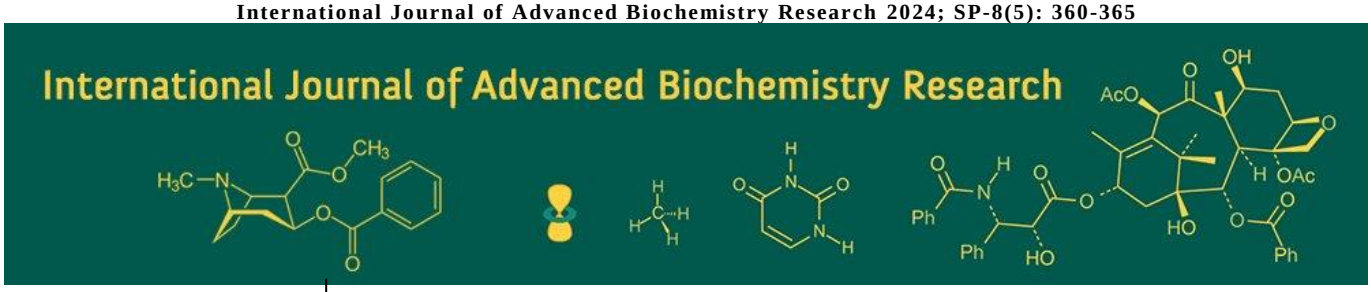

ISSN Print: 2617-4693
ISSN Online: 2617-4707
IJABR 2024; SP-8(5): 360-365
www.biochemjournal.com
Received: 15-03-2024
Accepted: 18-04-2024

Vishnupriya M. S.
Department of Fishery Engineering, College of Fisheries Science, Birsa Agricultural University Gumla, Jharkhand, India

Kasturi Chattopadhyay
Department of Fish Processing Technology, College of Fisheries Science, Birsa Agricultural University Gumla, Jharkhand, India

Veerendra Singh
Department of Fisheries Resource Management College of Fisheries Science Birsa Agricultural University Gumla, Jharkhand, India

Pritam Sarkar
Department of Aquatic Environmental Management, ICAR-Central Institute of Fisheries Education, Mumbai, Maharashtra, India

Akhilesh Kumar Singh
Department of Aquaculture, College of Fisheries Science, Birsa Agricultural University, Gumla, Jharkhand, India

Corresponding Author:
Kasturi Chattopadhyay
Department of Fish Processing Technology, College of Fisheries Science, Birsa Agricultural University Gumla, Jharkhand, India

Ecolabelling for sustainable fisheries: A comprehensive review of conservative fishing methods

Vishnupriya M. S., Kasturi Chattopadhyay, Veerendra Singh, Pritam Sarkar and Akhilesh Kumar Singh

DOI: https://doi.org/10.33545/26174693.2024.v8.i5Se.1197

Abstract
Ecolabelling, or Eco-certification, has become the most important in fisheries. There are lots of certification systems intricate in the ecolabelling of different products; out of that, only 40 are responsible for fisheries-related products. Ecolabels are known as approval seals for products that have been harvested using sustainable methods with minimal negative impacts on the environment. According to Marine Stewardship Council (MSC), all fishing methods have some impacts on the environment and should be used responsibly and follow the regulations given by the code of conduct of responsible fisheries and other certification agencies. Many ecolabels are mainly focused on minimising the negative marine ecosystem of primary production in a marine ecosystem or commodity through a set of good practices that are captured in sustainable standards. The main aim of ecolabelling is to follow sustainable fishing methods, and it is an advantage in both ways by securing the marine environment from overfishing and bycatch and by consuming only good products. The application of ecolabelling programmes unites segments of markets, industries, environmental concerns, and communities while offering new tools to advance sustainability in fisheries and aquaculture. The ecolabelling certification are given to particular products to ensure the products was obtained or caught in the proper way by following the certain rules coming under the all the certification procedure. This review offers a quick overview of the advantages and disadvantages of various seafood product ecolabelling programmes and sustainable maintenance of ecosystem.

