Chapter 7

Lived Histories of Flows and Sediments in a Turkish Delta

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Introduction

In June 2017, Osman and the village head (*muhtar*) picked me up from the bus station in Bafra, a bustling market town and municipality in the Kızılirmak Delta’s agricultural plain. Osman greeted me casually, as if I had just returned after a day trip, even though I had been away for over a year. The two men were driving back from Bafra’s industrial park, where Osman had loaded the trunk of his car with rice bags. Osman dropped off the headman, and half of the rice load, at his administrative headquarters, a small one-room office near the town marketplace. We drove on, past the outskirts of the city and towards the fields, farms and marshes of the lower delta, to the village of Doğanca. It was rice-planting season, and Osman was impatient to return to his rice paddies.

In the past three decades, new rice fields, including Osman’s, have replaced much of the delta’s coastal marshes, swamps and wet meadows. Over the twentieth century, the lower delta’s marshes, swamps, lagoons, forests and wet meadows had been transformed – through infrastructural, political, ecological and demographic interventions – into a vast agricultural landscape of crops and vegetable growing, livestock herding, fishing and reed cutting. In the 1990s, the few remaining lakes, marshes and swamps of the lower delta, including the lake and marshes near Osman’s farmhouse, were declared a wilderness protection and wetland conservation area (Scaramelli 2018). I first came to the delta in 2012, as I was trying to make sense of the emergent category of the ‘wetland’, a global object of conservation (Scaramelli 2021). But the ‘wetlandification’ of the delta – its remaking (on the part of natural scientists and environmental conservationists) into a valuable site of wetland biodiversity – was only one of the
many transformations of place that delta residents have variously been swept into, participated in and resisted.

Scientists have frequently invoked histories of the Kızılırmak Delta that centre on the damaging ecological effects of wetland drainage (e.g. Yeniyürt et al. 2008). Wetland loss, they claim, needs to be countered with civil society engagement and with more developed environmental policy, aimed at conserving wetlands while also continuing to maintain them as productive agroeconomic environments. This discourse, however, has omitted histories of environmental and agroeconomic change, as well as delta residents’ experiences of migration, family, place-making, work and displacement.

The delta’s environments (its animals, plants, microbes, soil, water, sediments) have been made and remade by its human residents. In turn, the materiality of the delta landscapes – fluid, mobile and saturated with water – has profoundly shaped their lives. For farmers like Osman, who grows rice and tends to over a hundred buffaloes, living in the delta means taking part in a constant remaking of land and water. It also means participating in broader transformations, like those brought about through resettlement policies, agricultural infrastructural development, international environmental agreements and national and international markets. Finally, living in the delta means making and maintaining a liveable home amidst the ever-changing flows of seawater, river, marshes, underground water, capital, subsidies, seeds, fossil fuels, fertilizers, pesticides and agricultural technology, and also the movements of birds, buffaloes, fish, reeds, migrants and scientists.

Osman and other delta farmers talk about the fluidity of land, water, plants and animals in a way that is attached to their experiences of migration, displacement, home and work. This is not because an inherent and essential materiality of wetlands’ water (cf. Orlove and Caton 2010) overdetermined and constrained social practices and histories. Fluidity is not merely a property of water and sediment flows, but it is expressed and shaped by people’s practices in a changing environment. These different movements converge in, and make, the delta. Ethnographic accounts of Turkish farmers have largely disregarded the ecological and environmental contexts of their lives, focusing instead on issues of kinship, religion, labour, economy and moral subjectivity (Delaney 1991; Hart 2007; Magnarella 1970; Stirling 1965). My analysis is inspired by the longstanding work of Africanist historians and anthropologists, who have long made the claim that regional and family histories and politics are inseparable from broader processes and narratives of environmental and agrarian change (Fairhead and Leach 1995; Moore and Vaughan 1994). Farmers’ everyday experiences of uncertain and precarious delta livelihoods, as the introduction to this volume argues, are implicated with, re-
spond to, and are agentive in the social, infrastructural and environmental transformations of the delta.

This chapter considers everyday work and life in a delta village as it has been mutually shaped both by long-term geological formations, histories of hydrological infrastructure, wetland drainage and irrigation, and by migratory movements of people in, through and out of the Kızılırmak Delta. Does this fluid ethnographic narrative add up to a delta as a category of place and hydro-sociality, and what might this spatial scale afford? In this volume, Tanya Richardson argues that deltas are not a given, but rather are a particular way of apprehending environments. Following her invitation, I ask: for whom is the Kızılırmak Delta meaningful as a spatial category? Deltas are particular kinds of spaces, because they foreground the transformative movements of water and sediment. A focus on the delta scale, then, can productively underline complex transformations of place by highlighting the varied cultural and political roles of water flows and sediments as they have made and remade place.

In the Kızılırmak Delta, the ‘delta’ is used as a shorthand by different people to invoke different scales of analysis, temporalities and politics. My farmer interlocutors did not hold a stable notion of the delta. They shifted, fluidly, between different practices of place-making in an uncertain and unstable watery environment. A deltaic scale invites us to attend to multiple convergences of water in the watershed, and to move beyond the boundaries of municipalities and provincial districts. At the same time, farmers engaged with water seepages, infrastructures and histories in ways that were informed by their class positions, biographies and senses of belonging.

Lived experiences of migration, dispossession, resettlement, loss, class mobility and temporality are at the centre of farmers’ accounts of environmental change in the delta. These histories were fluid – but water also mattered in non-metaphorical ways to the agrarian landscapes in which they unfolded. In this environment, people contended with water in multiple forms: storms, mud, dikes, floods, water pumps, shifting levels of salinity, toxic seepages, water wells, pipes, cisterns, drainage canals and riverbanks. In the conclusion, I draw from this ethnography to rethink the fluid and shifting scales of the delta as a place, an administrative unit, a geological formation and, in conversation with Richardson’s chapter in this volume, an anthropological concept.

