

Organic Aquaculture in Ecuador: A More Sustainable Solution?

by Laura Cuoco, MEdSc 2005

Introduction

For hundreds of years, local fishermen in Ecuador sustainably farmed coastal waters surrounding mangrove forests for shrimp and other harvestable marine organisms (Macintosh and Zisman 1999). In the 1970s, several Ecuadorian companies and individuals took advantage of the presence of shrimp in these waters to construct artificial shrimp ponds for higher production for export (Olsen, Robadue, and Arriaga 1995). The 1980s witnessed a marked increase in the production and consumption of shrimp worldwide. Concomitant with the growth of the aquaculture industry in Ecuador was massive deforestation of mangroves to provide space for artificial ponds. While aquaculture provided great economic benefit to shrimp farm owners, the negative consequences to local communities and estuarine environments have been devastating.

One system introduced in Ecuador in the late 1990s as a more sustainable alternative to modern shrimp farming was organic aquaculture.¹ In 1999, the first worldwide standards for the certification of organic shrimp aquaculture were established by Naturland, a non-profit German association (Naturland 2003). While organic aquaculture may appear to be an innovative solution, it has not been accepted

wholeheartedly by all actors. Several environmental NGOs in Ecuador, as well as in other countries, have spearheaded a movement against Naturland's certification process. The reason for this opposition is two-fold. First, the actual standards are contentious: they are not in compliance with national legislation, they do not account for all stakeholders, and they are not fully implemented and enforced per Naturland's own guidelines (Cisneros and Salgado 2004). Second, there is a greater concern that organic certification is legitimizing aquaculture without solving the problems inherent to shrimp farming, and that it is detracting from the integrity of the organic label (Cisneros and Salgado 2004). This article uses research findings from first-hand interviews and document review to explore the organic aquaculture controversy in Ecuador.²

Background

As late as the 1970s, mangroves were thought of as swampy wastelands (Mitsch and Gosselink 1993). Now, however, mangrove forests are touted as one of the most productive ecosystems in the world, providing myriad benefits to humans and the environment. Ecologically, mangroves help stabilize coastlines, preventing erosion and acting as a buffer during major storms; they harbor a wide diversity of wildlife (Hogarth 1999); and they serve to filter out nutrients that are potentially harmful to coastal waters (Twilley et al. 1998). Local communities worldwide have long sustained their livelihoods through utilization of the many services that mangrove ecosystems provide (Hogarth 1999).³

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The life cycle of shrimp is closely tied to mangroves. Post-larval shrimp migrate, or are carried, to estuaries, where they are protected from predators and provided with nutrients from waters surrounding mangroves throughout their juvenile stage, before reentering the open sea to mate and spawn (Hogarth 1999). The geographic distribution of the species that is commercially fished or cultivated closely follows the distribution of mangroves (ibid.). For this reason, the construction of shrimp ponds has been predominantly in mangrove ecosystems. However, farm owners unaware of the importance of these forests for shrimp habitat cut mangroves for pond construction. Mangroves in Ecuador suffered tremendously from deforestation during the 1980s as a response to the global increase in shrimp consumption.⁴ By 1999, as much as 50% of Ecuador's mangrove forests were deforested (A.E. 2003); in some areas with a high concentration of shrimp ponds, losses were closer to 90%.

Effects of modern shrimp farming

The effects of mangrove deforestation on the environment and local communities have been substantial. The majority of shrimp farms are not locally owned but were created by outsiders who illegally cleared mangroves. This deforestation has threatened the livelihoods of those who depend on mangroves for resources, deteriorating their health and causing an increase in emigration rates (A.E. 2003).⁵ Those who remain are frequently denied access to the surviving mangroves if new farms were constructed between their lands and the forests. Many people who were offered employment were poorly paid, suffered less than adequate working conditions, and were only hired on a temporary basis, often losing their jobs to outsiders brought in to replace them (Hagler 1997).⁶

The biological, chemical, and physical impacts of large-scale shrimp farms are also substantial. Salinity and acidity of surrounding waters have increased while productivity has declined, and contamination of waters has resulted in the die-off of some marine species. The loss

of mangroves has exaggerated coastal erosion, causing a loss of protection from El Niño events; increased sedimentation of waters; and elevated the potential for pathogen outbreaks in shrimp populations (Boyd and Green 2002).⁷

The socioeconomic and environmental inequities surrounding aquaculture in Ecuador are so contentious that violence has occurred in the last decade (A.E. 2003). Various environmental NGOs, national and international, have now joined forces with communities to support their struggle to prevent any further deforestation and encourage reforestation efforts, to regain access to existing mangroves, and to rid the coastline of illegal farms.

