

## All that is green does not conserve: green certification of aquarium fishes in India

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Aquarium or ornamental fish trade, although widely acknowledged as a large and diverse industry<sup>1</sup>, is one of the most poorly known and documented activities within the global fisheries sector. For example, there is very little up-to-date statistics on the number and quantity of species involved, major exporting countries, number of export units and trade value at different points. The aquarium industry is viewed as both positively (socio-economic and livelihood benefits) and negatively (over-harvest, habitat destruction, alien species invasions) influential<sup>2</sup>, and therefore is often considered a practice that divides opinion<sup>3</sup>.

Market-based tools, including consumer awareness campaigns and certification schemes are now being proposed to counter the issues arising from over-harvest and unsustainable fishing practices in many fisheries<sup>4,5</sup>, including those targeting species for home aquaria<sup>6</sup>. However, the progress of many of these efforts could be impeded due to reasons ranging from consumer confusion to lack of traceability<sup>4</sup>. In the case of aquarium fisheries, there is a difference of opinion on whether certification is required<sup>7</sup> or not<sup>8</sup>.

India, though not an important contributor to the global aquarium trade (only 0.3% by value)<sup>9</sup>, represents an important export hub for wild-caught freshwater fishes<sup>10</sup>. This unmanaged trade involving millions of individuals of restricted range and threatened species is an important conservation issue, which has received very little interest and attention<sup>10</sup>.

In the year 2008, an ambitious programme on 'Green Certification' (GC, a concept that deals with the promotion of a service or a product as 'environmentally sound'<sup>11</sup>) of freshwater ornamental fishes was launched to increase the global market shares of aquarium fish trade in the country, while ensuring best management practices and sustainable harvests<sup>12,13</sup>.

Guidelines for GC of ornamental fishes in India<sup>14</sup> were subsequently developed by a task force in collaboration with the United Nations Conference on

Trade and Development (UNCTAD) and Project PIABA (a community-based interdisciplinary programme promoting sustainable harvest of ornamental fishes in the Brazilian Amazon). GC of ornamental fishes in India is intended as a procedure by which the nodal agency (in this case, the Marine Products Exports Development Authority (MPEDA) under the Ministry of Commerce and Industry, Government of India (GoI)) will give an assurance that the fish has been caught/produced/reared in a manner that ensures social and environmental sustainability, and certifies its supreme quality as regards to health and biosecurity issues<sup>14</sup>. Besides being a means of promoting trade, GC also helps charge a premium<sup>13</sup>. Taking into account India's position in the global market, GC is a strategy for improved marketing, in addition to ensuring sustainable harvest of ornamental fish from the wild.

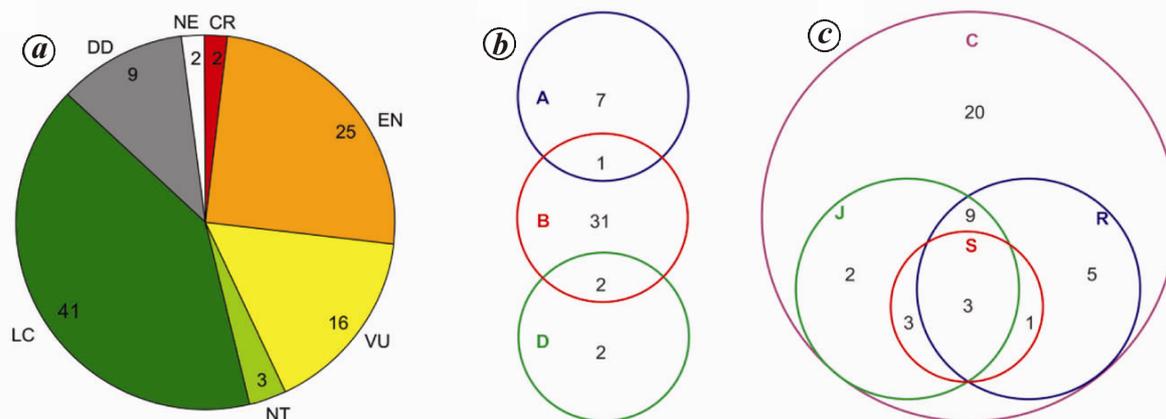
Geographical indication (GI) tag is an essential component of the GC guidelines, a concept that originates from Article 22 of the Trade Related Aspect of Intellectual Property Rights (TRIPS)<sup>15</sup>. In the case of green certification, GI refers to 'the place of origin or first description of the concerned species and its quality, reputation and other characteristics'<sup>14</sup>. This is based on the example of Project PIABA's success with achieving a GI for cardinal tetra, *Paracheirodon axelrodi* – the first live animal in the world to receive a GI<sup>16</sup>. According to MPEDA, all freshwater ornamental fishes that occur in India are covered under this project, but the GC guidelines currently list only 103 species<sup>14</sup>; we believe that these are the primary targets for export promotion.

