquaculture*, 602, Article 742334. <https://doi.org/10.1016/j.aquaculture.2025.742334>
- [49] Wang, K., Li, K., Liu, L., Tanase, C., Mols, R., & van der Meer, M. (2023). Effects of light intensity and photoperiod on the growth and stress response of juvenile Nile tilapia (*Oreochromis niloticus*) in a recirculating aquaculture system. *Aquaculture and Fisheries*, 8(1), 85–93. <https://doi.org/10.1016/j.aaf.2020.03.001>
- [50] United States Environmental Protection Agency. (2025). National aquatic resource surveys: Indicators—Dissolved oxygen. <https://www.epa.gov/national-aquatic-resource-surveys/indicators-dissolved-oxygen>
- [51] United States Environmental Protection Agency. (2025). National aquatic resource surveys: Indicators—Nitrogen. <https://www.epa.gov/national-aquatic-resource-surveys/indicators-nitrogen>
- [52] Agriculture, Fisheries and Conservation Department of Hong Kong. (2024). 良好水產養殖管理方案系列 2: 海魚養殖環境管理 [Good aquaculture practices series 2: Environmental management of mariculture]. https://www.afcd.gov.hk/tc_chi/fisheries/fish_aqu/fish_aqu_techsup/mariculture_management.html

- [53] Agriculture, Fisheries and Conservation Department of Hong Kong. (2024). 良好水產養殖管理方案系列 3: 塘魚養殖環境管理 [Good aquaculture practices series 3: Environmental management of pond fish culture]. https://www.afcd.gov.hk/tc_chi/fisheries/fish_aqu/fish_aqu_techsup/pond_culture_management.html
- [54] Agriculture, Fisheries and Conservation Department of Hong Kong. (2024). 良好水產養殖管理方案系列 1: 魚類飼料管理 [Good aquaculture practices series 1: Fish feed management]. https://www.afcd.gov.hk/tc_chi/fisheries/fish_aqu/fish_aqu_techsup/fish_feed_management.html
- [55] Agriculture, Fisheries and Conservation Department of Hong Kong. (2024). 良好水產養殖管理方案系列 4: 養殖魚類疾病防治 [Good aquaculture practices series 4: Prevention and treatment of fish diseases]. https://www.afcd.gov.hk/tc_chi/fisheries/fish_aqu/fish_aqu_techsup/fish_disease_prevention.html
- [56] Humane Slaughter Association. (2016). Humane harvesting of fish. <https://www.hsa.org.uk/downloads/publications/harvestingfishdownload-updated-with-2016-logo.pdf>
- [57] Endo, H., & Wu, H. (2019). Biosensors for the assessment of fish health: A review. *Fisheries Science*, 85, 641–654. <https://doi.org/10.1007/s12562-019-01318-y>
- [58] Martins, C. I. M., Galhardo, L., Noble, C., Damsgård, B., Spedicato, M. T., Zupa, W., Beauchaud, M., Kulczykowska, E., Massabuau, J.-C., Carter, C. G., Planellas, S. R., & Kristiansen, T. S. (2012). Behavioural indicators of welfare in farmed fish. *Fish Physiology and Biochemistry*, 38(1), 17–41. <https://doi.org/10.1007/s10695-011-9518-8>
- [59] Hong Kong Agriculture, Fisheries and Conservation Department. (n.d.). AFCD Accredited fish farm scheme. <https://www.hkaffs.org/english/>
- [60] Norwegian Seafood Council. (2020). Norwegian salmon farming sees continued drop in antibiotics use. <https://en.seafood.no/news-and-media/news-archive/norwegian-salmon-farming-sees-continued-drop-in-antibiotics-use/>
- [61] Salmon Scotland. (2020). Salmon Scotland sustainability charter: A better future for us all. <https://www.salmonscotland.co.uk/initiatives/a-better-future-for-us-all>
- [62] Fish Farming Expert. (2022). Scottish salmon export value bounced back in 2021. <https://www.fishfarmingexpert.com/hmrc-mairi-gougeon-salmon-scotland/scottish-salmon-export-value-bounced-back-in-2021/1360735>