

Climate resilience of fisheries – Is there a risk of collapse of fisheries resources of the Northern Brazilian Shelf marine ecoregion ?

Session 2 Report

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Recap

The session was a continuation of the previous day's session entitled *Impact of IUU fishing on northern Brazilian shelf marine eco-complex biodiversity and implications of climate change*.

A clear link was established between the **high levels of IUU and the status of all taxa explored**. Session 1 ended with an invitation for Session 2 with a focus on the **climate resilience of fisheries in the northern Brazilian and Guyanese maritime ecoregion**, with a particular emphasis on **Southern Red Snapper** and **Sciaenidae populations**.

An overview of the region's fisheries was provided, highlighting the **interconnectedness of fishery resources across the Guyana Shield**, which spans four nations.

Session general summary

Marine Species Conservation in French Guiana

The **Guianas marine ecosystem**, part of the larger North Guianas marine ecoregion and the North Brazilian continental shelf ecosystem, constitute systems of exceptional biodiversity. The regions possess **critical habitats for historically important fisheries and sources of protein and income for local coastal populations**. These previously systems are increasingly challenged by many **climate change drivers**.

These multinational fishing grounds (Guyana, Suriname, French Guiana, and the State of Amapa and Pará in Brazil) support important fisheries, two of which are of unusual economic importance, the **Southern Red Snapper** (*Lutjanus purpureus*) and the **Acoupa Weakfish** (*Cynoscion acoupa*). These two species are subject to **increasing fishing pressures**, including **Illegal, Unreported, and Unregulated (IUU)** fishing, which poses additional socio-economic challenges in all countries. When the impact of increasing climatic stressors on these resources is taken into consideration, the **cumulative effects** include highly imbalanced extraction and an accelerated loss of fishery and associated ecological resources.

Climate change effects can cascade and amplify negative population impacts, increasing the **vulnerability of already overfished populations**. Ocean heating, extreme weather, and ocean acidification also can affect the biology and distribution of species, degrade their habitats, and reduce their population resilience.

Beyond the direct impact of fishing on the target species, certain fisheries, notably the targeting of the Acoupa Weakfish and its swim bladder "(maw)" using drift gillnets, directly impacts several emblematic and protected species in the region, including several species of marine turtles, the Guiana dolphin (*Sotalia guianensis*), and sharks and rays. These fishing practices, and especially the unregulated IUU segment, weaken reproductive outputs and compromise the sustainability of local and regional fisheries.

Given the consensus on the critical situations these two species face in the region, this session addressed immediate needs for reinforced regional cooperation to integrate fisheries management measures for the conservation of critical areas and to adaptively integrate climate resilience principles into the management of marine resources on the Guianas continental shelf. It also addressed the need for regulation of international trade in fish maw to ensure it is sustainable and traceable.

Individual Presentation Summaries

Below is a brief description of the presentations given by the speakers and the major highlights of their presentations.

Red Snapper, *Lutjanus purpureus*

*Overview of the Red List assessment of the Southern Red Snapper, *Lutjanus purpureus*, with consideration of priority attributes for long term climate resilience.*



Beatrice Padovani-Ferreira, representing the IUCN Snapper, Seabream and Grunt Specialist Group, explained the **process and findings of Red List assessments for commercially important fish species**, with a focus on **Southern Red Snapper in the Guianas-Brazil region**. The group evaluates **species status** using available biological, fisheries, and management data, considering factors such as generation length and long-term reductions in estimated population sizes to assess conservation risk.

Southern Red Snapper is a **long-lived, high-value species** targeted by coastal fisheries. While it can be resilient under sustainable fishing, its life-history traits make it **vulnerable to overfishing**. Using **country-level data** (Brazil, French Guiana, Suriname, Guyana, Trinidad, Venezuela, Colombia), **population sizes and declines** were estimated based on **habitat area, stock distribution, and fishing pressure**. Despite data limitations, analyses indicate an **overall population decline of about 50%**, in the past and also projected in the future unless measures are taken, placing the species **near the IUCN Red List threshold for the Endangered category** (it is currently Vulnerable), with a risk of worsening IUU fishing trends. In Northern Brasil, **there are 150 registered red snapper boats but according to reports many others operate illegally**.

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Stock assessment models from Brazil and French Guiana suggest the species is slightly **overfished** and **exceeding maximum sustainable yield**. A major concern is the **widespread capture of smaller individuals, many before first maturity, due to market demand for plate size fish**, which undermines stock recovery. Fluctuations in catch and catch-per-unit-effort in French Guiana likely reflect **high juvenile exploitation due to market demands**.