Of the 103 species listed in the GC guidelines, the percomorph fish *Pristolepis fasciata* does not occur in India and all previous records are misidentifications<sup>17,18</sup>, whereas the catfish *Erethistes serratus* is currently under the synonymy of *Hara hara*<sup>19</sup>, which is also listed separately. Three other species, *Polyacanthus sota*, *Puntius bizonatus* and *Labeo nigriscens*, are under the synonymy of *Trichogaster chuna*, *Pethia meingangbii*

and *Labeo calbasu* respectively<sup>20</sup>. Of the remaining list of 101 valid species, 43 are listed as 'threatened' (Critically Endangered; Endangered; Vulnerable), and another three are listed as 'Near Threatened' in the IUCN Red List of Threatened Species™ (Figure 1a). The assessment of 43 species under threatened categories is based on three major criteria, viz. population decline, small geographical distribution and small or restricted population (Figure 1b). Forty out of the 43 threatened species are also endemic to India, and for at least 16 threatened species, populations are known to be declining, while for the remaining species population status continues to remain unknown<sup>21</sup>.

Thirty-four species mentioned in the GC certification document have small geographical distribution<sup>14</sup>, while four species have small and restricted populations (Figure 1b). Promotion of such species for aquarium trade by prioritizing them for GC seems to be counter-intuitive to the conservation importance of these threatened species. It is also more alarming that 20 (out of 43) threatened species listed in the GC guidelines (Figure 1c) do not find a mention in recent studies on Indian aquarium fish trade<sup>10,22,23</sup>. This could imply that using the GC project, MPEDA is promoting the export of novel (threatened and endemic) species which are currently not in trade. Among the 20 species listed in the GC document that are not currently in trade is *Pethia pookodensis* (Critically Endangered according to the IUCN Red List), which is restricted to a single lake in the southern Western Ghats<sup>24</sup>, and *Lepidopygopsis typus*, a monotypic genus (Endangered in the IUCN Red List) occurring only in the Periyar Tiger Reserve<sup>25</sup>.

Six threatened species listed in the GC document<sup>14</sup>, viz. *Pethia pookodensis*, *P. manipurensis*, *Lepidopygopsis typus*, *Ghatsa montana*, *Schistura striata* and *Opsarius dogarsinghi* are also candidates for Alliance for Zero Extinction<sup>26</sup>, as they are highly threatened (Critically Endangered or Endangered) and their populations are found in only one



**Figure 1.** **a**, Distribution of species listed in the green certification guidelines among the IUCN Red List categories: CR, Critically Endangered; EN, Endangered; VU, Vulnerable; NT, Near Threatened; LC, Least Concern; DD, Data Deficient; and NE, Not Evaluated. **b**, Criteria used for assessing species under threatened categories: A, Population size reduction; B, Small geographic range and C, Very small or restricted population. **c**, Distribution of threatened species listed in the green certification guidelines and studies reporting export of ornamental fishes: C, Green certificate; R, Raghavan *et al.*; J, Jayalal and Ramachandran<sup>8</sup>; and S, Salim *et al.*<sup>9</sup>. Note that Venn diagrams are not to scale.

location or management site (see species-specific accounts in the IUCN Red List of Threatened Species™). Prioritising these highly threatened species for GC and trade would compromise the conservation efforts that they otherwise deserve.

