

# Gone with the Clam Multispecies Arrangements and Feral Rhythms in the Goro Lagoon (Po River Delta)

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**Abstract** The Goro Lagoon, located at the southern edge of the Po River Delta, is considered a major European site for clam farming. Following the advent of the Manila Clam ‘revolution’ in the 1980s, the local community transitioned from traditional fishing to a mono-focalised ecological infrastructure focused on aquaculture. However, in the last decade, anthropogenic climate alterations have severely impacted the lagoon and its industrial system, triggering a series of accelerated proliferations of macroalgae and non-indigenous species – the Atlantic Blue Crab being the most prominent one. The article investigates the eco-cultural entanglement of the Goro Lagoon and critically explores the multispecies correspondences that excited its biosocial becoming. Thus, the concept of ‘arrangement’ is employed to question both local representations of clam farming and the feral disturbances endangering its feasibility. Finally, ethical and political implications are discussed in light of the cultural expectations of controllability embedded in the technocratic administration of the lagoon.

**Keywords** Po River Delta. Goro Lagoon. Clam farming. Climate change. Non-indigenous species. Multispecies ethnography. Environmental anthropology.

**Summary** 1 Introduction. – 2 Domesticating the Lagoon. – 3 Clam Farming as a Multispecies Arrangement. – 4 Feral Rhythms of the Anthropocene. – 5 Conclusions.



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## 1 Introduction

In his eclectic reportage on the Po River Delta, Italian writer Ermanno Rea wrote: “Goro is a complete surprise. Barely out of the darkest night imaginable and it is already shining: big cars, jewels for Sunday reunions, feasts that are monuments to wealthiness” (1990, 45; my transl.). At the time of his astonished observations, the local community was experiencing the euphoric booming of the so-called ‘clam revolution’. Once a fishing village that had faced severe socio-economic struggles for most of the twentieth century (Danesi della Sala, forthcoming), in the 1990s Goro turned out to be one of the most lucrative economies in the whole Emilia-Romagna region. After their successful experimentation in many brackish sites of the Po River Delta (Breber 2002), in the 1980s clam farming techniques had quickly taken over the old fishing traditions and boosted the development of an industrial model of aquaculture that has persisted to this day. In the case of Goro, the experimental ‘sowing’ proposed by a local biologist in 1986 led to a radical socio-environmental transformation that has been often described as a ‘mono-economic’ turn (Tamoni 2005). The staggering increase in incomes went hand in hand with the conversion of the Goro Lagoon into a productive infrastructure exclusively focused on the clam. Here, the clam itself became the ‘totemic icon’ of an unexpected and long-awaited rebirth: still nowadays, at the entrance of the town, under the local toponym, one cannot fail to notice the triumphal sign that reads *Capitale della Vongola Verace* (Capital of the Mediterranean Clam). This is undoubtedly peculiar given that modern clam farming is based on the exploitation of a non-indigenous species, which is the Manila Clam (*Ruditapes philippinarum*) of the Pacific Oceans.

However, in the last decade, the Po River Delta has been severely affected by climate-related issues that have been threatening the future feasibility of aquaculture systems. The impact of global warming has been framed locally in terms of rising sea levels, saline water intrusion, and coastal erosion phenomena which are becoming as frequent as acute (Simeoni, Corbau 2009; IPCC 2023). Moreover, the increasing tropicalisation of the Mediterranean Sea has triggered a process of biodiversity reduction (Templado 2014) or ‘simplification’ (Agostini et al. 2021) that has become sharply visible in the North Adriatic regions. In this regard, the communities inhabiting the delta wetlands have been witnessing a disquieting series of ‘accelerated’ environmental changes (Van Aken 2020) that have fostered widespread feelings of uncertainty and disorientation. More specifically, in the case of Goro, these turbulent alterations have been repeatedly enacted by bursting - and deathly - proliferations of nitrophilous macroalgae as well as growing intrusions of non-indigenous species that directly feed on clams (Mistri et al. 2019). The vulnerability of

the local socio-environmental infrastructure has become overtly evident in 2023, when the Goro Lagoon has suffered the overwhelming ‘invasion’ of the Atlantic Blue Crab, whose disruptive proliferation has been represented as a tragic disaster – both economically and culturally.