Proposed and existing management measures include establishing a minimum size limit, **protecting spawning seasons, implementing a quota, improving enforcement, reducing IUU fishing, and implementing area-based management such as marine protected areas using fishers' knowledge**. **Spatial protection is particularly important** given larval connectivity and regional ocean currents, which can enhance stock recovery across national boundaries. Recommendations also include a increase in gear selectivity to reduce the mortality of juveniles

Climate change adds significant uncertainty and risk by potentially altering **species distributions, spawning timing, recruitment success, and ecosystem structure, and by increasing extreme multi-factor events such as marine heatwaves**. These changes may reduce the species' natural resilience and introduce more uncertainty into fisheries management decisions.

Beatrice Padovani-Ferreira emphasized the need to **move towards climate-resilient fisheries management that integrates ecological, socio-economic, and governance dimensions**. This approach requires inclusive, transparent, and cross-scale decision-making, better data collection, and stronger regional cooperation.

In conclusion, under a “business as usual” scenario, **red snapper declines are likely to continue, potentially leading to a higher threat classification on the IUCN Red List**. **Urgent implementation of agreed conservation and management measures strengthened regional collaboration, stakeholder inclusion (especially fishers), and climate-resilience planning are essential to prevent further deterioration of Southern Red Snapper populations**.



Acoupa Weakfish, *Cynocion acoupa* 2021 – Red List assessment update in 2026

Sciaenidae SSG and global representation and global large croaker populations declines/collapse profiles.



Seah Ying Giat (IUCN SSC Croaker and Drum Fishes Specialist Group's Member), reports that **global croaker and drum fish populations are experiencing rapid declines driven largely by intense exploitation for the high-value fish maw trade. Demand for large swim bladders** has escalated sharply, transforming several species into luxury commodities rather than food resources. This economic pressure has encouraged unsustainable fishing practices, including targeted harvesting of mature individuals, discarding of flesh, and illegal trade networks. Many fisheries operate with limited regulation, weak enforcement, and poor traceability, further exacerbating population collapse. **Alarmingly, several species now show restricted geographic ranges, low resilience, and declining recruitment, raising serious concerns over long-term viability.**

Despite **increasing extinction risk**, reliable population data for many croaker species remain **scarce**, hindering accurate assessments and timely management actions. **Mislabeled and reshaping of fish maws obscure true species identity**, complicating monitoring and consumer awareness. **Aquaculture has not sufficiently reduced pressure on wild stocks and may even stimulate further demand. Combined threats** such as habitat degradation, by-catch mortality, and pollution intensify the impact of overfishing. **Without stronger international collaboration, improved data collection, and urgent policy intervention, continued exploitation may push several commercially important croakers toward irreversible population collapse.**



The case for Acoupa Rouge in French Guiana



Fabien Blanchard, Director of Ifremer, French Guiana, explained **how overfishing is assessed using two main indicators: fishing mortality (F) and biomass (B)**. If the observed fishing mortality exceeds the maximum sustainable fishing rate, overfishing is occurring. If this situation continues, it can lead to stock collapse. Separately, if the biomass of a fish stock falls below the level needed for sustainability, the stock is considered overfished. These are two distinct but complementary indicators.

In French Guiana, **fish production has shown strong variability, with a noticeable decline over the last ten years**. Diagnostic indicators suggest that **fishing pressure**, particularly from foreign and illegal fishing, **is very high, estimated at between 0.7 and 3.3 times the level of local fishing according to a study produced in 2024 in partnership with the WWF and the French Guiana Fisheries Committee**. In some cases, foreign catches of Acoupa Rouge are up to 4 times higher than French catches.

When illegal fishing effort is included in the diagnostic, **the fishing trajectory shifts from sustainable to clearly unsustainable in the long term**. This confirms a situation of overfishing and a risk of collapse.

Historically, two **Cynocion species (Cynoscion acoupa and Cynoscion virescens)** were the main fish stocks captures in French Guiana, but **their abundance has declined significantly over the past 10 years**. They are no longer dominant, as production has dropped to levels similar to other species.

The main driver of this overexploitation is believed to be the **high-value trade in fish maw**. Studies conducted in French Guiana by **Siyu Lam** show that **high-quality fish maw can sell for over 115 Euros per kilogram, while the fish flesh itself sells for only about 3-4 Euros per kilogram**. This large price difference strongly incentivizes overfishing and illegal fishing.

Fabien Blanchard concludes that **economic incentives, especially the maw market, are a key cause of the current unsustainable exploitation of fish stocks**.