Also prioritized for GC are threatened and charismatic species such as *Sahyadria chalakkudiensis* and *S. denisonii*, which are highly sought-after in the global aquarium fish trade<sup>10</sup>. Recent studies have shown that the populations of *S. chalakkudiensis* and *S. denisonii* comprise of distinct evolutionary lineages and therefore their trade promotion should be first preceded by detailed studies on the taxonomy, distribution and conservation implications of large-scale harvests<sup>27</sup>. Loss of genetic diversity within species as a result of unsustainable exploitation has received very little attention. But with the current understanding of the population genetics of *Sahyadria* barbs, it has become imperative that fisheries have to be managed with genetics in mind<sup>28</sup>. While seasonal bans on fishing are encouraged in the GC guidelines, basic research is lacking to determine the rationale and impacts of such bans, as evident from the discordant seasonal ban on the harvest of red-line torpedo barbs, *Sahyadria* spp.<sup>29</sup>.

Several statements in the GC document are also self-contradictory, in addition to challenging national legislations, including the Indian Wildlife Protection Act 1972 (WLPA) and Biological Diver-

sity Act (2002). The GC document suggests: 'Do not collect fish from sanctuaries, protected areas including sacred water bodies, fish breeding grounds and during breeding seasons. Sanctuaries, Protected areas and designated areas should be delineated. Commercial exploitation from reserve forests and forest areas should be strictly prohibited. Participatory support from the local communities will be essential for the implementation. Awareness programmes have to be developed for this purpose.' However, the list includes species such as *Lepidopygopsis typus*, the distribution of which is entirely restricted to a protected area<sup>25</sup> (National Park; IUCN Category II), defying the purpose of 'Protocols and Procedures section 1.3' listed in the GC document<sup>14</sup>. Further, listing a species found only inside a protected area and encouraging trade of the same is also a direct challenge to the regulations of the Indian WLPA. Prioritizing 43 threatened species (>40% of total) for GI tag and subsequent promotion for international trade also disregards Section 38 of the Biological Diversity Act (2002). It is clear that the GC document developed by MPEDA, contradicts and disregards environmental and conservation legislations developed by the Ministry of Environment, Forest and Climate Change.

Additionally, the GC guidelines are self-contradicting with regard to the Environmental Integrity section by stating the 'Alien species should not be released

to the natural water bodies', whereas the section on Import of Exotic Fishes refers to Annexure 13, which is nothing but a proforma for submitting proposals for introduction of live aquatic organisms.

Taking into account many of the inconsistencies, there is an urgent need to analyse the GC guidelines with reference to conservation of wild freshwater fish populations. High mortality rates of some threatened freshwater fishes that are wild-caught for the aquarium trade is a problem that may not be addressed solely through changes in collection methods.

The GC guidelines have been set up with the peripheral aim of ensuring sustainable harvest of freshwater fishes that are targeted for aquarium trade. However, to ensure sustainability and sustainable practices, several gaps in information such as: (i) clarifying taxonomic inconsistencies, (ii) recognition of threatened species, and (iii) distribution of information for species within and near protected areas, need to be addressed in detail before GC can be implemented. Further, transparency and accountability in export and import trade, and clear indication on how traders can financially afford to follow the guidelines, as well as implications of harvest on the conservation of wild populations require to be addressed systematically and scientifically.

Currently, there is no emphasis on minimum standards and knowledge required to obtain an export licence for a mere fee of Rs 5000. This can reflect in

substandard trade practices for freshwater fishes leaving India, be it in packing or quarantine methods. From the traders' point of view, GC seems to be an effort to organize the industry. It therefore seems to be a fair initiative also dealing with design of export facilities to prevent haphazard ones from coming up. However, there are certain steps where GC needs to make the trade really green, such as providing training to traders in harvesting, handling, and setting up small farms/quarantine facilities to ensure survival rates of more than 90% of the harvested stocks, since current harvest practices result in high mortality. Most importantly, GC should encourage research and development of captive breeding for the potential export species and ensure a mechanism by which the entire trade for a species shifts from wild collections to captive stocks within a period of five years.

Overall, the current GC guidelines have only very little constructive and positive suggestions and recommendations for the industry, the most important of which refers to the development of principles and systems in place for preventing introduction of exotic species. There is a need for more detailed science-based guidelines to be developed so that the species and trade can exist in perpetuity. Globally recognized guidelines for the sustainable exploitation and management of fishes for the aquarium trade on the lines of the FAO code of conduct for responsible fisheries are also urgently required.

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