Organic farming

In the late 1990s, in response to the negative environmental and social consequences of modern farming methods, the world's first organic shrimp farm was created in Ecuador.⁸ Naturland's subsequent standards for organic shrimp aquaculture are based on the following principles: the absence of chemicals, limited stocking density, strict environmental monitoring, and protection of the surrounding environment (Naturland 2002).⁹ As of May 2004, there exist six certified farms and four packing plants and laboratories where larvae are raised by organic standards (Cisneros and Salgado 2004).¹⁰

Critique of Naturland

While some environmental organizations accept organic aquaculture and, more specifically, the standards set forth by Naturland, other NGOs have questioned various facets of these guidelines. Acción Ecológica and C-CONDEM, both environmental organizations based in Ecuador, have recently been in communication with Naturland via public letters, addressing their concerns with the certification procedure and the consequences of organic aquaculture.¹¹ Their critiques are discussed below, based on the aforementioned

correspondence, Naturland's guidelines, and Ecuadoran law.

Specific concerns with standards

The specific concerns that environmental NGOs have with Naturland's standards are in regards to water quality and the lack of enforcement of organic label guidelines. Naturland has counted the improvement of water quality in pond effluent as a success, based on the elimination of chemical inputs into organic farm systems (Bergleiter 2003). However, this is misleading. Most farm owners have not utilized any chemicals since 1999, when an outbreak of White Spot Syndrome Virus wiped out shrimp stocks (McClennen 2004). This was a turning point when aquaculture farmers began to understand the negative effects of chemicals inputs (*ibid.*).¹² The reduction of chemicals, therefore, is not due to the inception of organic aquaculture. Moreover, chemicals are not the only problem; organic farms still expel nutrients and organic wastes, which contribute to the eutrophication of surrounding waters. Standards specify that effluent water quality must be monitored on a monthly basis (Standard IID2.1; see Naturland 2002 for complete standards). Farm owners, however, state that because they are not using chemicals anymore, they do not see the need to test or treat waters before discharging them, claiming that excess nutrients and feed wastes are consumed by other fish (Cisneros and Salgado 2004).

Another critique is that standards do not require owners to convert all of their ponds to organic ones. Naturland standards also serve as guidelines for organic agriculture, but while the agricultural standards specify that the entire farm area must be converted within five years to maintain its organic status (Standard I8), critics argue that no such standard is in place for organic aquaculture. Observers note that two owners are operating both organic and non-organic ponds on their properties

with no plans for total conversion within the next five years (Cisneros and Salgado 2004).¹³

The issue of access to existing mangroves is also contentious. Naturland's standards state that locals are to be permitted free access to open waters around the ponds (Standard IID10.3), but community members attest that this access has not been implemented (Cisneros and Salgado 2004). One farm owner states that he gave colored shirts to residents to wear for easy identification when entering his farm, yet locals say this is not true.¹⁴ Another owner situated beehives near the community entrance to deter locals from entering. In yet another case, canals created by the state for neighboring families were closed off from access (Cisneros and Salgado 2004).

General concerns with standards

General concerns are raised by procedural issues related to stakeholder information access and involvement. Though Naturland's certification process was established over five years ago, standards were published solely in English until May 2004, thereby limiting Ecuadorans' abilities to be fully informed about the certification process (Cisneros and Salgado 2004). Furthermore, Naturland emphasizes the involvement and support of public institutions, scientists, environmental NGOs, technical experts, and relevant stakeholders in the development of standards. However, the only locals involved in the development process were the farmers who later received certification, while those stakeholders who have been negatively impacted by aquaculture were left out entirely.¹⁵ Other environmental NGOs, including the ones who have been criticizing Naturland, were not invited to certification meetings either.¹⁶ Perhaps in response to the negative backlash on this front, Naturland has continued to encourage participation in the form of comments and critiques from all affected stakeholders and organizations. Naturland's responses, however, often do not address the issues presented nor do they appear to be fully aware of what is actually occurring on the ground.