In this article, which is based on two years of ethnographic fieldwork in the Po River Delta, I delve into the eco-cultural entanglement of the Goro Lagoon and ask: how may we understand the multiple and more-than-human interactions of its biosocial becoming? In recent years, cultural anthropologists have been exploring new theoretical perspectives to critically address the Anthropocene debate by taking into account the material, semiotic, and social agency of non-human actors. In this respect, multispecies ethnography (Kirksey, Helmreich 2010) has emerged as a refreshing and provocative orientation that has pushed anthropological studies beyond their conventional boundaries and towards a more transdisciplinary stance. My analysis builds on this methodological premise and attempts to push its – very often belittled – ethical and political implications even further: if multispecies ethnography is an “art of attentiveness” (Van Dooren, Kirksey, Münster 2016) that ignites a peculiar “speculative wonder” (Ogden, Hall, Tanita 2013), I argue that anthropological writing should fully embrace the opportunity to elaborate uncanny narratives and metaphors that seriously question our understanding of the Anthropos. Thus, in this work, I employ the concept of ‘arrangement’ to explore the agential correspondences that have enacted (Mol 2002) the accelerated environmental changes of the Goro Lagoon. By looking at the lively forms of ecological synchronisation, attunement, and variation, the idea of a multispecies arrangement makes visible the rhythms (Krause 2022) and temporal configurations (Gan 2017a) that underpin clam farming and its subsequent feral disturbances (Tsing, Mathews, Bubandt 2019). Therefore, the tragic disruption of the local economy, I contend, is the marker of a re-arrangement that, by exceeding local assumptions of controllability (Rosa 2020), appears to be culturally unthinkable.

## 2 Domesticating the Lagoon

Floriano is waiting for me in the courtyard at the back of his house. “You better wear these if you don’t want to get your feet wet” he mutters amicably while pointing to an old pair of rubber boots. After meeting with his son Filippo, we reach the docks of Gorino – a tiny hamlet of Goro – and we jump aboard a small boat.

Filippo steers the boat with confidence and, as we navigate the shallow and rippling waters of the lagoon, is in the mood for some conversation. The lagoon, he explains, is a very ordered space. The

big wooden poles that appear at regular intervals mark the navigation canals, which have been recently renovated with great excavation works. They are the highways that the farmers of the clam industry use for their commute to work. The areas where clams are harvested, he continues, are delimited by smaller poles and are commonly known as *orti* (gardens): they are like agricultural plots of varying sizes, depending on the farmers' cooperative that owns them. Actually, he points out, clam farming is usually represented and spoken of as a *coltivazione* (cultivation).

Harvesting operations are aided by mechanised tools, such as the *idrorasche*, which are metal rakes equipped with blowing jets to crack the sand layers where clams are settled. The nets are then emptied over a vibrating sieve onboard: by doing so, Filippo explains, clams are filtered according to their size. The big ones are ready to be processed in the purification and packaging facilities in town. The smaller ones will be sown again. As we sail back to Gorino, I ask Filippo about the dark black tone of the shells. He smiles and explains that the colour is due to the sludgy floors of the lagoon. Once they are purified, they will return to their natural hues. Once ashore, Floriano asks me: "Did you like it?". It was my first time onboard, and I wasn't quite sure what to say. Anyway, he immediately adds: "I really don't like it". I would soon understand the meaning of his words. He was an old fisherman and, although he had adapted to clam farming practices, he belonged to a minority of people who never appreciated the abrupt 'industrial' turn of its world.

