



Zebra catfish

Hypancistrus zebra



Photo: A. Birger

Does not Meet CITES criteria

Current and historical habitat, population survey data and projections for the future status of the population of *Hypancistrus zebra* did not support an uplisting of *H. zebra* from CITES Appendix III to Appendix I.

The Expert Panel agreed that there were declines in sustainability metrics, and that these declines are due to the construction of the hydroelectric dam and resultant habitat loss and change, plus illegal trade in the species to supply live fish for the aquarium trade. However, the Expert Panel did not agree that the species was threatened with extinction and the Panel concluded that available scientific data and technical information of *H. zebra* do not meet the criteria for listing under Appendix I.

Claims of habitat disturbance in the proposal were inferred to link to population declines. However, no evidence was provided and no literature could be found to support the assumption that changes to the habitat due to placement of a hydroelectric dam cutting across the habitat of the species had markedly reduced the *H. zebra* population, or supported the projected 80 percent reduction of the species in the wild over the 2016–2026 period (or projections over the course of the next 10 years).

Members of the Expert Panel plus a CITES Secretariat observer and technical FAO staff talked with the senior author of a recent paper on the species (de Sousa *et al.*, 2021) and an authority on the river system (L.M. de Sousa, personal communication) and learned firsthand that about 33 percent of the historical habitat has been negatively altered by the dam, stating that water-flow change and flooding caused by the dam made them uncertain of the long-term viability of the endemic *H. zebra*.

The author confirmed the lack of quantifiable data giving anecdotal statements on the remaining status of *H. zebra* in the Xingu River system; a smaller remnant population remained upstream of the dam, while 66 percent of the previous habitat for the *H. zebra* population remains downstream of the dam. The downstream population was reported as “very large”, found in suitable rocky habitat with evidence of recent recruitment. The author had ongoing concern for illegal fishing of *H. zebra* because the water level is now low (making fishing easier).

An unknown number of fish are illegally collected in Brazil and smuggled into neighbouring countries, mainly Colombia. Information on illegal trade in the proposal presented “projected” availability of *H. zebra* reported by illegal traders, not current estimates of ongoing trade. CITES Appendix III listing of *H. zebra* by Brazil (established in 2017) was noted as effective in helping to reduce illegal trade and inform on numbers of fish in legal trade from aquaculture sources, and the arrests of traffickers in both Brazil and Colombia was also linked to listing of *H. zebra* in Appendix III.

The Expert Panel noted that most international trade in the species no longer comes from wild-caught *H. zebra* but is dominated by fish sourced from aquaculture facilities in Indonesia (but also breeding facilities in other countries in Asia, Europe and the United States of America). Aquaculture suppliers have both the capacity and infrastructure to increase *ex situ* breeding of the species to meet current and projected global demand.

H. zebra was classified as medium-high productivity, which bodes well for recovery of populations after short-term shocks. However, the Expert Panel stated that chronic human pressures as a result of the establishment of the hydroelectric dam will not be rectified solely by putting in further trade governance measures to make already illegal trade “more” illegal. What is needed are other opportunities that support fish in the water and legal and sustainable servicing of trade demand from aquaculture.

The Expert Panel suggests increasing national on-ground management measures to ensure the remaining *H. zebra* habitat is well managed. Increasing fishery compliance and water control management, especially around *H. zebra* habitat, much of which is already in protected areas, and stepping up international, regional and local support for aquaculture of the species. Continued support for legal and sustainable aquaculture production of *H. zebra* will continue to catalyse the transition of trade from wild captured individuals to trade in captive bred fish, which are preferred in ornamental fish markets.

Aquaculture suppliers assure the Expert Panel that they can satisfy increased global demand. Uplisting *H. zebra* from CITES Appendix III to Appendix I would negatively impact legal trade of *H. zebra* from these *ex situ* facilities and ornamental species enthusiasts that currently have *H. zebra* in their aquaria, with related socioeconomic repercussions. If aquaculture facilities no longer trade in *H. zebra* due to the burden of CITES provisions, this potentially could have unintended negative consequences on stocks of *H. zebra* in the wild.