Keywords: Ecolabel, sustainable fishing, marine stewardship council (MSC), overfishing, bycatch

1. Introduction
Ecolabelling is a certification system for food and consumer products, which is recently becoming one of the most significant features of international fish trade and marketing. They are “seals of approval” given to products that are deemed to have fewer negative impacts on the environment than functionally or competitively similar products and are becoming significant features of international fish trade and marketing [1]. Ecolabels and related certification schemes are market-based management mechanisms that are designed to influence the purchasing decisions of consumers and the procurement policies of retailers of fish and fish-based products and to reward producers using responsible fishing practices. Eco-labels were developed in order to provide consumers with the option of purchasing sustainably produced products in the market and hence, are also regarded as a means of offering incentives to governments, international organisations, local authorities, and the fishing community to enhance the aspects of fisheries management for which they are responsible [2, 3, 4, 5]. Fishing has both direct and indirect effects on the marine system; conserving ecosystem diversity and structure will play an important role in helping to retain ecosystems. The data collection for stocks is moderately collected to maintain sustainability. Sustainable fishing methods protects livelihoods, increases ocean biodiversity, and contributes to global security [6, 7, 8, 9, 10]. Ecolabelled seafood is always captured using the sustainable fishing method, which leads to lowering the bycatch, catching only commercial and economical value fish with targeted market size, providing an additional tool to move towards sustainability in fisheries and aquaculture, and bringing together elements of market, industry, environmental interest, and communities. The government also gives some choice for ecolabelling, which may also decrease the unpopular or costly command and control policies [11, 12, 13, 14].

Developing educational programmes regarding the ecolabelling of seafood will aid in a better understanding of environmental issues related to fisheries, and we should take our own actions to regulate and make the categories of ecolabelling understandable to consumers. By making the ecolabel simple to understand, consumers are better able to choose the appropriate product to consume or choose, reduce their impact on the environment, and receive guidance. There are about 400 ecolabels concerning different products in operation in the world, of which nearly 50 are related to fisheries and aquaculture. Marine Stewardship Council (MSC), Friend of the Sea (FOS), KRAV, and Naturland are some of the well-known third-party certifications and ecolabelling schemes in fisheries. Consumer preference can result in increased prices, indirect non-economic benefits for fishers, and access to markets looking to exclusively source certified fish products [15, 16]. The Marine Stewardship Council (MSC) mainly addresses the fishing stage, in particular the overexploitation of marine resources [17, 18, 19, 20]. According to Thrane (2004) [21], LCA studies show that significant environmental impacts are related to the life cycle stages after landing. This includes fish processing, transport, cooling, and packaging (especially for highly processed seafood products). The Swedish KRAV is the only one that currently addresses a range of issues that include energy and chemicals in the whole life cycle of the products.

2. Categories of Ecolabelling

Ecolabelling are classified into three main categories:

2.1 First Party

These are established by individual producers based on their own product standards and criteria related to specific environmental issues. It is a form of ecolabelling often termed as “self-declaration”.

2.2 Second Party

These are established by industry associations for members‟ products, and the criteria are determined by the organization. The members elucidate the certification requirements, often by taking knowledge assistance from academic institutions and environmental advocacy groups. External certifying companies or industry-specific internal certification processes are involved in verification of the conformance.

2.3 Third Party

These certificates are created by the external organizations (public or private) independent from the producers, distributors and sellers of the labelled products. Products provided by certified organizations or resources are then labelled to inform customers that they were made in an "environmentally friendly" manner. The label, also known as the seal, is usually licensed to a producer and can be found on or in conjunction with a product that comes from a certified producer or fishery.

3. Three Attributes of Ecolabelling

There are three accepted categories of ecolabels based on the attributes used for certification [22, 11]:

- The Dolphin Safe Tuna label is categorized under single attributes, which are mainly concentrated on a single species [23].
- Resource-oriented multiple attribute labels, like the MSC ecolabel, aim to prevent overfishing and damage to the marine ecosystem in order to preserve fish stocks' ability to reproduce.
- Multiple attribute eco-labels, like the Swedish "KRAV" ecolabel emphasise environmental concerns throughout the product's life cycle.

4. The Organization Involved in Certification of Ecolabelling

Some of the most important organisation involved in certification of ecolabelling of seafood products are Marine Stewardship Council (MSC), Friend of the Sea (FOS), KRAV, Naturland, Aquaculture Stewardship Council (ASC) [24].