As Rita Vianello (2018) has shown in the context of the Venetian lagoon, the advent of modern aquaculture techniques in the 1980s fostered a rapid industrialisation process that involved most of the North Adriatic fishing communities.<sup>1</sup> In this regard, Goro clearly emerged as an unprecedented case of monocultural conversion and socio-economic homogenisation. Located at the southern edge of the Po Delta, the village was born in the eighteenth century and grew spontaneously between the riverbanks and the adjacent lagoon [fig. 1]. Given the amphibious peculiarities of the site, fishing represented the community's main source of livelihood for a long time. By developing creative practices, techniques, and knowledges that were attuned to the lively dynamism of their brackish surroundings (Maestri 1981),

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**1** The introduction of *Ruditapes philippinarum* in many sites of the North Adriatic region has played a major role for the development of the Italian aquaculture economy. This process had a significant socio-environmental impact in all the sites where the experimentation took place - i.e. the Venetian lagoon in 1983, the Caleri, Vallona, and Scardovari lagoons in 1985, and both the Marano and Goro lagoons in 1986 (Breber 2002). While not a mono-economic context as in Goro, in the last decade the Venetian clam industry has faced a similar crisis which has been thoroughly explored in an ethnographic inquiry by Florence Menez (2015).



**Figure 1** The map shows the Goro Lagoon (ca. 20 km<sup>2</sup>) and the areas devoted to the clam farming industry (ca. 13 km<sup>2</sup>). Yellow areas identify the 'cultivation' plots of the cooperatives, whereas purple areas are 'nursery' zones created to preserve the younger stocks of *Ruditapes philippinarum*. Graphic elaboration by the Author. Data source: Copernicus Data Space Ecosystem, 2024; Life Agree Project Final Report, 2021.

local fishing traditions also expressed a vernacular form of ecological awareness and flexibility. However, soon after the 'clam revolution', these traditions were quickly abandoned and as of today, with more than a thousand boats for clam farming, fishing trawlers are gradually disappearing from the docks.

Considering the period 1988-2018, the local aquaculture industry averaged between 10,000 and 15,000 tonnes of harvested clams yearly,<sup>2</sup> making the Goro Lagoon one of the biggest farming sites of Europe. However, unlike in other contexts, here the aquaculture revolution had a sharper impact that significantly reshaped the eco-cultural relations of the community. During my ethnographic fieldwork, I noticed that many clam farmers, when discussing or explaining their job, were regularly using terms completely unrelated to the fishing or marine repertoire. As mentioned previously, the farming areas were referred to as *orti* (gardens), but also as *campi* (plots), *appezzamenti* (parcels) or *concessioni* (concessions). In the same vein, clams

<sup>2</sup> Data taken from the report *Le marinerie del Polesine* (2018) published on the regional agency Veneto Agricoltura website: <https://www.venetoagricoltura.org/2019/04/news/le-marinerie-del-polesine>.

went by different names, like *raccolto* (harvest), *prodotto* (produce), *semi* (seeds), *pietruzze* (pebble) or *oro* (gold) – the latter indicating the high economic value associated with clam extraction. Also, the lagoon was usually called *fabbrica a cielo aperto* (open-air factory) or *miniera d'oro* (gold mine). This terminological assortment expresses a clear reference to intensive agriculture and industrial rationality as conceived by the late-capitalist fossil economies. More specifically, modern aquaculture reproduces the same ideological and technological paradigm that underpinned the Green Revolution – and its miraculous seeds (Cullather 2004) – by extending its agronomic assumptions over a watery space. In this sense, the figure of the ‘mine’ underlines an explicit extractive ideology (Ferry 2022) which is enacted through a mono-focalised exploitation of the lagoon with the ‘golden seeds’ of *Ruditapes philippinarum*.