Global impact of croaker gillnet fisheries on megafauna, bycatch considerations for CITES and CMS



Sue Fisher (Senior Policy Advisor, Animal Welfare Institute) described **how increasing global demand for fish maw, and the resulting “gold-rush”, is causing a double crisis: over-exploitation of fish for their maw is not only harming target species, risking serious impacts to food security and coastal economies, the gillnets that are predominantly used pose a significant threat to marine megafauna susceptible to bycatch.** This includes species of **dolphins, porpoises, dugongs, marine turtles, sharks and rays** protected by the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) and the Convention on the Conservation of Migratory Species of Animals (CMS). In Suriname, Guyana and Brazil, fisheries for **Cynosium acoupa**, whose maw is now worth **almost 100 million Euros** annually, are bycatching 89 additional species. **Of these 25 are critically endangered, 28 are vulnerable and 21 are listed on the CITES and/or CMS appendices, including the Endangered *Sotalia guianensis*.**

The international community is responding to this emergency: **resolutions or strong of concern have been adopted recently by the European Parliament** (https://www.europarl.europa.eu/doceo/document/TA-10-2025-0255_EN.html), **IUCN** and the **International Whaling Commission IWC**, and a seeking collaboration between CMS, IWC, FAO and CITES is expected to be adopted at the next meeting of the **Conference of the Parties to CMS** (<https://www.cms.int/document/bycatch-and-other-fisheries-induced-mortality>). If croaker range states continue to fail to ensure that maw fisheries are sustainable and traceable, it is likely that CITES will list target species on its Appendices, regulating or even prohibiting international trade in maw. Range states will then risk compliance measures, which can include **trade sanctions**, if they do not adequately implement and enforce these listings. This is already the case for Mexico where the critically endangered *Phocoena sinus* is threatened with extinction as a result of illegal fishing for, and international trade in, *Totoaba macdonaldi*.

Cynoscion acoupa 2021 Red List assessment - update in 2026



Tony Nalovic (member of several IUCN Specialist Groups) examined the **declining status of large croaker species, particularly *Cynoscion acoupa*, across the Guyanese eco-complex**. He draws sobering parallels with past collapses of large sciaenids, such as the Chinese croaker, noting that swim bladder prices skyrocketed as the species became increasingly rare. In the United States, the **East Coast Red Drum (*Sciaenops ocellatus*) stock recovered rapidly from collapse only after a total fishing ban was implemented between 1981 and 1985**, highlighting that **recovery may require a complete cessation of fishing activity**.

In Brasil, French Guiana, Suriname, and Guyana, *Cynoscion acoupa* shows a sustained downward trend. **A 2021 IUCN assessment warned that without significant reductions in illegal, unreported, and unregulated (IUU) fishing the species is likely to be classified as Endangered by 2026.**

In Suriname and Guyana, a 2023 publication utilizing 2018 data shows that *Cynoscion acoupa* was already overfished seven years ago—the equivalent of one generation length for this species. **The study concluded that there was already a significant risk of potential long-term depletion.**

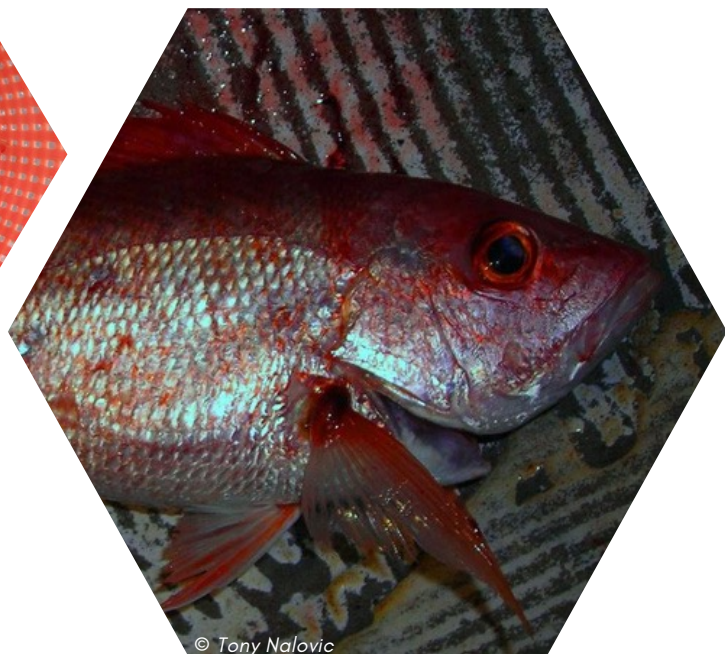
A 2024 study using local ecological knowledge reveals a **dramatic increase in fishing effort over the past 40 years in Suriname and Guyana**. According to **100 fishers surveyed, gillnet lengths have increased at least fourfold, while fishing trip durations have also quadrupled**. Consequently, the combined fishing effort per boat has risen eightfold. Simultaneously, catches have dropped by more than half. This implies that a boat would now need to exert twice as much effort with current gillnet length and **trip duration to catch the same volume as 40 years ago**. This is turn indicated that **exploitable biomass of targeted species may have fallen to about 1/16th of historical levels**—meeting the IUCN criteria for a population collapse at species levels

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In response to these trends, the Fisheries Committee of French Guiana, with support from the French Guiana Territorial Collectivity (CTG), developed a protocol in 2023 to rapidly **measure total gillnet length based on volume**. This can provide fishing authorities with an easy, rapid, and reliable method for inspecting the excessively long gillnets frequently reported in the region.