4.1 Marine Stewardship Council (MSC)

MSC is mainly focused on the fisheries assessment methodology, which involves the ecosystem impact of fisheries, an independent scientific verification of stock sustainability, and the effectiveness of fisheries management based on the indicator range. MSC acts as a light in FAO guidelines for the ecolabelling of fish and fisheries products.

4.2 Friend of the Sea (FOS)

FOS includes both wild capture and aquaculture fisheries and sea food products, where FOS is mainly responsible for the Dolphin Safe Label. The FSO is involved in sustainable management of overexploitation, bycatch of endangered species, impact on the sea bed, and also social accountability and regulation, where the FSO includes aquaculture criteria like reducing the use of harmful antifoulants, hormonal growth, and no impacts on habitat such as mangroves and wetlands.

4.3 KRAV

KRAV has been developed for sustainable fishing and is later framed for the certification of capture fisheries. It’s including the certification of vessels, landing and processing facilities to ensure traceability, and chain of custody.

4.4 Naturland

Naturland is used for the certification of the capture fisheries project based on social, economic, and ecological sustainability criteria. The use of the Naturland mark "Wildfisch" will be regulated by a licence agreement, and products will be labelled to enable the trader legally responsible for the product to be identified.

4.5 Aquaculture Stewardship Council (ASC)

ASC is a leading certification and labelling programme for responsible farmed seafood products. ASC includes producers, seafood processors, retailers, and food companies that are used to promote seafood choices in the environment. The standard guidelines established by the International Social and Environmental Accreditation and Labelling Alliance (ISEAL). These are the organisations that certify the seafood as safe for consumer preference and also have details about the product handling and manufacturing. Some of the early ecolabels are The Blue Angel (1977), The Canadian Environmental Choice (1988), The Nordic Swan (1989) and The European Flower (1992).

4.6 Best Aquaculture Practices

BAP is a part of the Global Seafood Alliance (GSA). It aims to improve responsible seafood practices, and it is the only certification involved in each step of the seafood production chain, like hatcheries, seafood distribution businesses, and processing factories, which are the
most important recipients of the certification.

5. Sustainable Fishing Methods

Sustainable fishing means maintaining and managing the fishing population for a natural resource without exploitation. Sustainable fishing mainly concentrates on managing the healthy marine environment, marine animals, and fisheries for future generations, and it also provides the livelihoods of many people. Sustainable fishing, related to many different types of fishing methods like commercial fishing, recreational fishing, or subsistence fishing, paves the way to avoid overfishing and bycatch production. Fishing using a rod and reel reduces bycatch by enabling the immediate release of non-targeted animals. One fish is taken at a time, which also prevents overfishing (25). Commercial fishermen would be better off using rod and reel fishing rather than long lining in terms of environmental impact. Long lining allows for the mass capture of unwanted species using a single fishing line equipped with several hooks. Marine ecosystems may be harmed by this technique and overfishing. On the other hand, fishing with a rod and reel minimises the influence on the total fish population and maintains the equilibrium of the marine ecosystem by enabling more focused targeting of desirable species [26]. As per MSC Commercial fishing uses a variety of gear. Every kind of gear has an impact on the natural environment of the ocean. But nearly every kind of gear can be used responsibly and sustainably if maintained with care [25, 27].

6. Ways to Implement the Sustainable Fishing

The majority of fishing methods used today is unsustainable, and as the world's seafood consumption grows, so does the amount of seafood available to us. Both the health of our seas and the people who depend on fishing for stability and sustainability may be negatively impacted for some time by this. Businesses engaged in commercial fishing must switch to more sustainable methods and practices [10, 3]. Some of the common measures that the seafood industry can take to limit their negative impact, such as catching bycatch and using BRD's in our world's oceans, include the following steps that are more important to becoming sustainable in the fishing industry:

- Eradicate bycatch
- Stick to the "Good Fish Guide"
- Prevent ocean waste from plastic netting
- Prohibition of overfishing endangered species
- Practice lead-free fishing gear
- Certification guidelines
- Diminish fossil fuel use
- Develop green business certified.