However, the transition from the relational attitude of small-scale fishing to the ‘calculative ethos’ (Appadurai 2012) of industrial aquaculture has been driven by a wider process of ecological domestication. This process should be understood as a classificatory endeavour that, by imposing human control over non-human entities, reinforces specific assumptions on the state of advancement or progress of a social group (Swanson et al. 2018). In this sense, modern ideas of domestication have often paved the way for many large-scale political plans and techno-scientific interventions such as the aquaculture revolution. Moreover, as noted by Gro Ween and Heather Swanson (2018), the etymology of the term ‘domestication’ (lat. *domus*, ‘home’) implies the many practices that reconfigure what a community thinks as the proper home of a non-human subject. The Manila Clam was initially recruited by transnational laboratory research as a scientific object of study for applied biologists. This is where its ontological reconfiguration began: firstly, it was converted into a set of biological parameters for aquaculture systems, and then it was tested in specific environments to verify its commercial potential. Transformed from an animal into an economic resource, *Ruditapes philippinarum* was then desubjectivised by technocratic farming and harvesting practices. Laura, a young clam farmer, told me in all honesty that “clams are not considered animals. [...] It seems like you’re harvesting fruits”. Indeed, as made clear by the other terms employed by my interlocutors, in the Goro Lagoon, clams were hardly ever considered as living creatures. In addition to this, one should not forget the non-indigenous origins of the Manila Clam. In this sense, the extractive domestication of the species in the Goro Lagoon was allowed by a process of biosocial ‘purification’ (Latour 1991) that, given its economic value, made *Ruditapes philippinarum* a welcome arrival. Consequently, the cultural indigenisation of its presence quickly led the entire community to identify itself in the Manila Clam, which was promptly re-defined as ‘the clam of Goro’.

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Furthermore, I argue that the domestication process did not concern the clam alone but also affected both the spatial representations and politics (Lefebvre 1991) of the environment. With the development of a system that was focused on the exploitation of a single species, the lagoon underwent a technocratic reconfiguration that prioritised its legibility and controllability. As required by modern aquaculture models, the Goro Lagoon was geometrically mapped and organised in discrete subdivisions for the ‘cultivation’ of clams. In this respect, the constant monitoring of hydrodynamic patterns by local biologists and experts has played a fundamental role in ‘fixing’ the productive landscape of the lagoon: on one hand, it has supported a series of environmental ‘restorations’ that were designed exclusively for clam farming (canal excavations and seabed nourishment, for instance); on the other hand, it reinforced the idea that the lively ‘volatility’ (Krause 2023) of a deltaic lagoon could finally be ‘tamed’ by techno-scientific management.

### 3 Clam Farming as a Multispecies Arrangement

Since its early days, the monocultural infrastructure of the Goro Lagoon has suffered multiple ecological crises due to the proliferation of nitrophilous macroalgae – *Ulva rigida* and *Gracilaria verrucosa* in most cases (Turolla 2008). Local biologists describe this environmental issue as a ‘dystrophic crisis’, which refers to a somewhat ‘pathological’ deterioration process triggered by algal blooming. As macroalgae exhaust all the nutrients and the oxygen of the lagoon, they begin their decomposition process. The biochemical reactions involved end up with the release of hydrogen sulphide – a white fluid that covers the upper strata of the water column. As a consequence, clams cannot feed or breathe anymore – they die en masse.

Alessio, a middle-aged accountant from Goro who gladly switched to clam farming, told me that in 2011 the *disastro dell’acqua bianca* (white water disaster) – as they call it – had dramatic consequences: “The infamous plague... The *Sacca* [the local name for the lagoon] was all white”. Doctor T., a local biologist, had analysed the severity of the event: “100% of clams were dead”. Mauro, a fisherman from Goro who embraced the clam revolution as a positive turn for the community, expressed the discouragement he felt after the event: “You need three or four years to start again. It’s not that easy”. To solve the problem and protect the local industry, in 2014, the administration of Goro initiated an environmental restoration project that was financially supported by European funding and local cooperatives’



sponsorship.<sup>3</sup> In the following years, the morphology of the lagoon was modified by new excavation and nourishment works aimed at increasing water recirculation and oxygenation. In November 2021, during a public meeting on the project's outcomes, Doctor T. declared that the problem was finally solved: "Our success is due to our ability to modify the environment".

