



The Unintended Consequences of the Yangtze River Fishing Ban: A Deep Dive into the Economy and Culture of Hongze Lake

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Abstract. This paper investigates the comprehensive effects of the Yangtze River's fishing ban policy on Hongze Lake's ecology, economy, and cultural heritage. We explore the policy's unintended ecological and socio-economic repercussions. Our analysis underscores the economic challenges faced by local fishing communities and the concurrent erosion of their cultural traditions. Ecologically, the ban presents a mixed outcome: it aids the recovery of specific fish species, enhancing ecosystem stability and conserving endangered species, yet it also inadvertently promotes harmful algal blooms through unchecked fish population growth and overconsumption of aquatic vegetation.

To safeguard the delicate balance between conservation objectives and the well-being of affected communities, a holistic and participatory approach to policy formulation is imperative. By acknowledging the socio-economic challenges faced by the fishing communities, policymakers can mitigate the detrimental consequences and protect the cultural heritage intertwined with local fishing practices.

The findings of this research contribute to a nuanced understanding of the complexities associated with fishing ban policies. Furthermore, the study provides valuable insights into the formulation and execution of future policies, highlighting the importance of comprehensive strategies that address ecological concerns while safeguarding the socio-economic and cultural fabric of affected communities.

Keywords: Fishing ban, Hongze lake, ecosystem, culture, economy

1 Introduction

The Yangtze River, as the largest river in China, possesses a unique ecosystem that supports a diverse range of biological resources, making it a prime example of the country's biodiversity. However, the ecological integrity of the Yangtze River has been severely compromised by intensive human activities, resulting in the significant degradation of its aquatic ecosystem. Rare and endemic fish species have experienced a substantial decline, while economically valuable fish populations have neared exhaustion.

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The unsustainable practice of competition-driven fishing, in which each household engages in individual fishing activities, has contributed to the tragedy of the common, exacerbating the rapid decline the Yangtze River's fishery resources. To address this issue, a fishing ban and fleet reduction measures were implemented in 2020 along the Yangtze River to alleviate the severe decline in fish stocks.^[1]

Hongze Lake, spanning approximately 757 square miles (1,960 square km), is situated in the downstream region of the Huai River in western Jiangsu province.^[2] Known for its abundant aquatic resources, the lake has been home to more than 8,000 professional fishermen for generations, who have relied on fishing as their primary means of subsistence. In addition, the lake supports a fishing-related population of nearly 200,000 individuals engaged in activities such as aquaculture, processing, and sales. Over the course of centuries, the communities residing along the shores of Hongze Lake have developed a way of life intimately connected to the water, heavily reliant on fishing for sustenance.

As a result of its ecological significance within the Yangtze River basin, Hongze Lake became subject to a comprehensive ban on commercial fishing activities in 2020, necessitating a significant transition for the fishermen who had to abandon their livelihoods and seek sources of income and employment. According to the Ministry of Agriculture's "Announcement on the List of Water and Aquatic Organism Conservation Areas in the Yangtze River Basin" (Ministry of Agriculture Announcement [2017] No. 6), a comprehensive ban on fishing will be gradually implemented in 2018 for six national-level aquatic germplasm resource protection areas in Hongze Lake, including the Qingxia River Clam, Silver Fish, Beautiful White Shrimp, Shrimp, Mandarin Fish, and Yellowthroat Fish. The core zones of these protection areas will be the first to impose a year-round fishing ban. The purposes of the fishing ban along the Yangtze River were primarily to protect and rejuvenate the aquatic ecosystem and preserve biodiversity. Overfishing and habitat destruction had significantly depleted fish populations and disrupted the delicate balance of the river's ecosystem. The ban aimed to provide a conducive space for the normal reproduction and growth of aquatic organisms, ensuring the continuous recovery and development of fishery resources.^[3]

Many fishermen have been living on fishing boats for generations, relying solely on fishing as their livelihood. However, they face several challenges such as limited exposure to alternative job opportunities and a lack of basic job skills beyond fishing. As a result, they experience weak social integration and often face issues related to their livelihoods. On one hand, fishermen are a vulnerable group, with limited social involvement leading to low public attention and insufficient understanding of their true living conditions. On the other hand, there are problems with the management system, as livelihood security, medical insurance, pension, and children's education of fishermen are all managed locally, sometimes resulting in blind spots and separation between households and actual places of residence.^[4] Especially for professional fishermen in Hongze Lake, who live on their boats and depend solely on fishing for their living, the enforcement of fishing bans has left them with no alternative sources of livelihood, leading many to fall into poverty.