Draining the lower delta

From a geological perspective, the lower Kızılırmak Delta is a new landform. In this volume, Richardson reminds us that studies of deltas as
dynamic processes of alluvial deposition and sedimentation emerged in nineteenth-century geological and hydrological sciences. The lower delta plain formed around ten thousand years ago, and continued expanding thanks to the accumulation of sediments carried by the Kızılırmak River into the sea. The delta emerged through complex interactions of alluvial sediments, waves, currents and winds (Özesmi 1999; Yılmaz 2002). The construction of the large-scale dams of Altinkaya (1980–88) and Derbent (1984–90) reduced the flow of sediments in the river, from 21.1 million tons/year in 1960 to 0.46 in the 1990s. The Black Sea started rapidly eroding the delta’s coasts. Upstream, thousands of people were displaced from the land and villages flooded in the dam reservoir. Several hundred families were relocated to the agricultural plain and cotton fields that had been created in the wake of the drainage of Lake Amik between the 1930s and 1970s, in Turkey’s southeast.

Today, the Kızılırmak Delta is an environment of wetland lakes and lagoons, sand dunes and hardwood forests, interspersed with the expansive agroeconomic landscape of rice and vegetable fields, pastures, houses, roads and drainage and irrigation infrastructure. Ecological and hydrological transformations of the delta, however, have been motivated by broader political projects. During his tenure as Minister of Commerce and Public Works (1910–12), Bedros Haladjian signed a contract with the Société Generale of Ottoman enterprises. The French financial company was to undertake irrigation and river stabilization work in the river-delta plains of Bafra and Çarşamba, both on the Black Sea coast. This agreement was part of a longstanding Ottoman policy of creating new settlements and agricultural land in malaria-prone environments, conceptualized as a ‘cleaning’ of the swamps. Ottoman officials associated swamps with unhealthy and unproductive land peopled by unruly nomadic populations (Gratien 2018).1 Draining marshes and swamps, and turning them into farmland, had also been an important strategy for agricultural growth in the Ottoman Empire during the nineteenth century, one that involved expanding to previously uncultivated areas, as opposed to adopting new agricultural technologies (Kasaba 2009).

By the early twentieth century, then, nearly all Ottoman wetlands had been demarcated for drainage, at least on paper. However, land reclamation was an expensive and complex undertaking, and it proved to be largely ineffective in combating malaria (Gratien 2018). Standing water in the canals of drained marshes created more breeding sites for malaria-carrying mosquitoes. The drainage of swamps and marshes created new, cheap agricultural land where officials encouraged the permanent settlement of peasants in marshy and water-saturated areas where mosquitoes thrived. Many swamp drainage projects would remain unrealized until
the second half of the twentieth century, when the Turkish State Hydraulic Works (DSI), an agency founded in 1951, would begin to reclaim land in earnest all over the country (Evered 2013; Scaramelli 2018). The Société Generale commissioned plans and cost assessments for the drainage of the coastal lagoons, marshes and wet meadows in the Kızılırmak Delta, but the project was never realized. On 15 September 1915, amidst the forced displacement and deadly marches eastward of the Ottoman Armenian population, Haladjian was killed together with other Armenian parliamentarians (New York Times, ‘Armenian Officials Murdered by Turks’, 29 September 1915).

A map of ‘the marshes of Bafra’, dated 19 December 1925, shows a delta landscape saturated in water. Wet meadows (çayırlık arazi) and marshes (bataklık arazi) extended from the coastal dunes and surrounded the lakes. The sandy, marshy coastline was interspersed with forests. The biggest coastal lake, Balık Gölü, had an average depth ranging between 1.5 and 2 metres. Surrounding the lakes were extensive forests, marshes and swamps. Upstream, past the cultivated fields surrounding the city of Bafra, were forested hills, and more fields along the meandering Kızılırmak River. The Kızılırmak River flowed from the mountain gorge above the town of Vezirköprü past the centre of Bafra, and through the plain into the Black Sea, with several small islands forming in its deltaic meanders. In the lower delta were more scattered villages and fields. In marking the marshes, swamps and wet meadows to be drained (kurutulacak arazi), state officials also emphasized the emptiness of the land. The forced displacement of Ottoman Greek and Armenians between 1914 and 1923 had left behind abandoned fields and houses torn down by Turkish militias to erase Greek and Armenian memories on the land, and villages repopulated with resettled populations from Greece and the Balkans (Meichanetsidis 2015).

Thicker lines on the map demarcated the areas of planned hydrological intervention. New embankments would stabilize the river as it flowed through the town of Bafra, the cultivated fields and the wet pastures marked for drainage. The lower delta’s marshes, coastal forest and wet meadows were all delineated as ‘marshes to be drained’, and to be terrafomed into fields and permanent settlements. This plan, and the many designs and infrastructural interventions that followed, produced new agrarian land that was appealing to landless farmers in other regions of Turkey, and provided a place to resettle exchanged populations and refugees. All these resettled farmers, however, would contend with the unpredictable effects of fresh, brackish and saline water seeping into the deltaic landscape.

In these changing environments of water and land also emerged new infrastructures and extractive economies. A railway line, built in 1931,
connected the sawmills in Bafra to a small port on the Black Sea. Trees logged in the Kunduz Mountain forests, above the formerly Greek town of Vezirköprü, were rolled down the mountain to the Kızılırmak River, and then floated on the river to the mills downstream. The railway started at the Bafra mills, and the train made stops in the delta villages of Sarıkoy, Nohutluk and Üçpınar, before reaching the end of the line at the docks of Kumcağız. Workers unloaded the planks onto characteristic Black Sea çapar barges, and then onto larger ships. On the weekends, delta farmers, workers and their families boarded the crowded train to go to the beach. The railway was dismantled in 1950, when highways and trucks replaced rail and river transportation (Yılmaz 2015).

The transformation of the lower Kızılırmak Delta was exemplary of a broader trend of environmental transformation sutured to Ottoman imperial and, later, Turkish national visions. Ottoman officials sought to turn the watery, marshy and malaria-ridden lowlands of the empire into productive agricultural land for a sedentary population of tax-paying subjects. From the early nineteenth century, landowners were encouraged through various subsidies and other economic incentives to acquire large tracts of land in exchange for its drainage and improvement; new sedentary farming populations were given deeds to marshy plots of land to drain and cultivate (Gratien 2018). This was not merely a project of agricultural improvement and expansion, but one of creating new settled, productive and tax-paying imperial subjects.