The technocratic representation expressed by Doctor T. was basically shared by the whole community. In Goro, the origins of clam farming are embedded in a 'mythological' narrative that gives Man and its techno-scientific knowledge a 'Promethean' merit - the lagoon, on the other hand, is no more than a background to be exploited or fixed. When I met Doctor Paesanti, the local biologist who proposed the first experiment in 1986, he told me:

The farming activity [started] not because I am... the Messiah... but because as a simple *Goranto* [a local term to indicate the people from Goro] I had the opportunity to study. [...] It was a revolution.

During fieldwork, it became sharply evident that clam farming was too-human a story: non-human actors had been instrumentally neutralised and objectified by an anthropocentric ecological paradigm. Therefore, drawing inspiration from Elaine Gan's work on the Green Revolution (2017a; 2017b), I wondered: is it possible to write a 'more-than-human' story of the clam revolution? In the following paragraphs, I present my attempt at recomposing the polyphonic arrangement - of fluxes, substances, capitals, politics, and organisms - that underpinned the emergence of clam farming in Goro. In doing so, I borrow many terms from the music jargon to underline the temporal, socio-environmental, and material interactions that sustain the idea of an indeterminate arrangement. This story starts with the Manila Clam itself.

*Ruditapes philippinarum* came to Europe by pure accident. In 1936, when it was classified as *Venerupis japonica*, the mollusc was unintentionally imported into the small port town of Ladysmith, on the Canadian coast of British Columbia. Probably harvested together with a commercial load of *Crassostrea gigas* (the Pacific oyster), as reported by marine biologist Daniel Branch Quayle (1964), the Manila clam displayed extraordinary adaptation skills. It proliferated rapidly in Puget Sound and throughout Vancouver Island. In 1941, as Quayle noted, *Venerupis japonica* was regularly harvested and sold along with the indigenous Littleneck Clam (*Protothaca staminea*). However,

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**3** The project AGREE (coAstal laGoon long teRm managEmEnt) was part of the LIFE Programme of the European Union. The main objective was the protection of some indigenous species threatened by environmental changes: however, most of the morphological interventions were aimed at restoring the ideal conditions for clam farming.



until the 1970s, the European market still preferred imports of Pacific oysters and Hard Clams - or Northern Quahogs - from North America. Interestingly, the introduction of these species in France was instrumental to early experimentations with modern aquaculture techniques. In 1966, the Madec laboratory was opened in Brest: it was the first mollusc hatchery in France. In 1972, it was quickly followed by the SATMAR, in the Cotentin peninsula of Lower Normandy. Designed for oyster farming, in their early years, both hatcheries had to deal with a zoonosis that had spread in oysters coming from Portugal. Thus, both the epidemic and market demand drove the researchers to experiment with new technologies for the controlled reproduction of different bivalve molluscs.

In 1972, as documented by biologists Flassch and Leborgne (1992), the SATMAR hatchery imported a stock of 500,000 specimens of *Venerupis japonica*. Introduced into French waters in larval state, the first experimentation was a total failure: the clams were preyed upon in no time. Between 1973 and 1974, the hatchery procured 1,000 more - this time, as adult specimens. In 1980, the British laboratory of Conway, under the supervision of the Ministry of Agriculture, Fisheries, and Food, procured another 50 specimens. Both imports were then used as laboratory breeding stocks to obtain new larval clusters: the 1,050 Manila Clams recruited in Europe fuelled a decade of biological studies that led to the development of new aquaculture systems. Between 1980 and 1989, the quantities raised and harvested in France increased from 2 to 450 tonnes. The *Ruditapes philippinarum* model was ready to be exported to the rest of Europe. In 1983, Italian biologist Paolo Breber started working with the Co.S.P.A.V. (Consorzio per lo Sviluppo della Pesca e dell'Acquacoltura del Veneto, 'Consortium for the Development of Fishing and Aquaculture in the Veneto Region') for the implementation of this model in the North Adriatic lagoons. In 1986, Doctor Paesanti, once he heard about Breber's project, decided to attempt the same experimentation in the Goro Lagoon. Thus, the 'revolutionary' sowings of the 1980s were an accidental entanglement of biogeographies, commercial routes, zoonoses, and techno-scientific programmes to which the Manila Clam co-responded in unpredictable ways.