7. Commercial Fishing Impacts the Environment

The ecosystems of the oceans are severely harmed by today's unsustainable commercial fishing, which involves everything from pollution and waste to overfishing and habitat destruction. Every year, over 100,000 fish, whales, and sharks that are essential to ocean ecosystems get tangled in abandoned fishing nets [28], commonly referred to as "ghost nets," as they pass through our oceans.

7.1 Eradicating Bycatch

Bycatch is the incidental capture of non-targeted species; the catching of bycatch has increased eventually during these years, and numerous species, especially those that are endangered, are placed in danger because sea turtles, dolphins, and other wildlife get entangled in fishing nets and are then released while dead or close to death. Jeopardising of species populations, especially those that are endangered can be done effectively. Reduction by catch can be done by making changes in the fishing methods, which also include fishing gear improvements. Some of the most important innovations and technologies used to reduce bycatch are bycatch reduction devices in trawl fisheries. There are many types of bycatch reduction devices employed based on targeted species [29]. Some of the Bycatch Reduction Devices (BRD's) are Turtle Excluding Device (TED), Square Mesh Cod end (SMC), Square Mesh Window (SMW), Fish Eye, Juvenile Trash Excluding Device (JTED), etc.

7.2 "Good Fish Guide"

The Marine Conservation Society is maintaining a good fish guide where it provides important information on the fish, like species to be fished sustainably and species to be avoided. It also includes the location of the species along with the method and gear that should be used for fishing. The Good Fish Guide facilitates better-informed decision-making, which benefits both ecologically conscious consumers and fishermen. It should be considered a standard reference for all fisheries-related work to make the marine environment more sustainable [30].

7.3 Prevent Ocean Waste from Plastic Netting

Fishing nets and lines are made up of non-biodegradable and non-recyclable plastic materials of different compositions, like Polyethylene (PE) and Polypropylene (PP), Polyamide (PA), Polyester (PES), Polyvinyl alcohol (PVA), Polyvinyl chloride (PVC), and Polyvinylidene chloride (PVD), etc. Due to the damaging of nets during the fishing operation and the release of those nets into the ocean, plastic is dumping and accumulating in the ocean. Sometimes the released nets are also engaged in the activity that results in ghost fishing, which is another serious issue followed by bycatch fishing. The Europe project has come up with an excellent solution called BIOGEARS. It is a prototype of bio based ropes that are made from natural materials [3, 4]. These ropes can decompose, offering a promising alternative to petroleum-based plastic.

7.4 Prohibition Overfishing Endangered Species

A list of species that are currently in danger of extinction due to overfishing A way that the fishing industry can contribute to the conservation of species populations is by implementing annual catch restrictions. Because it is difficult to enforce these restrictions over millions of square miles of open ocean, many fishing vessels continue to overfish in spite of severe fines and penalties. Since catching non-endangered species will enable commercial fishing to continue for future generations, it makes more sense from a logical standpoint for fisheries to concentrate on doing so. Unfortunately, overfishing and illegal fishing

are being supported worldwide by consumer demand and the illicit seafood industry [31].

7.5 Practice Lead-Free Fishing Gear

When fishing gear is lost, it frequently ends up on the ocean floor, where it is exposed to fish and other aquatic animals. Seabirds that are looking for a quick bite might also snag lines. Sadly, animals that consume gear composed of hazardous lead become poisoned. Fishing gear was usually made from lead in the early days; however, now there are lots of lead-free fishing gears available that can be used or implemented to avoid the risk in the marine environment. While using or purchasing any fishing accessories, ensure that the materials are non-toxic.

7.6 Certification Guidelines

Ecolabelling of seafood programmes includes many councils like the Marine Stewardship Council (MSC), Friend of the Sea (FOS), KRAV and Naturland, Aquaculture Stewardship Council (ASC), Earth Island Institute (EII), Eco Fish, Ocean Wise, etc. The aim of the certification is not only the eco-labelling of sea food that is caught in sustainable ways; it also includes a guideline for the proper fishing methods, fish to be caught at this size, areas to be restricted, and areas about the availability of the fish. Along with this information, it also allows the fisheries sector to move towards sustainability by raising awareness among the people, and fishermen should be encouraged to join certification councils in order to strengthen their reputation as reliable and sustainable businesses and to address environmental impacts. In addition, seafood that has been obtained sustainably is frequently sold for more money, ensuring both quality and guilt-free eating.