Agricultural land-making on drained swamps and marshes also enabled a politics of population resettlement. In the late nineteenth century, after the Crimean War (1854–56), Muslim refugees from Crimea, the Balkans and Eastern Europe and Circassian populations from the Russian Empire were often resettled in sparsely populated coastal or lakeside marsh and swamp areas. The underlying aim was for agricultural settlement to bring civilization, progress and prosperity. Marsh drainage was also intended to create new land to settle displaced populations who, through population exchanges and international agreements, would become new Turkish subjects. The Kızılırmak Delta exemplified these environmental transformations in the wake of shifting political contingencies.

Throughout the first half of the twentieth century, the coastal marshes and swamps of the lower Kızılırmak Delta were drained and deforested and turned into agricultural fields and new farming settlements. New delta villages were populated with incoming migrants in search of new land and, alongside this economic migratory movement, with formally exchanged populations (Scaramelli 2018). Between 1914 and 1921, thousands of the delta’s Greek and Armenian inhabitants were rounded up and killed in their town squares and churches, or sent on brutal
forced marches to the southeast, many dying on the way (Akçam 2012; Meichanetsidis 2015). The remaining Greeks left concurrently to the 1923 agreement between Greece and Turkey (Kirişci 2008; Zurcher 1997). Their built environments and life histories were elided, but remain sedimented in local memories and in the land.

Ongoing remaking of land, water and people in the delta continues to make it a shifting and mobile place. The ethnographic account that follows is fluid and in flow, like the wetlands, connecting fast and slow environmental transformations in the delta to farmers’ family histories of migration and settlement, and their everyday practices of work and home in the delta.

**Feeding the water buffaloes**

One day, in the summer of 2014, I woke up at dawn and looked out through my bedroom window. My hosts, Emine and Ismail – farmers in their early sixties – were already up, in their muddy work clothes; they were walking from the house across the yard towards the water buffaloes’ barn. I grabbed a pair of woollen trousers and a cotton shirt I had borrowed from their daughter Ayşegül, who was my age, and ran down the stairs and past the front yard to join them. Ayşegül remained at home: she started a fire in the wood stove, cleaned the kitchen and bathroom, swept the front yard, watered the flowers, folded the laundry, prepared breakfast and attended to many other household tasks. The house was located about three kilometres from Osman’s on the other side of the village, and it was right off the village’s main paved road. Just around a turn of the road, a few minutes’ walk from the house, was the boundary of the wetland conservation area.

Ismail was already at work in the concrete shed where they stored bales of hay and bags of feed supplements. My task was to push the empty wheelbarrow to the silage pile and carry a load of silage to the hay shed. Silage, a mixture of corn and other chopped vegetable matter, was fermenting under two layers of tarpaulin. Ismail and I removed the wooden planks, stones and car tyres that held it in place, and then rolled back the plastic tarp, heavy and humid and slick. Ismail worked fast with a fork to fill up the wheelbarrow. The mound of silage, broken by Ismail’s fork, released a sweet-and-sour whiff and felt warm to the touch – it always reminded me of the aroma of green bean pickles, one of the delta’s staples. In a way, both were fermented fodder: pickles for humans, and silage for our bovine companions.

Silage had only been introduced to the village about fifteen years previously, Ismail explained to me. Before, farmers had grazed their water buffaloes in the wetland, providing them with a natural diet of aquatic plants. Now, however, they were using silage to ensure a more consistent and nutritious diet for their livestock. This change was part of a broader trend towards modernization and mechanization in agriculture, which had led to a reduction in the use of traditional farming practices and a reliance on commercial feed supplements.

In the following weeks, I spent many mornings together with Ismail and Emine, watching and helping them to work in the fields and the barn. I learned about the different crops they grew, including rice, barley, and cotton, and how they processed and marketed their produce. I also observed the daily routines of rural life, such as the preparation of meals, the care of their livestock, and the maintenance of the house and barn.

Despite the challenges and changes they faced, Ismail and Emine were dedicated to their farming and to their community. They were proud of their heritage and the traditions that had shaped their lives, and they sought to preserve these as they adapted to a rapidly changing world. Through their stories, I gained a deeper understanding of the people and places of the Turkish delta, and the complex interplay of history, environment, and culture that defines this unique region.
falo herds in the common pastures, and fed them with hay in the winter, while the buffaloes rested in the barns. But back then, Ismail recounted, there was more common pasture available, before rice quickly took over. At the end of the twentieth century, there were not nearly as many buffaloes as in the mid-twentieth century: livestock herding had been steadily declining since the 1960s (Arna 2008; Ermetin 2017). Ismail and Emine had acquired their small herd – about fifteen or twenty buffaloes – thanks to a state subsidy programme that was started in 2009. The subsidies were distributed through a provincial water buffalo breeders’ union. Within a decade, the number of water buffaloes in the delta had tripled, from three thousand to almost nine thousand (Ayan 2007).

For environmental activists and academic experts, as well as for local businessmen, the water buffaloes represented, at the same time, both the rural past of the Kızılırmak Delta and its future – restructured through ‘modern’ breeding practices and integrated into national markets. Ismail and Emine reaped some of the economic benefits of the subsidies, but the programme also constrained them to keep working to maintain the herd. In many conversations over the four years that I knew them, they told me that at their scale of operations, they calculated that the profit they made was not worth the intense work that the buffaloes required and the amounts of hay they had to purchase. But buffaloes still represented a possibility for a viable economic pursuit in the future, one supported by state institutions. Furthermore, the buffaloes connected many farmers to a way of life, and to a set of skills and knowledge that they had known since childhood.