The Po River Delta, with all its transitional wetlands and brackish lagoons, was identified as an ideal environment for clam farming. However, one should not forget that the morphology of the Delta has been shaped by a more-than-human interplay of political-economic disputes, nation-building processes, and environmental phenomena. Between the seventeenth and twentieth centuries (Maestri 1981), land reclamation interventions led to new forms of ecological exploitation that oftentimes had unintended consequences (Danesi della Sala, forthcoming). The temporality of human regimentations excited unexpected rhythms of riverine flooding and sedimentation

from which the aleatory deltascape (Krause, Harris 2021) of the present day emerged. Thus, the Goro Lagoon and its spatio-temporal tune were actually moulded by polyrhythmic patterns of material sediments, alternating Bora and Scirocco winds, tidal undulations, as well as anthropic actions. Moreover, the incidental harmonisation of salinity and phytoplankton tonalities resulted in the choral expression of unique benthonic biodiversity.<sup>4</sup>

It is exactly through the abundant frequencies of phytoplankton that the biosocial becoming of Goro's fishing tradition could resonate. The ensemble of these microscopic protists and bacteria plays a crucial part in the composition of the lagoon: by assimilating nitrogen and phosphorus dissolved in riverine sediments, phytoplankton fixes atmospheric carbon dioxide through photosynthesis and in turn releases oxygen. Due to their enclosed morphology, deltaic wetlands are usually rich in these substances and organisms – which biologists consider as the first link in the aquatic food chain. However, starting from the 1960s, the total amount of phytoplankton living in the Po River Delta significantly increased, along with the growing agronomic mechanisation and intensification that took place in the Po Valley. As observed by several studies (De Wit, Bendoricchio 2001; Castaldelli et al. 2013; Viaroli et al. 2018), high levels of fertilizers rich in nitrogen and phosphorus have fostered the eutrophication of the Po River Delta, leading to the multiplication of phytoplankton populations. *Ruditapes philippinarum*, just like in Puget Sound, displayed extraordinary adaptation skills and synchronised its presence to the seasonal growth of phytoplankton – an interesting harmonisation between the chemical temporality of agronomic spills and that of clams' reproductive habits.

However, the acceleration of intensive agribusiness in Northern Italy was also linked to processes of pollution and biological degradation that severely affected the biodiversity of the Po River Delta: interestingly, clams were introduced in the Goro Lagoon at a time when fish species that were traditionally caught were disappearing. Moreover, it is worth noting that, at least from the 1960s, the dominance of monocultural and extractive paradigms based on fossil fuels has played a major role in triggering global warming and subsequent ecological alterations: in this regard, the increase in carbon dioxide emissions between the 1960s and the 2000s has fuelled the tropicalisation of the Mediterranean (Bianchi, Morri 2003) and allowed many non-indigenous species to proliferate in unusual biogeographies – the Manila Clam making no exception.

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<sup>4</sup> It is worth noting that the Po River Delta, before the Manila Clam introduction, was inhabited by the indigenous Mediterranean Clam (*Venerupis decussata*). However, after excessive harvesting in the 1960s, the population noticeably declined until its disappearance. Biologists claim that this species is too fragile to be farmed. *Ruditapes philippinarum*, due to its aesthetic similarities, was thus presented as the ideal substitute.

As we acknowledge the agential temporalities (Barad 2007) of non-human actors, the mythological narrative of the clam revolution starts crumbling: human agency is enmeshed in a lively arrangement of multispecies correspondences, synchronisations, and improvisations that defy any idea of predetermination or invention. More precisely, the techno-scientific experimentation of clam farming was executed in the context of a pre-existing more-than-human polyphony. In this sense, the biosocial becoming of the Goro Lagoon may be understood as a creative ‘jam session’ that is always apt to enact new patterns, modulations, and rhythms. Therefore, the environmental infrastructure of Goro constitutes what Eben Kirksey (2015) has defined as an ‘emergent ecology’ – an ecological arrangement that is neither static nor entirely controllable.