7.7 Diminish Fossil Fuel Use

Fishing is one of the most energy-intensive industries and is mostly dependent on fossil fuels.

About 1.2% of the world's fuel usage in 2020 was contributed by fishing fleets globally [32]. Moreover, the marine industry, which is in charge of transporting fish both locally and internationally, pollutes more than all nations combined. The top 16 vessels produced more sulphur in 2020 than all of the cars in the world [15]. Some of the technical solutions proposed at a conference on the topic of energy efficiency in fisheries are mainly focused on increasing energy efficiency and cutting fuel costs and dependency. The other way to improve energy efficiency is by improving the efficiency of fishing techniques by utilising innovative fishing gear, mainly concentrated in trawling, the most commercial and demanding fishing method. A study that was published in Nature claims that one gigaton of carbon emissions are produced annually by bottom trawling, a type of fishing where weighted nets are scraped over the seafloor for fish, shellfish, and crustaceans. That exceeds the annual emissions caused by aviation. Another solution for energy efficiency involves efficient propulsion and on board energy generation. Some of the efficient methods to be followed on board are reduction in vessel speed, use of biofuels, use of both electric and diesel at the same time, and optimising hull and propeller design, which have all been calculated to generate fuel reduction and cost savings. Bound for Blue, a company, has redesigned the sail such that it can self-adjust to optimise wind exposure. These kinds of inventions assist the shipping and fishing industries in reducing the quantity of fossil fuels they utilize. Although there is still a long way to go in fuel and propulsion technology, fisheries can still minimise their onshore usage of fossil fuels by converting to hybrid or electric vehicles and improving energy efficiency within their facilities.

7.8 Develop Green Business Certified

Having a third-party green business certification is beneficial in addition to all the certification council's accreditation, as is publicising all the ways your organisation is streamlining its operations. A green business certification gives you the flexibility to create and monitor objectives, evaluate how well your sustainability efforts are doing, and update stakeholders on your progress. Clickable web seals, such as the one provided by the Green Business Bureau, act as a badge of proof, demonstrating your dedication and winning the confidence of prospective clients, business associates, and staff members.

8. Moderate Change in the Sustainable Fisheries by Stock Assessment of Seafood Eco labelling

The term "sustainable" is difficult to define because it encompasses ecological, social, and economic components. At a basic level, however, a renewable resource must be extracted no faster than the level at which it can replace itself for it to be considered sustainable. Under the FAO, eco-label schemes are defined as "entitling a fishery product to bear a distinctive logo or statement that certifies that the fish has been harvested in compliance with conservation and sustainability standards. The stock assessment can be examined by two methods: certified and uncertified stock, where MSC plays an important role in the validity of the stock, which helps in the establishment of sustainable fisheries [33]. The ecolabelling of seafood shows that there is a rapid increase in the certified stock, which is expected to be above 50% of BMSY and below 50% [34]. The stocks targeted by an MSC-certified fishery are often above BMSY, often aiming not to keep them near BMSY but above BMSY. Where 82% of the certified stocks had a high exploitation rate, but that is expected to maintain at or above the BMSY. Compare to 65% of uncertified and 52% of non-recommended stocks.

9. Marketing Strategies for Eco labelled Seafood

The development of seafood ecolabelling products is very important in the fisheries sector, which is necessary to raise consumer awareness and also helps enhance sustainable product development at the consumer level. Based on the scheme of ecolabelling, the cost and benefits of the fisheries industry vary; the main benefits are increasing the industrial standard for eco-labelled products and other related products. The cost to the fisheries industry is establishing a secure chain of custody for the product from the producer to the consumer, advertising and awareness campaigns to specifically capitalise on the consumer appeal of the eco-label products, and also exploitation of marine ecosystems. The main problem in the fisheries sector is that "consumers seem unaware of the linkage between eco-labelled seafood and the ecological conditions of the oceans and fish stocks, or, perhaps even worse, at this stage, not many seem to care" [26]. Where the retailers are the main drivers of the ecolabelling phenomenon, in terms of value addition to the products, reputation, risk management, and potential price,

the fishers assume the main cost burden relating to certification. According to Iyer (1994) [35], green consumers are one of the best ways to enhance demand in the market. where it helps the consumer make the decision about whether to purchase the product or not. Green labelling is mostly trusted by the consumer because they think it's an environmentally friendly product, so they don't show that much concern for other eco-labelling products. It is good or bad that they always care about the green label.