During the interview with Fisherman A, he emphasized the direct economic impact of this policy and the difficulties faced by the fishermen. "The government provided

subsidies for three years, but there have been no more subsidies since the ban took effect four years ago. And as we are entering a post-pandemic era, we had to find alternative ways to make a living. Before the fishing ban, I earned 300,000 yuan per year. Now, I can only find temporary work that pays 150 yuan per day due to my lack of education. Only individuals over 60 years old receive a daily subsidy of 700 yuan, leaving out those in their 50s who don't meet the age requirement, and most are uneducated. Moreover, the government devalued our assets, forcing us to sell fishing tools and our fishes for much less than their original value. Fish farming is also prohibited, despite the government's claim of poor water quality in fishponds. Yet that is so not true, because we have tested that the water quality in fishponds is actually better than that in the lake. At the same time, he mentioned that the ban also hinders the local tourism. The interviewee said, "now, as we cannot catch fish, the fish are growing bigger, thus consuming more food. Most of the lotus flowers in our ponds have been eaten by the large fish. Many tourists used to come to Laozi Mountain to see the beautiful lotus pond, and experience the local fish cuisine, but now, due to the fishing ban, tourists can't enjoy fresh fish caught locally. Many unique tourist activities have disappeared, and the tourism industry has collapsed. The local economy is now in severe decline."

In another interview with Fisherman B, she focused on the impact of this policy on the fishing culture. Fisherman B stated that the fishing ban has resulted in the loss of valuable skills and knowledge that have been passed down through generations. She pointed out that fishing not only provided a livelihood for the fishermen but also maintained a unique fishing culture. However, the fishing ban restricts the opportunities for fishing and fish farming, leading to the alienation and decline of this traditional culture. The interviewee told me, "This generation of fishermen may be the last. Our children, affected by the policy, are mostly giving up fishing and rarely have the skills to fish like us. Many aspects of fishing culture are at risk of being lost." She also mentioned that the famous lotus pond and aquatic plants have been damaged by uncontrolled fish populations, further weakening the connection between the local unique fishing culture and the landscape: "As time goes by, even traditional fishing-related festivals that passed down through generations may gradually disappear, and our great grandchildren may stand in front of a fishing temple without recognizing the fish god. Isn't it terrifying?" She also spoke from a female perspective, said, "On the boats, if a woman has her period, she can take a day off. But now, the government has established fishing companies and employs fishermen, paying them wages. If a woman has her period, she has to go fishing in the lake, even if she feels uncomfortable."

The discrepancy between the benevolent intentions underlying environmental policy and the actual outcomes highlights the intricate nature of both policy formation and implementation processes. This incongruence serves as a compelling impetus for me to investigate the historical antecedents and sociocultural origins that shape the contextual framework of these policies. The idealized aims of environmental policies frequently stand in contrast to the practical challenges encountered during their implementation. This divergence suggests a complex interplay of factors that include but are not limited to, legal frameworks, socioeconomic conditions, political will, and stakeholder inter-

ests.^[5] Therefore, understanding this complexity necessitates an interdisciplinary approach that delves into the historical and social milieu from which these policies emerge.

Historical background offers critical insights into the evolution of values, beliefs, and societal needs that have influenced the orientation and objectives of environmental policies. Examining past policies, regulatory shifts, and public discourses can provide a longitudinal perspective on how prevailing attitudes and scientific understanding have shaped policy over time. Similarly, understanding the sociocultural origins of policy contexts is crucial. This involves studying the influence of social structures, cultural norms, and community engagements in shaping policy objectives and strategies. Social factors like public awareness, activism, and institutional capacity play a substantial role in determining the success or failure of environmental policies.^[6] Therefore, a comprehensive understanding of the complexities associated with environmental policy-making and implementation requires an in-depth investigation into their historical roots and social frameworks. By examining these aspects in the following sections, I glean valuable insights into why policies may fail to achieve their intended outcomes and how they can be better structured for effective implementation.

2 Ecological Reverberations: A Double-Edged Sword

Historically, overfishing had been detrimental to the Yangtze's biodiversity, endangering various species and disrupting the ecological equilibrium. The ban, in many ways, did accomplish its goal by leading to a revival of certain fish populations.^[7] However, this regeneration was not without its problems. In Hongze Lake, an unexpected surge in fish populations began to manifest new ecological challenges. Water plants and lotus flowers, integral to maintaining the lake's ecological balance, were consumed at alarming rates. This overconsumption then led to the rampant growth of cyanobacteria, notorious for creating harmful algal blooms, which further deteriorated water quality and affected the health of other aquatic species.