Feeding the buffaloes in the morning was the perfect time to talk about these matters. I balanced the heavy wheelbarrow, walking slowly across the yard to the concrete hay shed, and then poured the contents onto the pile of hay Ismail had prepared. He measured a couple of platefuls of feeding supplement from a bag and added another bale of hay. We each grabbed a fork, and started mixing the hay, silage and feed on the concrete floor, following a meticulous procedure. Ismail worked incessantly, and with extreme precision. After all the mix had been bagged in empty feed sacks, the floor would be carefully swept. Everything in the farmhouse was neat and orderly, every job properly and quickly finished, tools cleaned and stored away. Ismail helped Emine carry the heavy sacks, one at a time, on her back, to the barn, which she had just finished cleaning, shovelling piles and piles of manure mixed with urine, water and hay, into a hatch that opened onto a ditch near their corn field. For many other delta farmers, similar routines, tied to the livelihoods of the farm buffaloes, punctuated and structured everyday life and formed a sense of home in the delta. The unfinished project of terraforming in the lower delta has
made it possible for water buffaloes to continue living in the delta’s remaining wet meadows, marshes and lakes.

Making home in the delta

Like many other Turkish landless peasants, in the 1960s Emine and her family left their mountainous village, near the town of Aybastı (Ordu), for the lower plains of the Kızılırmak Delta. At the time, Emine was nine years old. They were attracted, as Emine and Ismail recounted, by the promise of agricultural development and wage work in the newly drained swamplands. New technologies and the expansion of infrastructure, starting from the large dams upstream on the Kızılırmak River, had transformed the landscape. In the 1940s, Ismail’s great-uncle had worked as a shepherd in the lower delta. At the time, he could have acquired land for free, Ismail said, but he could not stand the mosquitoes, and returned to Ordu. When Ismail’s uncle arrived in the delta twenty years later, in the 1960s, the land was no longer free. The family could only afford to buy small parcels of bad land. Ismail came to the delta as a young boy. Emine and Ismail experienced living in an environment of seasonal flooding and impassable swamps – a place for fishing, hunting, gathering reeds and grazing water buffaloes. They helped transform it into less volatile fields, canals, roads and settlements.

Emine and Ismail married when she was fifteen and he seventeen years old. They toiled as paid labourers in others’ fields, tending corn, wheat, sugar beet, peppers and leeks. Two years after their wedding, Ismail began to work in construction – in Istanbul, and then in Iraq and Saudi Arabia. In the 1980s and 1990s Ismail worked on the two large river dams on the Kızılırmak. Through this work, the family of six gradually saved up to buy their own small parcel of land and some livestock. Ismail and Emine were not unusual in their movement from mountains to delta, to cities, and back to the delta’s villages: many of their neighbours shared similar stories. Their siblings had moved to Istanbul, and their squatter land had become valuable property for the booming real estate market.

‘If I had also moved to Istanbul with my siblings, I would be rich’, Ismail told me one day. The neighbourhood where his siblings had settled, he explained, had become engulfed by new high-rises. Moving to Istanbul now was out of the question: they would not be able to afford even a modest apartment in a cheap district, and jobs were not as good and reliable as they once were, he said. Ayşegül had never left her parents’ home, and their three other children all lived nearby. The eldest son worked as a university pharmacist, and two daughters, both married, lived in nearby
villages and towns. The eldest granddaughter was training to become a nurse – a source of great pride for her parents and grandparents. In my conversations with farmers like Ismail and Emine, they were often pondering and questioning past decisions about settling, buying land and cultivation – uncertainty that was emergent from uncertain landscapes and profound ecological and agroeconomic changes.

The agrarian delta had proven to be a disappointment for many farmers who had resettled there: as many farmers explained to me, the delta soil was new, and so it was not fertile. Others remarked on the hardship of flood irrigation, which they remembered in their youth. Irrigation had not made the work easier, they explained. Now they had to contend with irrigation fees and with the expensive and toxic fertilizers and pesticide applications. Farmers living in areas that did not have access to the irrigation conduits used small electric pumps to draw water from the drainage canals.

**Fluid histories**

Delta histories, as the farmers told them, were interspersed with stories of water ecologies. The delta was constituted by changing matter, shaped by different kinds of water materiality. These stories involved saturated land, swamp forests, irrigation canals, mud, wells, paddies, rain, fog and sea. Wetland histories continued to percolate, and to exceed the agricultural grid of drainage and irrigation canals. For example, Ismail and Emine’s neighbourhood was called Çorak, which means, literally, brackish, barren. Every day, farmers took their water buffalo herds to graze in the wet meadows near the lake. In the past, Ismail recounted, this was children’s work, and sometimes they rode on the buffaloes’ backs. Water buffaloes provided milk for yogurt and cream, meat, and before the arrival of tractors in the 1960s, they helped to plough the fields. From April to October, most of the water buffaloes were grazing freely in the delta, and in the winter they were kept indoors in the farmers’ barns.

The delta’s wetlands were also a source of valuable commodities for national and international markets. Ismail’s younger neighbours recalled foraging for wild orchids (*Orchis mascula*) to sell their precious tubers, which were used to make *salep* powder – a thickener and flavouring substance for desserts. Delta people also gathered leeches, used for folk-medical treatments. Orchids and leeches were sold to local merchants, and then entered national markets. Reed cutting, once used to build the thatched roofs of delta houses and barns, provided a source of income for many landless delta farmers, who worked seasonally to gather reeds from
the delta lakes for a Turkish firm that exported them to Northern Europe
(see Özesmi 2003). Often, fishermen also worked as reed cutters. They
could navigate the seasonally changing labyrinths of reeds and water in
the delta lakes and wetlands.

One day in the late summer of 2014, I went to pick blackberries with an
Istanbulite couple who was visiting their relatives in the village. We walked
across our neighbour’s fields, planted with green peppers, and then bal-
anced on an unstable board placed across a large drainage canal. I noticed,
to the right and left of the bridge, water pumps taking water from the ca-
nal. The water was turbid, filled with green algae. Water pumps, as Jessica
Barnes (2012) has written, produced a shifting landscape of waterfl ows
with multiple human and non-human participants. Pumps also marked
socioeconomic inequality. One of my companions explained: ‘some farmers
are too poor to buy irrigation water. And others have cleared fields in areas
that haven’t yet been reached by the irrigation union, and maybe they never
will’. We talked about the unknown mixings of herbicides and fertilizers
percolating through their fields, pesticide and fertilizers that farmers apply
to their crops watered down with water containing agricultural chemicals.
Everyone knew that irrigating fields with drainage water led to diseases
both in humans and in the soil, my companion explained. Yet the farmers
in this part of the delta were not connected to the irrigation canals, essential
for growing their water-thirsty cash crops. If they did have access to the
irrigation mains, they were trying to reduce the high cost of irrigation.