10. Eco labelling Seafood in India

Indian oil sardine and squid are two candidate species identified for certification against the Guidelines for Assessing Small Scale Data Deficient Fisheries (GASSMDD) of MSC by WWF-India. According to WWF India, the pre-assessment of the short-neck clam fishery in Ashtamundi estuary, Kollam, was completed [24]. The Marine Product Export Development Authority (MPEDA) also made an attempt to get eco-labelling for the tiger shrimp, skipjack tuna, and yellowfin tuna. The National Task Force, constituted by the Marine Products Export Development Authority (MPEDA), has finalised the guidelines for green certification of ornamental fisheries [29]. Gaps related to data deficiency and bycatch quantification. NASS has published a policy paper on ecolabelling and certification in captured fisheries and aquaculture.

11. Conclusion

Ecolabelling in fisheries is one of the fastest-growing markets that promotes sustainable development and minimises environmental impacts. To achieve successful eco-certification and sustainable fishing, demand for eco-labelled seafood products must increase, which also helps reduce bycatch and catch only commercially important fish. Whereas seafood is a primary source for the livelihood of many people and a rich protein source, it's our duty to ensure a healthy marine environment by following certain rules outlined by all the ecolabelling parties.

12. Reference

1. Kurien J. A view from the Third World. Fish Stakes; c1996.
2. Gardiner PR, Viswanathan KK. Ecolabelling and fisheries management. World Fish; c2004.
3. Gaztelumendi S, Egaña J, Ruiz R. La monitorización del riesgo marítimo-costero en Euskalmet. UHINAK; c2022. p. 62.
4. Arantzamendi L, Andrés M, Basurko OC, Suárez MJ. Circular and lower impact mussel and seaweed aquaculture by a shift towards bio-based ropes. Reviews in Aquaculture. 2023;15(3):1010-9.
5. Signes ÁP, Miret-Pastor L, Tsiouni M, Siggia D, Galati A. Determinants of consumers' response to eco-labelled seafoods: The interaction between altruism, awareness and information demand. Journal of Cleaner Production. 2023;433:139758.
6. Blomquist J, Bartolino V, Waldo S. Price premiums for eco-labelled seafood: Effects of the MSC certification suspension in the Baltic Sea cod fishery. European Review of Agricultural Economics. 2020;47(1):50-70.
7. Vitale S, Biondo F, Giosuè C, Bono G, Okpala CO, Piazza I, *et al*. Consumers' perception and willingness to pay for eco-labeled seafood in Italian hypermarkets. Sustainability. 2020;12(4):1434.
8. Forleo MB, Palmieri N. Environmental Attributes of Wild versus Farmed Tuna: Beliefs, Knowledge and Purchasing Choices of Italian Consumers of Canned Tuna. Sustainability. 2023;15(9):7149.
9. Pierucci A, Columbu S, Kell LT. A global review of MSC certification: Why fisheries withdraw?. Marine Policy. 2022;143:105124.
10. Giacomarra M, Crescimanno M, Vrontis D, Pastor LM, Galati A. The ability of fish ecolabels to promote a change in the sustainability awareness. Marine Policy. 2021;123:104292.
11. Thrane M, Ziegler F, Sonesson U. Eco-labelling of wild-caught seafood products. Journal of Cleaner Production. 2009;17(3):416-23.
12. Galati A, Miret-Pastor L, Siggia D, Crescimanno M, Fiore M. Determinants affecting consumers' attention to fish eco-labels in purchase decisions: a cross-country study. British Food Journal. 2022;124(10):2993-3013.
13. Garraud L, Beckensteiner J, Thébaud O, Claudet J. Ecolabel certification in multi-zone marine protected areas can incentivize sustainable fishing practices and offset the costs of fishing effort displacement. Earth System Governance. 2023;17:100184.
14. Kumar A, Basu R. Do eco-labels trigger green product purchase intention among emerging market consumers?. Journal of Indian Business Research. 2023;15(3):466-92.
15. Lindstad HE, Rehn CF, Eskeland GS. Sulphur abatement globally in maritime shipping. Transportation Research Part D: Transport and Environment. 2017;57:303-13.
16. Proi M, Dudinskaya EC, Naspetti S, Ozturk E, Zanoli R. The role of eco-labels in making environmentally friendly choices: an eye-tracking study on aquaculture products with Italian consumers. Sustainability. 2023;15(5):4659
17. Potts T, Brennan R. Sustainable Seafood and Eco-labelling: The Marine Stewardship Council, UK Consumers and Fishing Industry Perspectives.
18. Paolacci S, Mendes R, Klapper R, Velasco A, Ramilo-Fernandez G, Munoz-Colmenero M, *et al*. Labels on seafood products in different European countries and their compliance to EU legislation. Marine Policy. 2021;134:104810.
19. Sigurdsson V, Larsen NM, Pálsdóttir RG, Folwarczny M, Menon RV, Fagerstrøm A. Increasing the effectiveness of ecological food signaling: Comparing sustainability tags with eco-labels. Journal of Business Research. 2022;139:1099-110.
20. Jones ST, Allison EH, Kroetz K, Ota Y, Jardine SL. Enrollment, retention, and inclusivity of Marine Stewardship Council (MSC) eco-labelling certifications. Marine Policy. 2023;155:105734.
21. Thrane M. Environmental impacts from Danish fish products. DIAS report; c2004.
22. Chaffee C, Leadbitter D, Aalders E. Seafood evaluation, certification and consumer information. Eco-labelling in Fisheries: What is it all about?; c2003, 4-13.
23. Anonymous. Earth Island Institute. International Dolphin Safe standards for tuna. The Earth Island Institute, The International Marine Mammal Project. 2012 (cited 25 Nov 2023); c2012. Available from: http://www.earthisland.org/imp.