The ban on fishing in the Yangtze River did successfully address the issue of overfishing caused by fishermen. The system of banning fishing and sealing off the lake has played a positive role in ensuring ecological restoration, biodiversity conservation, and sustainable fishing practices. First, compared to 2020, the number of fish species has increased from 48 to 52, with an overall increase in size by 67.2% and a 145.8% increase in resource density.^[8] By prohibiting fishing activities, the ban helped in allowing fish populations to replenish and recover. This has positive implications for the ecological health of the river and its surrounding areas. This has helped to preserve and maintain the diverse array of species that rely on the river for their survival. The revival of fish populations in the Yangtze River has led to the restoration of a more balanced ecosystem. It has allowed for the resurgence of certain species that were previously at risk of extinction. This not only benefits the fish themselves but also contributes to the overall biodiversity and functioning of the river ecosystem.

Secondly, the implementation of a fishing ban has had pronounced ecological implications, specifically in the context of ichthyofaunal biodiversity and the conservation

of aquatic ecosystems. Multiple fish species, encompassing those that are classified as endangered or vulnerable, have experienced a favorable shift in their population dynamics owing to the cessation of fishing activities. This regulatory measure has effectively provided these species with a sanctuary conducive to natural reproductive cycles and growth, thus bolstering the potential for their long-term survival. The recuperation of fish populations does not merely signify a triumph in species-specific conservation but also contributes to the broader ecological integrity of the river system. Higher diversity among fish species fosters greater resilience within the ecosystem, enabling it to better withstand environmental stressors such as pollution, habitat degradation, and climate change.

Moreover, the augmentation in fish biodiversity has a cascading effect on the overall aquatic ecosystem, influencing other trophic levels and ecological processes. For instance, a robust fish population can act as a biological control agent for certain aquatic pests and algae, thus maintaining a balanced ecological network. Additionally, fish serve as a vital food source for a variety of predators, including birds and larger aquatic creatures, reinforcing the interconnectedness of the ecosystem.

Thirdly, the imposition of the fishing ban on the Yangtze River presents a strategic opening for the incorporation of sustainable fishing methodologies into the regional fisheries management paradigm. The heightened regulatory environment, marked by stringent laws and enhanced monitoring mechanisms, has set the stage for a more controlled and accountable utilization of the river's aquatic resources. In the immediate term, the ban serves as a protective measure for critical spawning and nursery habitats, areas that are indispensable for the maintenance of healthy fish populations. By shielding these ecological zones from the negative impacts of overfishing and habitat disruption, the ban effectively safeguards the river's biological productivity.^[9] Moreover, this period of prohibition allows for the natural replenishment of fish stocks, creating a more resilient foundation upon which sustainable fishing practices can subsequently be instituted.

From a governance perspective, stricter regulations also facilitate the adoption of responsible fishing practices such as quota systems, seasonal fishing calendars, and gear restrictions. These measures, guided by scientific research and population assessments, aim to align human activities with the river's ecological carrying capacity. By doing so, they help to ensure that fishing does not surpass a level at which fish populations cannot naturally regenerate, thereby promoting long-term ecological sustainability. Furthermore, the introduction of enhanced monitoring mechanisms, potentially incorporating technologies like satellite tracking and electronic reporting, serves a dual purpose. It not only ensures compliance with established regulations but also furnishes real-time data that can be used for adaptive management. This ongoing accumulation of empirical evidence enables policy adjustments in response to changing ecological conditions, making the management framework both responsive and dynamic.

Undoubtedly, the prohibition of fishing activities in the Yangtze River introduces its own set of ecological challenges, most notably stemming from the unchecked proliferation of fish populations that may exceed the ecosystem's carrying capacity. While abundant fish populations may superficially appear beneficial for lake ecosystems,

these ecosystems are inherently vulnerable and possess limited capacities for resource utilization.

From the standpoint of ecological equilibrium, an overpopulation of fish species can trigger adverse feedback mechanisms within the ecosystem. Should the reproductive and growth rates of fish populations surpass the lake's carrying capacity, rapid mortality events are likely to occur. The decomposition of these excessive fish carcasses necessitates a significant consumption of dissolved oxygen, thereby posing an acute threat to both aquatic flora and fauna. Such an event not only degrades water quality but also contributes to organic sediment accumulation on the lakebed, hastening the process of marshland succession and increasing the risk of the lake's eventual extinction.