We continued walking on the side of a dusty gravel road, picking black-
berries from the thorny, dusty bushes alongside the drainage canal. We
arrived at a small concrete house, and greeted old Fatima, who was walk-
ing about, propped on her cane. She was waiting for her nephews to come
and do her farm work, as her husband was too old and sick to work. We
sat down on a carpet in Fatima’s yard, and she offered us nokul sweets.
Fatima’s husband’s father was born in Albania, she recounted. He had ar-
rived in Turkey at the end of the Balkan Wars, apparently, she said, escap-
ing after committing a crime. The story was convoluted, and it involved
a murder somewhere in the Balkans. Eventually Fatima’s father-in-law
settled in the Kızılırmak Delta. He bought the land where we were sitting
from a Kurdish family, one of the largest landowners at the time, Fatima
explained.

As for Fatima’s father, he had come from a mountain village near
Aybastı, like Ismail and Emine. He was a carpenter and house builder
by trade, and was hired to make fences to mark the property of the new
delta’s landowners, who had acquired property after the founding of the
Turkish Republic. Fatima recounted that her father also bought land from
a local Kurdish landlord. These were unoccupied swamps and marshes
(bataklar), and also land ‘abandoned’ by the Christians, she said. This was a veiled reference to the violent displacement of Greeks and Armenians, but Fatima quickly changed the subject. The head of a Turkish militia known for the violent killing of Christian residents, Hasan Topal, is still celebrated as a patriotic hero in the delta. Fatima’s father-in-law, she told me proudly, had also fought in Topal’s militias.

Stories about life in the delta, and about the farmers’ families’ arrival in the delta, were stories of remaking place and families through the movements of the population that came to be subjects of the Turkish Republic. These accounts brought together changing broader politics of resettlements and changing family forms with changing ecologies. They were deeply entangled with stories about environmental change: from the brackish mudlands of the Çorak neighbourhoods, to clearing fields, seasonal floods, and the advent of municipal road infrastructure, concrete houses and irrigation and drainage canals. These stories, then, were not about a delta that was once dynamic and gradually stabilized. On the contrary, they were about strategies for creating a home, working and accommodating change, as people themselves become agents of sweeping environmental, agricultural, economic and political changes.

The way home

After four years conducting fieldwork in the lower Kızılırmak Delta (2013–17), I thought I had a good grasp of the predictable routines of the rice-planting and harvesting work in the village’s fields, and of the controlled flows of water necessary to make it possible. Earlier in my fieldwork, I had preferred to stay put in the village of Doğanca, near the wetland conservation area. There, I believed, I would become immersed in the dynamic and complex movements of the delta’s waters: its shallow lakes, underground percolations, canals, reedbeds, clouds and rain, wet meadows and the urban infrastructure of tap water that now connected Bafra to its surrounding villages.

But the delta’s wetlands, as the sections above evidenced, were co-produced with the work of agricultural development, and inseparable from it. The comings and goings of village farmers through the market town’s offices, banks, shops, warehouses, markets and factories made rice cultivation and water buffalo breeding possible. To understand the hydrosociality (Krause and Strang 2016; Swyngedouw 2009) of the delta, the contested social lives of its waterflows, I had to attend to practices and places that did not seem immediately connected to the wetlands. This meant, for instance, following Osman on his many errands in town.
Let me follow Osman in the market town one typical day in June 2017. After dropping off the muhtar at his office, we drove on to the barbershop, where Osman got a quick haircut and shave while I waited in the car outside. This was a familiar routine. He emerged clean-shaven around a bushy black moustache, with the back collar of his light blue shirt sprinkled with hairs. The barbershop visit had lasted five minutes: Osman was, as always, impatient to move on to his next task. He would only allow himself to linger in the Türkçell phone store in town to chat for hours with a childhood friend, banter with the young assistants and down a few glasses of tea. But today we were running late.

We stopped back at the marketplace to buy tomatoes and peaches. This was the market where women from Doğanca and other delta villages came twice a week to sell their eggs, vegetables and buffalo yogurt, cream and milk. We continued driving past football fields and corner shops, meandering through thickly constructed apartment buildings in grey concrete, and picking up a few Ramazan pidesi loaves, still steaming hot. We were driving on what had been the sawmill’s railway between 1931 and 1950. The city ended, and we were surrounded by tobacco, pepper and corn fields on gentle hills. While driving, Osman opened the plastic and paper bags from the bakery and invited me to take a piece of the steaming loaf, to snack on the way. He abstained from joining in, as he was keeping the fast. His wife’s home-made bread was tastier and more durable, he said (and I agreed). But village women no longer baked a large enough quantity of loaves of bread in the farmhouse wood ovens. As older women themselves admitted, while extolling the virtues of sourdough loaves cooked in wood ovens, buying market bread instead of making their own had saved them countless hours of work, freeing up time for other tasks around the farm and the house.

The hills gave way to the lower delta plains, and the vast rice fields began. We were speeding down the meandering road at 100 km/h, and I asked Osman to slow down. ‘I have been driving on this road every day for years’, he replied. ‘I could drive with my eyes closed’, he continued, smiling, slowing down only slightly. As we entered the village of Doğanca, we stopped by the agricultural credit cooperative office. Osman owed them a payment, the director said, pulling out a thickly scribbled spreadsheet from his books. Begrudgingly, Osman took out a roll of banknotes from his trouser pocket, and counted them out to pay what he owed, very slowly and deliberately, almost reluctantly. He acted as if this had been unexpected news, and not, as I suspected, the reason we had stopped at the credit office in the first place. Then, as a rebuke for the large credit payment, he insistently haggled with the director to reduce the price of a tin box of black olives, and eventually succeeded in paying two-
thirds of its asking price. The director of the cooperative also offered me a glass bottle of olive-scented cologne, and a pen with the cooperative logo. We left the office satisfied with our transactions, but Osman dismissed my questioning about the details of his agricultural financing and subsidies.