24. Gopal TS, Boopendranath MR. Seafood ecolabelling. Fishery Technology. 2013;50(2013):1-0.
25. Anonymous. Final environmental assessment, regulatory impact review, and final regulatory flexibility analysis for amendment 8 to the 2006 consolidated Atlantic Highly Migratory Species fishery management plan: commercial swordfish management measures; c2013 (cited 2 Dec 2022). Available from: https://repository.library.noaa.gov/view/noaa/4717/noaa_4717_DS1.pdf.
26. Ward T, Phillips B, editors. Seafood ecolabelling: principles and practice. John Wiley & Sons; c2009.
27. Anonymous. Guidelines for green certification of freshwater ornamental fish. 2011. Available from: http://eprints.cmfri.org.in/7951/1/AGKN%20-%20Green%20Certification%20of%20Freshwater%20Ornamental%20Fishes%20%20MPEDA%20Guidelines downloaded%20from%20MPEDA%20site%20Feb%202012.pdf.
28. Nama S, Prusty S. Ghost gear: The most dangerous marine litter endangering ocean. Food Sci. Rep. 2021, 2(5).
29. Anonymous. Status of MSC certification of needle squid, oil sardine and short neck clam fishery in Kerala. Paper presented at: the NAAS Brainstorming Session on fish Stock Certification and Ecolabelling. New Delhi; c2011
30. Penca J. Mainstreaming sustainable consumption of seafood through enhanced mandatory food labeling. Frontiers in Marine Science. 2020;7:598682.
31. Nyiawung RA, Raj A, Foley P. Marine Stewardship Council sustainability certification in developing countries: Certifiability and beyond in Kerala, India and the Gambia, West Africa. Marine Policy. 2021;129:104526.
32. Kemp PS, Froese R, Pauly D. COVID-19 provides an opportunity to advance a sustainable UK fisheries policy in a post-Brexit brave new world. Marine Policy. 2020;120:104114.
33. Boström M, Klintman M. Eco-standards, product labelling and green consumerism. Basingstoke: Palgrave Macmillan; c2008.
34. Gutiérrez NL, Valencia SR, Branch TA, Agnew DJ, Baum JK, *et al*. Correction: Eco-Label Conveys Reliable Information on Fish Stock Health to Seafood Consumers. PLOS ONE. 2019;14(1):e0210844.
35. Iyer E. Environmental marketing: Positive strategies for reaching the green consumer. Journal of Marketing. 1994;58(2):127-129.