Regarding the conservation of biodiversity, it is imperative to recognize that high fish populations are a necessary but insufficient condition for ecological health. The concept of species diversity serves as a more nuanced indicator of ecosystem vitality. In scenarios where particular fish species—such as silver carp, bighead carp, and short-lived species like *Odontobutids* *obscura* and icefish—exhibit rapid growth and life cycles, they may disproportionately monopolize available resources. This results in ecological pressure on less dominant species, restricting their growth and reproductive capabilities. Consequently, the ecosystem may experience a skew towards these dominant species, engendering conditions for ecological imbalance or even systemic collapse.

Therefore, while the fishing ban serves numerous conservation goals, it is not without its complexities and potential pitfalls. These challenges call for a multifaceted approach to fisheries management, incorporating continuous monitoring and adaptive strategies to mitigate the risk of ecological imbalances and to sustain the intricate dynamics of the Yangtze River's aquatic ecosystems.

3 Socio-Economic Consequences of Fishing Ban

The ramifications of the year-round fishing ban on Hongze Lake extend beyond ecological considerations to significantly impact the socio-economic and cultural fabric of local fishing communities. What was once a profitable and culturally significant occupation, integral to community identity, has been dramatically transformed, leaving a host of challenges in its wake.

First, the ban has precipitated a decline in the transmission of traditional fishing knowledge, customs, and practices, thereby undermining the community's cultural heritage. For instance, in Laozi Village, the lake was not merely a source of income but also a reservoir of collective memory, tradition, and identity. Fishing boats, once symbols of pride and belonging, have been rendered obsolete, and their absence marks a disheartening erosion of cultural integrity. The emotional toll of this transition is palpable, epitomized by scenes of fishermen mourning the loss of their once vibrant livelihoods on the barren shores. Second, the ban has imposed considerable economic hardship on fishermen who have specialized skill sets but limited formal education, constraining their employment opportunities to low-paying, manual labor roles. These precarious employment conditions have led to income instability, further marginalizing an already vulnerable population. Third, the inability to generate income from fishing has

led to a deterioration in the living standards of affected communities. Although government subsidies are available for elderly citizens, comprehensive financial support for other age groups is conspicuously lacking. Consequently, families are struggling to meet basic needs, significantly impairing their quality of life. Fourth, the stringent fishing restrictions may inadvertently encourage illicit fishing activities, including poaching and unregulated fishing. Such activities not only compromise the conservation objectives of the ban but also risk further depletion of already vulnerable fish populations. Finally, the absence of fishing activities may also have repercussions for regional food security. Reduced availability of local fish could escalate the prices of alternative protein sources, engendering a potential risk of food shortages within the community.

In summary, the year-round fishing ban, while serving critical ecological objectives, has concurrently resulted in a range of socio-economic and cultural repercussions. These include the erosion of cultural heritage, economic decline, reduced living standards, a surge in illegal fishing activities, and the potential for regional food scarcity. It is incumbent upon government and relevant stakeholders to adopt a multi-dimensional approach that addresses these pressing concerns, concurrently balancing ecological conservation with the socio-cultural and economic well-being of the affected communities.

Beyond its significant environmental implications, the prohibition on fishing in the Yangtze River offers multiple dimensions of benefits. These advantages range from fostering scientific inquiry to enhancing public awareness and education on environmental conservation.

Firstly, the fishing ban serves as a critical platform for scientific research. The absence of fishing pressure permits researchers to conduct longitudinal studies on the recuperation trajectories of fish populations and broader ecosystem changes. This monitoring extends to the evaluation of fish abundance, spatial distribution, and species diversity over time. Such empirical data can provide invaluable insights into how aquatic populations respond to reduced human intervention, thereby informing fisheries management and conservation strategies. Additionally, the ban enables a comprehensive analysis of the impact of environmental variables on both fish populations and the aquatic ecosystem. Researchers can examine how factors such as water quality, temperature fluctuations, habitat degradation, and pollution affect the overall health and resilience of aquatic life. These studies not only enrich our understanding of the Yangtze River's ecological dynamics but also underscore the importance of its preservation. Secondly, the ban has considerable educational and public awareness implications. Promoting the objectives and accomplishments of the ban helps to deepen societal understanding of the value of natural resources and the imperative to protect them. Through educational campaigns, outreach programs, and targeted initiatives, the prohibition facilitates the dissemination of knowledge about the Yangtze River's ecological richness and the urgent need for its conservation. Furthermore, the ban provides a platform to accentuate the cultural importance of the river, fostering a sense of pride and stewardship within local communities. As a result of increased environmental awareness, individuals are more likely to engage in conservation activities. This heightened engagement may manifest as support for sustainable practices, participation in citizen science endeavors, or involvement in community-based conservation projects.