This is what Osman and his family’s farm looked like during my stay there: rice fields surrounded the compound, which included three other houses, belonging to Osman’s brothers and unmarried daughters, and his sons with their spouses and young children. Osman’s and his brothers’ houses were the largest and wealthiest on the street. His house was painted blue, and decorated with faux-marble slabs, which a flock of domestic geese had developed a taste for. Eventually, the nibbled-down decorations, gnawed away by the birds, were removed from the ground floor.

Next to the house was a large concrete shed for the tractors, the water buffalo barn and a separate space for the Holstein cows. The old village school, a one-room building, still stood near the front gate, with its roof caved in and overgrown with weeds. Behind the farm was what remained of a swamp forest, which has gradually been cut down to make space for fields and canals. The forest teemed with little egrets and storks; in the spring, water buffaloes and horses grazed in the flowery meadows in the forest clearings. Less than one kilometre from the farm, a dirt track ended at a large drainage canal, deep and wide enough to navigate a small dinghy. The canal led to thick reedbeds, opening onto Cernek Lake, which was within the boundaries of the delta’s protected wetland conservation area.

I stayed in Osman’s house as a guest for the first time in the summer of 2014. By the time I joined Osman’s household, all but one of his nieces had already married and moved out. Many of Osman’s nephews and their peers, all approximately my age, had married. Babies were born. Toddlers started school. Young couples furnished their new apartments, often just on the floor above their parents, even as they continued to take their meals in the parents’ (or, from the perspective of women, their in-laws’) kitchens. A niece graduated from high school; another came home from college and was looking for work as a graphic designer. One of Osman’s sons took over the buffalo breeding operations on the farm, and the other, who lived in a different province, prepared to take the state exam to become a judge. Life in the delta is not statically tied to the watery rhythms of wetlands and the seasonal and economic rhythms of cash-crop fields. Lifecycles, the pursuit of education, changing markets and the contingency of people’s choices and preferences mark a fluid relationality to the delta’s agricultural ecologies.
Knowing rice

In the early summer, in the lower Kızılırmak Delta, the few wealthy farmers, like Osman, who owned rice paddies, or the many others who leased fields from the state, worked as sharecroppers or toiled in the crews of day labourers, were in the fields all day long. In the nearby villages, green rice seedlings were already poking out from the murky waters of the paddies, but Osman and his brothers’ planting had been delayed by unpredictable rain. They needed a few dry days to finish preparing the paddies with large laser-guided land-levellers attached to their tractors, and then release the flow of water from the delta’s irrigation canals into the fields. Only then would they throw rice seeds in the shallow water of the paddy.

Every year, Osman planted different rice varieties, all hybrid seeds which, since the 1980s, have largely replaced open-pollination seed varieties (Atalan-Helike and Mansfield 2012). Osman assessed the seeds depending on how they had fared on the market, their yield in the lower delta’s fields, new crop blights, changing subsidies and his relationship of trust or mistrust with specific seed companies’ representatives. He also kept up to speed with the latest technological advances as far as he could afford to: his laser levellers, for instance, were only four years old. He was planning to expand the water buffalo operation.

Rice work took up many of our conversations in this early summer season. As encompassing as rice labour was, this was not a traditional undertaking passed down for generations: rice production only took off a couple of decades before, when drainage and irrigation infrastructure expanded in the lower delta. The network of water provision was made possible by the construction of large dams upstream on the river in the 1980s and 1990s. However, the very infrastructure that created canals also led to their slow demise. As sediment was trapped in the dam lakes, the delta began to visibly retreat, eroded by wind and sea currents. Salt water began to permeate the irrigation canals, and rose higher in the water table (Yılmaz 2002). The delta’s soil became more saline, a change that was noticeable by farmers as they created new fields and planted water-thirsty crops like rice, corn and peppers.

Osman and his family had been early adopters of rice cultivation in the early 1990s. While driving around the village fields on his tractor or scooter, Osman talked to me about the delta as a lively and dynamic agrarian landscape, detailing transformations of land tenure, soil, water, capital, work, chemicals, seeds and technology. Osman often remarked that while I, as a scholar, had to specialize in one field of expertise, being a farmer meant dabbling in all scientific disciplines – including anthropology.
However, scientists at the nearby university, who were active in wetland conservation and sustainable agriculture projects, often assumed that delta residents were largely ignorant, and in need of being educated in more sustainable, efficient and healthy agricultural practices. This view assumed farmers were free and responsible for their own improvement, and not constrained by governmental subsidies, market economies, agricultural credit, land tenure, water provision and the quality of soil (Scaramelli 2018). Here, rather than engaging with the politics of knowledge and of land degradation, a classic topic of political ecology (Robbins 2012), I stay with the farmers’ perspectives of what constituted good work (Whitehouse 2012), which is central to their experiences of environmental change in the delta.

Before sunset, we often drove on Osman’s scooter on bumpy dirt tracks across the rice fields to check on the work of his sons and nephews. The youngest, who was my age, worked as a teacher in another city, but he came back every year for the two weeks of rice preparation work, and Osman praised his precision with the laser leveller. One day, on our usual inspection drive, Osman pointed towards some rice paddies in the distance, and told me that the family had recently purchased them, expanding their already large land ownership. The previous owners had sold the land as they migrated to larger urban centres, Osman recounted. He would often describe the swamp forest, teeming with birds and flowers, that grew there before it was transformed into agricultural land.

During one of our errands in Bafra, Osman looked up at the concrete apartment buildings, and, with a sigh, wondered aloud whether they were making a mistake. If they had invested in urban real estate instead of in land and the latest agricultural technology, he said, they would be rich from the rent revenues, and would not have to work as hard. Knowing rice, for Osman, meant knowing how to work hard, day and night when needed, and to make difficult decisions in the face of uncertain climates and markets.