#### 4 Feral Rhythms of the Anthropocene

In May 2022, the people from Goro became really worried about the prolonged drought that had been going on since winter. The Po River was drying up and the lagoon was hardly navigable: I even started noticing that large piles of macroalgae were accumulating on the shores. Furthermore, salty waters from the Adriatic Sea were intruding into the river branches and the drastic increase in salinity levels was damaging both agricultural activities and aquaculture systems. Asked about the situation, Doctor T. invited me to his laboratory. His explanation was very clear:

Less water from the Po River, higher salinity... The clam is a species that requires medium-low salinity. I show you the data, I measure salinity levels [in the lagoon] twice a day, every day, I show you the data from last winter, from November until twenty days ago: salinity levels are constantly above 30 per thousand, which is a medium-high value, not medium-low. The clam is affected, it doesn't die, but is affected, it's not its habitat. It's like taking the lion living in the savannah, that is used to 50 degrees, and bringing it here... It eats, but if there were 2-3 degrees more [it would be better]. [...] The clam was affected, its growth slowed down. Less water from the Po River, less nutrients, less food, higher salinity, and there you have macroalgae appearing again, which we had not seen for a long time.

This time, Doctor T., who had always impressed me with his confidence, seemed quite uncertain:

We will see what is going to happen, the season has already started moving... It may be that water is coming, but how much? We will see. You don't know.

This form of ‘not-knowing’ clearly expressed the growing disorientation enacted by environmental phenomena that were eluding scientific expectations and interpretations. In the following months, especially between July and August, the absence of rain exacerbated the proliferation of macroalgae and its harmful effect on the aquaculture ‘gardens’. Clam farmers, on many occasions, lamented that the lagoon was ‘suffocating’ or ‘dying’, and therefore asked local and regional institutions for further environmental ‘restoration’ actions. Finally, by excavating a new canal with an emergency protocol, the administration of Goro managed to reduce the effects of the dystrophic crisis.

Algal bloomings and mass mortality phenomena in aquatic ecosystems represent a major impact of the ecological disturbances triggered by anthropogenic climate change (Benbow, Receveur, Lamberti 2020). In this sense, the increasing eutrophication of the Goro Lagoon and its dystonic shifts make the controversial interactions of fossil economies visible: on the one hand, clam farming is based on the monocultural, technocratic, and extractive paradigm that emerged in the twentieth century along with the exploitation of fossil resources; on the other hand, this very model not only created the ideal ecological conditions to which the Manila Clam was able to adapt but also produced unintended environmental alterations such as macroalgae proliferations and non-indigenous species intrusions.<sup>5</sup> Mauro, for instance, told me that in recent years the lagoon was rapidly changing in strange ways:

And what about the *nucin*? [He refers to the allochthonous Sea Walnut]. And then those strange algae? These things have arrived because... In the past, they couldn’t create a habitat here... But now, as the sea has become warmer... There is also this crab that I don’t know where it comes from [he’s talking about the Atlantic Blue Crab]. But it is strong! It’s a beast! It’s a real beast! There are plenty of them!

Accelerated changes as such were often described to me as forms of ‘uncontrollable’ disruption. On many occasions, the ‘feral’ proliferations (Tsing, Mathews, Bubandt 2019) of unknown species were also defined as ‘disturbing anomalies’ or ‘monstrous invasions’. Interestingly, the metaphor of the monster has been used by anthropologists Tsing, Swanson, Bubandt and Gan (2017) as a means to reconceptualise the Anthropocene and its disquieting expressions. In this respect, the abrupt

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<sup>5</sup> Among the most relevant appearances, based on clam farmers’ observations, it worth citing: the Sea Walnut (*Mnemiopsis leidyi*) and the Atlantic Blue Crab (*Callinectes sapidus*) from North America; the Transverse ark clam (*Anadara transversa*) from the Atlantic coasts; the amphipod *Grandidierella japonica* from Japan; the red seaweed *Gracilaria vermiculophylla* from the Northwest Pacific.

re-arrangement of local ecologies seems to be a peculiar trait of the climate crisis: anthropocentric configurations of socio-environmental relations appear to be jagged, eroded, and stripped out by unknown rhythms and temporalities. Yet, one should not forget that these very rhythms have been excited by the more-than-human interplay of carbon ecologies, mono-focalised industries, and intensive exploitation models.