Additional indicators reinforce these concerns: **smaller mesh sizes, declining average fish size, decreasing total landings, and a large proportion of unlicensed (IUU) vessels, at the regional level**. Furthermore, environmental stressors, including extreme rainfall events in 2022, have disrupted larval recruitment. **This is evidenced by the total absence of *Cynoscion acoupa* larvae in one the 2023 IFREMER estuarine surveys.**

Taken together, worsening fishery indicators, high market demand for swim bladders, climate impacts, and previous scientific assessments point toward a high risk of imminent collapse if current practices continue. The IUCN Croaker Specialist Group concludes that "business as usual" is not viable and **calls for immediate regional cooperation involving politicians, fishers, scientists, governments, and industry to evaluate management options, including total closures if deemed necessary.**



Executive Conclusion

The North Brazilian and Guianas Marine Eco-Complex at a Critical Threshold

The proceedings of Session 2 at COP30 establish a definitive and sobering consensus: **iconic fisheries of the Northern Brazilian Shelf and Guianas eco-complex are facing a systemic threat of collapse.** The convergence of continued **high fishing pressure on snapper, escalating market demand for weakfish (Acoupa) swim bladders, and climate-driven environmental stressors** has created a perfect storm that endangers both regional food security and marine biodiversity.

1. Imminent Risk of Species Collapse

- **Red Snapper** : With population declines estimated at 50%, the species is nearing the "Endangered" threshold. The widespread capture of juveniles and a fleet of illegal vessels—nearly equal in size to the registered fleet—undermine any current recovery efforts.
- **Acoupa Weakfish** : This species is at high risk of imminent collapse. Comparisons with historical collapses of other large sciaenids (like the Chinese croaker) serve as a haunting precedent. Current fishing effort per boat is estimated to be 16 times higher than in the 1980s, while exploitable biomass may have plummeted to 1/16th of historical levels.

2. The "Gold Rush" Driver: The Fish Maw Trade

The primary driver of this crisis among some sciaenid species is the **high-value international trade in fish swim bladders (maw)**. The extreme price disparity—where bladders can fetch over €115/kg compared to €3/kg for the flesh—incentivizes illegal, unreported, and unregulated (IUU) fishing. This **economic "gold rush"** has rendered traditional management ineffective and encouraged the illegal use of massive drift gillnets that decimate not only the target species but also critically endangered marine megafauna (turtles, dolphins, and sharks).

This implicates all of the fisheries. The focus here is on two of over 100 fishery species.

3. Climate Change as a Threat Multiplier

The resilience of these stocks is being further eroded by various climate change drivers. Ocean heating and extreme weather events (such as the 2022 rainfall) have led to recruitment failure. **Evidence includes the total absence of *Acoupa* larvae in one recent research survey.** These unmitigated stressors amplify the impacts of overfishing, making "business as usual" a recipe for irreversible losses.

4. Call for Decisive Regional Action

The session concluded that the **current management frameworks are insufficient to counter the scale of IUU fishing and market-driven exploitation, particularly with the inevitability of a 1.5 Co post-Industrial temperature increase.** To prevent further degradation and collapse, the following actions are deemed crucial :

- **Reinforced Regional Cooperation:** Harmonizing management between Brazil, French Guiana, Suriname, and Guyana to address the interconnected nature of the stocks. At least annual joint meetings of the relevant parties can benefit all.
- **Strict Regulatory Enforcement:** Implementation of rapid inspection protocols (such as the volume-based gillnet measurement) across countries and a significant reduction in the IUU fleets.
- **Integration of Climate Resilience:** Moving beyond static quotas to management that accounts for and adapts to environmental instability
- **Adoption of listing proposals** to regulate international commercial trade for qualifying species at the next meeting of the Conference of the Parties (COP21)

Considering Total Closures: Especially for *Cynoscion acoupa* following the US model for Red Drum (*Sciaenops ocellatus*), authorities should be prepared to implement fishing closures and export bans if the science indicates a risk of collapse.



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Next Steps

Without an immediate shift in governance, the transition of these species from "Vulnerable" to "Endangered" is virtually certain, likely followed by a collapse of the regional fishery economy. The window for proactive intervention is closing; the time for regional, multi-national cooperation is now.



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