### The home garden

While the men were at work in the rice fields, inside the farm compound, Osman’s wife Fatma and her sisters-in-law and nieces were tending to the house gardens. The soil was finally warming up after a long winter and spring frost. Cucumbers, tomatoes, peppers, leeks and aubergines were already growing in the small makeshift greenhouse, and needed to be transplanted. For days, Fatma had been asking Osman, her sons and her nephews to plough the small house garden, so that we could transplant the seedlings. When Osman did find the time, manoeuvring the tractor...
with agility in the small plot of land, Fatma was not entirely happy with the spacing of the furrows, but there was no time to start over. Gardening work – back-breaking and repetitive, following Fatma’s instructions – was the perfect task for the visiting anthropologist. It allowed me ample time for chatting while working side-by-side and gave me a good view of the farm road to observe the comings and goings of relatives, neighbours, farm workers, sheep, dogs, geese, ducks, water buffaloes and horses. Making the house garden was relatively invisible work, even though it occupied hours of a woman’s workday and allowed the farm to subsist on the market sale of rice, as eating the home-grown vegetables saved considerable expenses.

I wore Osman’s youngest son’s chequered shirt and worn jeans, which I fastened with a leather belt. To complete the outfit, I would find a clean pair of socks among the daughter’s work clothes, kept in a broken refrigerator in the backyard, and slipped on a pair of Fatma’s purple plastic shoes. Before stepping into the harsh sun, I put on a baseball cap, decorated with the logo of the New England college where I had worked, or borrowed Osman’s straw hat, which fell over my eyes. Admittedly, no man or woman in the village would even consider wearing this bizarre outfit, but it worked for me.

With a hoe, I began breaking the hard clots of soil and digging shallow holes to plant seedlings. Behind me, Fatma moistened the soil, dragging a heavy watering hose. Later, we would walk back along the row to transplant the seedlings, and water them carefully. In some rows, Fatma instructed me to plant a small handful of beans and corn. I pinched the corn away from the cob, and counted seven or eight beans into each hole. Some of the beans came from the neighbours’ gardens, some from Fatma’s own beans, others had been passed down for generations as they were preserved year by year for the next planting, and some were commercial hybrid varieties. Fatma sent Osman and me to the agricultural chemicals store in Bafra to buy more beans. These came in a small plastic bag and were coated with bright purple herbicide. On another day, I walked to a neighbour’s house to pick up a large bag of bamiya (okra) seeds, already soaked in water.

‘The soil here is not good’, Fatma told me as we took a break from working. I sipped some water, but Fatma was keeping the fast, and she wiped the sweat from her brow. ‘We added a layer of soil taken from where canals were dug, nearby’, she explained. ‘But that still won’t make it into good, fertile land. The soil is very hard, difficult to work. It’s very difficult to get rid of those weeds’.

I knew that well: every morning I extirpated a dark green, furry-leaved weed and grass that grew in the potato and pea garden, but its roots were
deep, and hard to dig out without also cutting through the potatoes, peas and onions. The day after, they were already sprouting back.

Behind me, Fatma sprinkled fertilizer (*ilaç*, meaning medicine or drug) in the holes. At first, she prevented me from touching the toxic powder, but eventually handed me the bucket. I held my breath; my eyes burned and my fingers itched as I sprinkled the sticky powder on the plants. After planting was completed, my hands were covered in blisters, and my back hurt. My hat, designed to withstand leisurely strolling through a quaint college’s lawn in the American Northeast, had been bleached by weeks of sun exposure and sweat. My neck, arms and back were sunburned.

Then, again, it was time to water the fast growing seedlings. We assembled heavy plastic pipes, the same we used to irrigate corn, and connected them to the well. When I pressed the electric switch that activated the pump, water gushed out through a broken connection in the tubing before it could reach the field. After fumbling with the pipes, we repaired the broken link, and cool water reached the plastic hose, attached to the last of the pipes. It took us half a day to water the small field, dragging the heavy hose row by row. The sun was unforgiving, but the work had to be done. Fatma continued to observe Ramadan even as she toiled in the scorching heat, and I occasionally patted her forehead with a wet cloth as she rested in the shade or a flower bush.

‘Try to convince your uncle Osman to install those drip irrigation pipes in the field’, she said.

‘I don’t have time now, my niece’, Osman replied. ‘We are working day and night to plant this rice. We are already two weeks late, and it is an enormous cost.’

One night, it unexpectedly rained, further delaying the irrigation of the rice fields before planting rice, and also flooding our garden, after all our work with the irrigation hose. ‘The beans you planted are all rotting now’, Fatma told me, worriedly turning to look at the storm outside the kitchen window.

Fatma lived in the farmhouse year-round. But many other women from the most well-off families (including some of her sisters-in-law and her nephews’ wives) took residence in the town of Bafra with their children or grandchildren during the school year. In this way, their children could attend better schools in town instead of the village school, which many farmers considered to be inferior in terms of education quality. When the families could afford it, students enrolled in private preparatory schools (*dersane*) to work towards the famed Turkish university admission exam. And, in town, high-school students remained under parental supervision. When the mother of a high-school-age child was not able to move to Bafra, the student could lodge in a student dormitory, or stay with relatives. This
was not a new practice. Fatma herself, thirty years earlier, had lived in an apartment in Bafra during the school term with her two young sons and their cousins. Looking after all the little boys and girls was as hard as farm work, she told me.

All families in Doğanca had close relatives who lived permanently in Bafra, Istanbul, Ankara, Izmir and other urban centres. Some relatives had left for Germany in the 1970s, and a few had returned, investing their savings in nice apartments and gardens. Migration was not unidirectional: many farmers returned to Doğanca upon their retirement from urban wage-work. Others returned at certain stages of their lives. Many others moved between Doğanca, Samsun (the provincial capital) and Bafra. In this sense, even as I remained steeped in the everyday rhythms of work, sociality and water on the wetland, I was aware that the agro-economies and hydrosocialities of Doğanca and the lower delta were entangled with and produced by other places and commodity markets, near and far.