Mangrove Restoration Project
on Isla Corazon, Manabi
Province, Ecuador.
Photograph by Laura Cuoco.



Legislation

Another focus of criticism relates to conflicts between Naturland's standards and Ecuadoran law. Legislation and governing bodies have existed in Ecuador since the 1970s to protect mangroves from deforestation caused by the installation of shrimp ponds (Hemphill, n.d.); however, enforcement has not occurred.¹⁷ Naturland allows farms that were constructed before 1994 to be considered for certification, essentially ignoring the previous twenty years of legislation that outlaw the removal of mangroves (Standard IIID1.2; Cisneros and Salgado 2004).¹⁸ Interestingly, all the farm owners who participated in the meetings to draft standards began their farms prior to this year.¹⁹ Additionally, representatives of Naturland appear not to have known how the legal process, with respect to aquaculture, functions in Ecuador, nor did they know which laws should be considered when forming their standards (Cisneros and Salgado 2004).²⁰ They are also accused of not verifying whether certified farms are on old mangrove lands or not, basing their knowledge solely on farm owners' testimonies (Cisneros and Salgado 2004).²¹ Environmental impact assessments have also not been carried out to the full extent of the law before determining the legality of shrimp farms. Further, there is no set process to verify compliance with labor laws, which some farm workers state have not been implemented

(Cisneros and Salgado 2004).

Reforestation efforts are another contentious legal point. Section IIID1.2 of the Naturland standards states that "the former mangrove area in property of the farm shall be reforested to at least 50%" (Naturland 2002). Ecuadoran law, however, requires more than 50% reforestation (Cisneros and Salgado 2004). The manner of reforestation is also problematic. According to Naturland, mangroves are to be planted on dikes and canals. This is not a viable solution to the problem of deforestation since reforested areas are a non-continuous, fragmented line of trees.

Naturland's response to the legality of their standards and the lack of adherence to Ecuadoran law is that "certification initiative is an activity under private law; therefore it is not meant to replace or resemble national legislation" (Bergleiter 2004a). They acknowledge the need to integrate aspects of national legislation in their standards, but claim not to be accountable to the fullest extent of established Ecuadoran laws (Bergleiter 2004a).

Evaluating the Potential Benefits of Organic Shrimp Farming

There are several economic benefits that have been attributed to organic aquaculture by

various environmental NGOs, including an increase in employment and a reduction in costs as the market opens up for organic shrimp (Cisneros and Salgado 2004).

An increase in production may provide more jobs for outsiders, but it is not likely to increase the local employment base, as evidenced in the situation of non-organic farms. For some time, locals were able to earn money by gathering larvae from wild stocks and selling them to laboratories; however, sources are depleted and the organic label requires that larvae be raised in labs (Standard IIID3.2). Another issue not considered by Naturland is the extreme difference in employment figures when comparing earnings on a shrimp farm with that of an equal area of mangroves. One such comparison states that one hectare of mangroves feeds ten families, while one hundred hectares of pools employs one family (Cisneros and Salgado 2004).

A reduction in costs resulting from the elimination of chemical products in fertilizers, feed, and antibiotics has occurred on most farms, not just organic ones.²² Other savings are in cheap labor and fewer environmental restrictions, common to many products produced in the developing world; however, these economic costs do not include ecological and societal costs. The harm done to the environment in terms of mangrove destruction, eroded coastlines, or diminished marine life is not accounted for, nor are the costs carried by local communities in the loss of jobs, food, or raw materials (Cisneros and Salgado 2004).

Finally, proponents suggest that organic aquaculture increases access to markets. The underlying assumption is that the “green” label will expand the market for this product and increase prices, which could encourage more environmental protection. If organic standards are insufficient to address the externalities of shrimp farming. However, consumer ignorance of the validity of certification standards will only continue to exacerbate the societal, cultural, and environmental shortcomings now associated with organic farming.