From a cultural standpoint, the unpredictable outcomes of these rhythmical entanglements have resulted in widespread perceptions of uncertainty and dismay. Clam farming in Goro was developed around technocratic assumptions of controllability that have been reversed by the climate crisis - a more-than-human reaction that, as sociologist Hartmut Rosa (2020) suggested, constitutes a peculiar trait of Western modernity. Yet, ideas of environmental manipulation or ecological restoration - which are supported by local biologists and institutional representatives - continue to be advocated by clam farmers as the only solution to the crisis. Fausto, a middle-aged clam farmer, told me it was a matter of life and death:

Because the lagoon, with its daily transformation, a transformation that occurs quickly... It needs continuous works that keep it alive, because if we leave it on its own, it dies.

In this sense, the rigidity of the productive infrastructure, which has been made precarious by the feral rhythms of the Anthropocene, is mirrored by the low flexibility of its social organisation: despite the evident de-synchronisation of clam farming relations, the community of Goro seems unable to coordinate and co-respond to the new emergent ecologies of the lagoon. Moreover, its technocratic politics enact what anthropologist Kari Norgaard has defined as 'social denial' - a form of collective blindness that originates from the lack of meaningful accounts of the ethical, political, and economic correspondences at the core of the climate crisis.

## 5 Conclusions

In 2023, the proliferation of the Atlantic Blue Crab (*Callinectes sapidus*) reached unprecedented levels. For the first time after many years, the community of Goro was facing the risk of economic collapse: the vast majority of clams' gardens had been swept away by the feral hunger of the 'alien' - this is the term that my interlocutors used to refer to the Blue Crab. National and international media outlets, especially during the summer months, amplified the local rhetoric of a dramatic 'invasion' that had to be fought with all available means. When I paid a visit to Floriano, in September, he was clearly distressed: "There's not a single clam left. They've all been eaten!".

Asked about the local strategy, which aimed to capture as many crabs as possible to save the industry, he cynically told me that all efforts were futile: “This is an unequal war”. As we sailed across the lagoon, he also showed me other defence experiments: some plots had been enclosed in tightly knit metal fences. The ‘walls’ – to quote Floriano’s words – were installed by some cooperatives on the advice of the local biologists and technicians. However, it was not clear whether they would work as intended or not.

As the multispecies arrangement of the lagoon has been ‘remixed’ by the climate crisis, it seems like the local community is facing a radical disconnection from the biosocial becoming that has emerged with unexpected feral rhythms. The people from Goro are experiencing a crisis of presence (De Martino 2019) that deeply questions their eco-cultural imagination. Despite the severe crisis of the monocultural infrastructure, most inhabitants still consider clam farming as the only possibility of life. In the same vein, local identity and environmental politics insist on the vanishment of the clam as a dramatic loss that might leave no alternatives. In this sense, the collective denial of the socio-environmental re-arrangement may be understood as a different kind of loss: the loss of meaningful ‘response-ability’ (Barad 2007) that seems to amplify the fracture between human expectations and non-human interactions.

The cultural outcomes of this process are yet to be observed and discussed. Anthropological research is weaving transdisciplinary threads that might shed new light on the multispecies arrangements of the Anthropocene. By experimenting with perspectives, methodologies, and narratives that account for non-human agency and creativity, ethnographic work will play a crucial role in deconstructing the monophonic representations of late-capitalist ecologies. At the same time, the rehabilitation of more-than-human polyphonies should not be detached by critical accounts of their ethical and political implications. In this regard, the situation of the Goro Lagoon opens up a fundamental issue: will the local community be able to imagine a future outside the fence?

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