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Editorial: Ornamental fishing industry

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Editorial on the Research Topic

Ornamental fishing industry

More than 70% of the earth's surface is covered by water, which is also where most of the world's biodiversity is found. At least one third rely on corals reefs (Knowlton et al., 2021). While crabs, octopuses, starfish, oysters, and snails move and scoot around the ocean floor and form a lovely aquatic underwater garden; fish, squids, eels, dolphins, and whales swim in the open waters. From sea anemone to sun coral, the natural beauties of the deep blue waters offer an ethereal beauty as aquatic life.

Oceans and aquatic organisms have been severely impacted by anthropogenic factors, such as globalization, climate change, overfishing, pollution, and sedimentation (Peixoto and Voolstra, 2023). The fish schools that sustain the diets of coastal people are dwindling, and the reefs', built-in natural barriers, are less effective, causing more damage during tropical storms (Carlson et al., 2021). Additional ecological and economic services provided by coral reefs may also be affected, such as tourism and the provision of secosteroids for cancer and inflammatory illness treatments (Cooper et al., 2014). Unprecedented and continuous accumulation of growing plastic contaminants have put the oceans under extreme stress. Microplastics, which are tiny plastic particles less than five millimeters in size, have been particularly harmful to marine life, especially for the ornamental fishes (Sankrityayan and Biswas). These fishes, which are collected from coral reefs, are essential to the multibillion-dollar marine ornamental fish trade. These ornamental fishes are filter feeders, and consequently the accumulation of microplastics in their gills has a detrimental effect on them.

Notwithstanding the fact that this multimillion-dollar industry on the trade in decorative coral reef fauna is ever-expanding, but in some areas, weak coral reef ecosystems and their resident species are in danger due to unsustainable practices and a lack of effective management control. Fishing practices that destroy coral reefs and environments, such as cyanide fishing, are often used by fishermen to supply this trade, depleting fish populations in the process. Significant barriers to their conservation and management are the large number of nations involved in their trade, the scattered fishing locations, and the enormous variety of traded species (Jain et al.). For ornamental fisheries, which are characterized by limited data on population dynamics, stock status, and collection effort coupled with the instances of illegal, under-reported, and unregulated

fishing; traditional fisheries management techniques involving stock assessments and total catch limits are not feasible. Despite the inherent difficulties, continuous efforts, albeit with limited success have been used to monitor, control, and manage their trade.

Significant concerns remain on the trade threatened and/or endangered species. One such species is the Banggai cardinalfish, a well-known aquarium species that is not protected internationally despite being on the IUCN Red List as an endangered species. Concerns about the ability of governments and international agreements, like CITES, to guarantee adequate protections for vulnerable species are being consistently raised. The trade of seahorses (*Hippocampus* spp.) for traditional medicines and the trade of giant clam (*Tridacna gigas*) and black and gold corals for commercial purposes are worrying. Therefore, for preventing further decline in the population of endangered, threatened, and protected species; governments, industry, and consumers need to play an active role during trade of coral reef species.

The United States is the world's largest consumer and importer of coral reef-associated ornamental species. Around, 63% of all imports worldwide go through the United States, and on an average, 2/3 of all organisms, used in the marine ornamental trade, are brought into the region from elsewhere. Global trends and environmental risks are attracting the researchers to develop innovative technology for the conservation and sustainable use of the marine ecosystem. The increase in demand for marine ornamental fishes by the hobbyists is well documented around the world. Present research focuses on corals, ornamental fish and plants, coral diversity, the effects of climate change on native biodiversity and ecosystems, developing aquaculture techniques, weed sea culture, etc. The topics covered in this Research Topic include creation and application of scientific solutions for the sustainability of marine ornamental fisheries, coral reefs, and seaweeds. Viewpoints on how to create a sustainable Blue Economy through enhanced stewardship of ocean resources by effective research and planning are encouraged (Trujillo-González et al.). Ornamental coral propagation, currently being practiced in several Indonesian provinces, is perceived to be the major driving force in future, propelling the decorative coral trade and minimizing the ecological and environmental damages (Johan et al.).

Wild-caught fish make up most of the marine ornamental fish trade worldwide, with hatchery production accounting for less than 10% of the total. The only long-term viable solution to lessen fishing pressure on the wild population and to protect the fragile coral reef ecology, which is home to most marine ornamental species, is by hatchery production. Clown fishes dominate the group of species produced in the hatcheries that are traded, and designer clown fishes, which are more expensive than other clown fishes due to their uncommon and alluring colour patterns, have recently been added to this group (Anikuttan et al.). Hatchery technology for producing marine ornamental fishes such as seahorses, clown fishes, damsels, and serranids has been developed and perfected by the ICAR-Central Marine Fisheries Research Institute (CMFRI), Kochi (India). Clown fishes that were bred includes *Amphiprion chrysoaster*, *A. ocellaris*, *A. nigripes*, *A. peridarion*, *A. ephippium*

and *Premnas biaculeatus*. Among damsels, breeding technology was standardized for *Chrysiptera cyanea*, *C. hemicyanea*, *Neopomacentrus cyanomos*, *N. nemurus*, and *Dascyllus carneus* (Anil et al.).

Underwater beautiful creations are the attraction for ethics and nature lovers. Nature has provided aquatic beauty in the form of living creatures that display colorful pattern, diverse body shape, and attractive behaviors (Sinha, 2020). Possessing enormous potential, the ornamental fish industry is evolving from its infancy. Developing nations are significant players in this sector; estimates indicate that over 60% of the ornamental fish traded internationally, comes from these nations, mostly in Asia. It is envisaged to control the invasion of alien species, that impacts the population of native endemic species. Also, as women play a pivotal role in the supply chain of ornamental fishes in developing countries, gender equality (Yadav and Sharma) need to be ensured by including a gender perspective into programmes, and policies.

Author contributions

All authors listed have made a substantial, direct, and intellectual contribution to the work and approved it for publication.

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References

- Carlson, R. R., Luke Evans, L. J., Foa, S. A., Grady, B. W., Lia, J., Seeley, M., et al. (2021). Synergistic benefits of conserving land-sea ecosystems. *Glob. Ecol. Conserv.* 28 (2021), 1–21. doi: 10.1016/j.gecco.2021.e01684
- Cooper, E. L., Hirabayashi, K., Strychar, K. B., and Sammarco, P. W. (2014). Corals and their potential applications to integrative medicine. *Evid Based Complement Alternat Med* 2014 (3), 1–9. doi: 10.1155/2014/184959
- Knowlton, N., Grottoli, A. G., Kleypas, J., Obura, D., Corcoran, E., de Goeij, J., et al. (2021). Rebuilding coral reefs: A decadal grand challenge. *Int. Coral Reef Soc. Future Earth Coasts* 56, 1–49. doi: 10.53642/NRKY9386
- Peixoto, R. S., and Voolstra, C. R. (2023). The baseline is already shifted: marine microbiome restoration and rehabilitation as essential tools to mitigate ecosystem decline. *Front. Mar. Sci.* 10. doi: 10.3389/fmars.2023.1218531
- Sinha, A. (2020). Ornamental fish trade in India. *Smart Agri Post-Fisheries* 6 (1), 6–10.