Conclusion

Other points of contention exist and most likely will continue to emerge. At this stage, several Ecuadoran NGOs have united together to call for a moratorium on certification because “it legitimizes the impunity of an illegal industry...that uses public resources for private benefit, that doesn’t reinvest in the development of the country and that doesn’t guarantee food security for communities, but in fact, excludes them” (Cisneros and Salgado 2004, translation mine). While Naturland agrees with its critics in some respects – accepting that more collaboration is necessary and that certification is a dynamic process subject to change – they disagree that a moratorium is the answer. They state, “While developing and investing in sustainable practices that are friendly to both society and nature, the pioneer farms should be supported, not discredited for purely political reasons. However else...should development of a more sustainable industry start?” (Bergleiter 2004a).

Under Naturland’s standards, according to the organization’s own estimation, mangroves and surrounding waters are protected and locals regain access to the remaining patches of forests. Research suggests, however, that this is not the case in Ecuador. Little has been accomplished in the way of integrating the greater part of Ecuadoran coastal society into the certification process and improving their livelihoods. Furthermore, environmental NGOs are not discrediting Naturland for political reasons; rather, they believe that the standards are threatening to the environment and Ecuadoran society and culture. Additionally, most, if not all, of the organically certified farms are illegal per Ecuadoran law. To support these farms would set back any efforts to return these lands to their naturally forested state.

Should these ‘pioneer’ farms be supported while the issues are being sorted out? Is organic aquaculture the solution? Will this new method eventually have a positive impact on

the environment and local communities? I am inclined to disagree and do not support these farms at this stage. At the very least, standards must be rewritten in a stronger fashion to offer even greater protection for the environment while including local community needs. Yet, even if all standards fell within Ecuadoran law, my research indicates that organic aquaculture is not the answer. Locals saw their entire livelihoods dramatically changed with the inception of large-scale shrimp farming and have been struggling to gain lands to replant mangroves and improve their quality of life. Shrimp farming, whether organic or non-organic, will continue to infringe upon their way of life, degrade environmental quality, and act to lower standards of living for local communities.

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Endnotes

¹ R. Mears, pers. comm. 2004.

² I conducted research in Ecuador from June through August 2004. I interviewed shrimp farm owners and environmental NGO staff as well as local communities around Bahía de Caráquez. The findings in this report are based on these interviews and personal observations.

³ People derive their main source of protein from marine organisms captured in the mangroves; they use mangrove wood for construction, fuel and charcoal; and they make medicines, food, drinks, and cosmetics with materials from these forests (Hogarth 1999).

⁴ In Ecuador, shrimp production more than

doubled in this decade (Olsen et al. 1995), with the United States as the largest importer (WRM 2003).

⁵ Local community members attest to the high rate of emigration from the Bahía de Caráquez region owing to a lack of employment in this region. This is based on information gathered in community interviews.

⁶ Local community members affirm that this has occurred.

⁷ The most recent spike in disease occurred in 1999, when the White Spot Virus virtually decimated the shrimp industry in Ecuador (Rodriguez et al. 2003). In more recent years, the industry has been slowly recovering.

⁸ R. Mears, pers. comm. 2004.

⁹ Naturland's standards were first published in 1999 and revised in 2002.

¹⁰ Other certified farms once existed, but they have since dropped the right to the organic label. One farm owner stated that she could not afford to pay for the certification and did not see a high enough demand to make it worth the investment (Flor Maria Dueñas, pers. comm, 2004.).

¹¹ There has also been ongoing correspondence between Naturland and other international organizations in reference to shrimp farm certification in other parts of the world (Rönnbäck 2003; Bergleiter 2004b).

¹² For a more detailed analysis of the effects of the White Spot Syndrome Virus, see McClennen 2004.

¹³ My field observations confirmed this.

¹⁴ Cisneros, R.B. Personal Communication. July 2004.

¹⁵ Ibid.

¹⁶ Ibid.

¹⁷ The majority of Ecuadorans name corruption as the prime factor in lack of enforcement, while others cite poor communication between governing bodies and a lack of understanding as to where their respective jurisdictions lie.

¹⁸ For a listing of Ecuadoran legislation that pertains to the installation of shrimp farms on mangrove lands and deforestation of mangroves, see Hemphill (n.d.)

¹⁹ Cisneros, R.B. Personal Communication. July 2004.

²⁰ Ibid.

²¹ Another point of contention has been the requirement that only those farms “which in part occupy former mangrove area, can be converted to [o]rganic [a]quaculture according to Naturland standards if the former mangrove area does not exceed 50% of total farm area” (Standard IIID1.2).

²² See above, “Specific Concerns with Standards.”

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