Management

Since 2005, there has been a national ban on the collection, transportation and export of *H. zebra* from Brazil. Since 2017, Brazil included *H. zebra* in CITES Appendix III, which placed provisions on management and reporting of international trade of the species (both legal and practical controls). Despite the ban on the collection, transportation and exports for over 20 years and the Appendix III listing being in place over the past five years, there appears to be a lack of sustained enforcement on the prohibition of collection, transport and trade of the species in Brazil. Some enforcement actions have been taken between Brazil, Colombia and the United States of America, but illegal trade is ongoing because management control mechanisms are not always effective.

Trade

It has been speculated that 60 000–75 000 individuals are kept by fishkeepers worldwide. It is likely the total trade of *H. zebra* comes predominantly from aquaculture. Since 2017, legal trade of *H. zebra* is documented on the CITES database, but unreported trade is ongoing, so the data captured in the CITES trade database are likely an underestimate of the ongoing trade.

In the CITES trade database, to date, 83.3 percent of trades reported by importers are listed as source code “F” (captive bred), with smaller numbers of reported trades made under source codes “C” – five instances of specimens bred in captivity in accordance with Resolution Conf. 10.16 (Rev.); “W” – one instance of specimens reported as taken from the wild (likely an error as its movement of fish between Indonesia and the United States of America); “I” – two instances of confiscated or seized specimens; and one instance of “source unknown” (source code “U”).

The main exports are from aquaculture facilities in Indonesia, although captive bred commercial production facilities also exist in several other countries in Asia, Europe and North America. Indonesian breeders provided the Expert Panel reports that their production of F2 and F3 generation was approximately 9 000–12 000 fish annually over the past five years. Current industry data suggest that a single supplier from Indonesia alone already supplies the trade with over 10 000 fish a year. Given that this is not the only supplier of captive bred fish for the ornamental trade, it would seem that there is more than an adequate capacity to supply the current market with captive bred fish from culture facilities.

Likely effectiveness of an Appendix I listing for conservation of the species

A CITES uplisting from Appendix III to Appendix I could potentially assist in increasing compliance and understanding of trade. However, the export of wild-caught *H. zebra* would be unlikely to improve in Brazil, as exports from the country have already been banned for over 20 years but have struggled with compliance.

Changes to the aquatic habitat of *H. zebra* due to the Belo Monte Hydroelectric Power Plant cannot be influenced by a CITES uplisting, although increasing compliance over illegal trade of *H. zebra* by fishing would be beneficial to the species in its endemic habitat.

An Appendix I listing of *H. zebra* has the potential to halt or delay aquaculture facilities exports, as they would need to comply with necessary process steps required to comply with new CITES provisions for both production and trade. Certifications and export paperwork would need to be in place for trade of aquaculture products, or else legal exports of *H. zebra* are halted, or continues without proper CITES documentation (i.e. illegal trade). Such an event, even a delay for commercial facilities, would mean loss of investment and livelihoods and decline of this sector. This could also have unintended negative consequences for wild stocks if illegal fishing of these populations increased to fill the gap left if aquaculture facilities halt production and exports.

H. zebra has the ability to recover its numbers quickly after short-term shocks. However, chronic human pressures as a result of the establishment of the dam will not be rectified solely by putting in further governance measures to make already illegal trade “more” illegal. What is needed are other opportunities that support fish in the water and legal and sustainable servicing of trade demand, which aquaculture is doing.

The Expert Panel suggests increasing national on-ground management measures to ensure the remaining *H. zebra* habitat is well managed. Increasing fishery compliance and water control management, especially providing more scrutiny of imports of live fish from neighbouring countries with a history of exporting smuggled Brazilian fish and around improving *H. zebra* habitat that already exists in protected areas in Brazil, offers some solutions. Additionally, international, regional and local support for aquaculture of the species needs to be made to support legal and sustainable aquaculture production of *H. zebra* that will continue to catalyse the transition of trade from wild captured to captive bred individuals, fish preferred by the market, and which current suppliers assure the Expert Panel they can satisfy global demand.