In conclusion, the prohibition on fishing in the Yangtze River offers an integrative model for both scientific research and public education. The multi-faceted benefits contribute not only to immediate conservation objectives but also to the long-term behavioral transformation required for the collective commitment to preserving the Yangtze River and its diverse ecosystems for future generations.

4 The Need for a Holistic Approach

The aftermath of the fishing ban in Hongze Lake has prompted a critical examination of policy-making practices. This episode has brought to the forefront the question of whether policies can adhere to a universal, one-size-fits-all approach, particularly when dealing with communities that are culturally diverse and deeply entrenched in their traditional practices. This inquiry yields a definitive answer, one underscored by the Hongze Lake situation - a resounding negative. A more prudent approach might have involved the implementation of staggered fishing quotas or seasons. Alternatively, the government could have initiated re-skilling programs designed to facilitate the transition of fishermen into alternative careers, all the while safeguarding their dignity and cultural heritage.

This prevailing scenario underscores the pressing need for a more comprehensive and consultative approach to policy development. It is imperative to actively engage with affected communities, gain a profound understanding of their concerns, and incorporate their perspectives into policy formulation. Collaborative policy-making, as evidenced, not only guarantees the preservation of ecosystems but also serves to protect the well-being and cultural heritage of these communities.

To effectively address these concerns, forthcoming policies and strategies should center on the following focal points: First, livelihood assistance and social security measures should be fortified by the government to ensure that fishermen encounter minimal difficulties during their transition away from their traditional occupation. This could encompass temporary financial support, employment subsidies, and an expansive social welfare infrastructure. Second, it is paramount for relevant government agencies and institutions to provide comprehensive skills training that facilitates a seamless transition for fishermen into new vocations and employment opportunities. This training could encompass diverse areas, including aquaculture techniques, business management, and skills pertinent to fishery tourism. Third, the preservation of Hongze Lake's ecological balance necessitates the implementation of policies that restrict the scale of fishing activities and establish periodic fishing bans. These measures are crucial for safeguarding fishery resources and ensuring their sustainable utilization. Finally, the government can play a pivotal role in promoting the artificial propagation of fish species in Hongze Lake through breeding and releasing activities. This endeavor would augment the quantity of fishery resources and enhance the long-term sustainability of fishing in the region.

The implementation of these policies and measures is not only poised to facilitate a smooth transition for fishermen but also to guarantee the preservation and development

of fishery resources in Hongze Lake, thus fostering sustainable progress within the fishing industry. Nevertheless, challenges loom on the path to implementing these policies. These challenges encompass three key areas. Firstly, adequate financial resources are imperative to support livelihood assistance, social security, and skills training programs for fishermen. The deficiency of financial means could potentially hinder the effective implementation of these measures. Secondly, the successful execution of policies requires seamless coordination among various government entities, relevant institutions, and local communities. The intricacies of strengthening institutional cooperation and collaboration may pose substantial challenges. Lastly, regular monitoring and evaluation of policies and measures are indispensable to assess their effectiveness and make necessary adjustments. However, the establishment of a robust monitoring and evaluation system may encounter logistical hurdles. To address these challenges effectively, proactive efforts from the government, relevant institutions, and all stakeholders involved are essential. Open channels of communication, active stakeholder engagement, and adaptable approaches are pivotal for ensuring the enduring success of these policies and measures.

5 Conclusion

In 2023, Japan's resolution to discharge radioactively contaminated water from the Fukushima Daiichi nuclear power plant into the ocean has engendered significant apprehensions among domestic constituencies, international environmental organizations, and adjacent nations. This pressing ecological crisis serves as a renewed admonition of the imperative for judicious water governance and policy formulation. In conclusion, the predicament faced by Hongze Lake serves as a poignant reminder of the intricate challenges that characterize environmental policy-making. While the noble intention of preservation and protection underpins these policies, the intricate web of their implementation often yields unforeseen consequences, disproportionately affecting those they are designed to safeguard.

Looking ahead, it is imperative that future policies take a holistic approach, seamlessly blending environmental science with a deep understanding of socio-cultural dynamics. This synergy will ensure that as we navigate the path towards ecological restoration, we do not inadvertently forsake the very essence of human communities – their cherished traditions, identities, and means of livelihood.

In this juncture where conservation and cultural preservation intersect, the lesson derived from the Hongze Lake saga is resoundingly clear: The objective transcends mere preservation of ecosystems; it extends to safeguarding the vibrant pulse of communities that thrive harmoniously within these natural landscapes.

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