Rhythms of delta water

In the summer of 2014, I learned about a new water canal, built to replenish Cernek Lake’s increasingly shallow waters. The canal would take fresh water from the irrigation dams on Kızılırmak River, upstream – the dams that Ismail had helped to build. However, as a professor of agricultural engineering explained in the context of a university field trip to the delta, the canal was still empty (see Scaramelli 2018). The two governmental agencies responsible for water infrastructure and for nature protection, he explained, could not adjudicate who should oversee the regulation of the canal to provide the amount of water needed to maintain the lake ecosystem, which would involve ascertaining how much water of what kind and quality was required, and where and when it was needed. The question of regulating waterflows to and in the lake was made even more complicated by ongoing debates over who and what the lake, and the water made to flow into its basin, were for.

While most knew the roads and walking paths connecting houses, fields, pastures and hamlets in the lower Kızılırmak Delta, only a few, mostly men, had an intimate knowledge of its changing waterways. The lakes were a favourite subject of the many nature photographers who came to the delta on the weekends. The gravel road that ran parallel to the Black Sea coast skirted the shores of the Cernek Lake. Farmers, riding horses in the shallow waters, holding their mobile phones high above the water, herded their water buffaloes across the lake.

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Cernek was connected to other lakes, but the navigable waterways were hidden in the reeds, and were known only to those who worked in the lake: fishermen, hunters (despite the formal restriction on hunting in the conservation area), buffalo herders and reed cutters. As Sandro Simon has written in this volume, harvesting molluscs requires an embodied and tactile skill to know the rhythms of waterflows and one’s bodily movement on the water. The Kızılirmak Delta’s lakes had been co-produced with large-scale irrigation and drainage infrastructure; nevertheless, to fish in the lakes meant to know them in a tacit and experiential way. While the delta’s fishermen told me they sometimes do feel at peace while casting their nets from their small dinghies, withstanding freezing cold wind and ecological uncertainty, their existence remains economically precarious, and wealthier, land-owning farmers shun the fishers as uneducated and untrustworthy.

The lakes’ waters were dynamic: they changed with the season, with the year’s climate and, particularly, with the changing drainage and irrigation infrastructure in the delta. In the summers, the lakes became shallower, even more so since a drainage canal was redirected from the lakes into the sea. Pastures dried up, and the water buffaloes would wallow in the lakes. In the winters, the lake waters froze. The rice paddies and corn fields were planted with cover crops. In the spring the meadows were soaked and dotted with flowers, and the trees in the swamp forests stood immersed in water. In the early summer, the irrigation union regulated the flow of water through irrigation canals to the farmers’ fields.

I do not take the material properties of water, its physical capacity for flows and movement, and its chemical property of mixing as givens. Neither do I use water as a metaphor for social relations. Water itself does not provide an overdetermined metaphorical or material blueprint for wider notions of environmental change and movement (Helmreich 2011; see also Richardson, this volume). On the contrary, I contend, political processes, economic transformations and biographies become the narratives that farmers draw upon to describe the movements of multiple waters in the delta.

Scholars have often centred histories of marsh reclamations on a narrative trope: that dynamic and mobile flows of water, species and livelihood are fixed through neat and orderly boundaries of land and terraform (e.g. Blackbourn 2007; Cattelino 2015; Mathur and da Cunha 2009). This is an accounting of dynamic water agency giving way to terraformed stability. But in the Kızılirmak Delta, the agroeconomic landscape produced at the moving edge of the disappearing wetland is not a static place, neatly divided between land and water. Rather, as Franz Krause (2017) has argued, we can think of places like the delta as spatiotemporal rhythms, embody-
ing ‘shifting configurations of water, mud and dry ground, of people and their practices, and of moods and aspirations’. People, species, markets, water technologies, houses, political boundaries, economies and science remain in flux – their rhythms are uncertain, and unknowable. And water continues to seep through the delta, often in unexpected and sometimes undesirable ways.

Conclusion: delta as a marker of place

Natural scientists, geographers, ornithologists, ecologists and agricultural engineers have all taken the Kızılırmak Delta as their main subject of analysis, centring on the hydrological, ecological and agricultural processes that are interconnected within the delta. From a geographer’s perspective, the delta is dynamically constituted in the interaction between sediments – carried by a river – and the sea. In a way, different typologies of deltas correspond to different relationships between water, sediment and time.

This delta-scale view fails to account for the circulation of people, water, capital, politics, species and technology across, and beyond, the delta. The delta is constituted within national and transnational flows and processes, from the movement of the river’s sediments to global markets, national development subsidies, and transnational population exchanges and migration. A focus on the delta as such, then, often suggests an interest in the scientific study and governance of the natural and cultural resources contained within its geographical region, as Richardson writes in her contribution to this volume. For example, the Kızılırmak Delta, as a spatial unit, defines the boundaries of the irrigation union’s work, which operates on the hydrological plain. The delta is also the central category used in the wetland area’s management plan, despite the fact that the conservation area only includes the coastal wetlands, and not the delta in its hydrological entirety.

The delta as an agroeconomic unit of production – a delta plain watered by the same river and irrigation network, and with similar soil characteristics – is also overridden by other administrative units. For example, one day I visited the local agricultural bureau office in Bafra. I chatted with the director about agricultural productivity in the delta, and he shared data about crops within what he referred to as the Kızılırmak Delta. His data, however, pertained to the Bafra municipality, and not to the whole extent of the geographical delta. The director showed me that the yearly report of the provincial agricultural bureau describes the delta floodplain as ‘one of the most fertile of Turkey’, and the ‘second-largest delta of the country’.
Within the report, data on agricultural production were subdivided across the different municipal districts and towns, overlaying them onto other spatialities of soil, water, infrastructure, climate and markets.

The delta’s emergence as a seemingly self-apparent site of agricultural production (fields, farmers, roads, factories and agricultural credit) and of the production of nature (the conservation area) has been made possible by delta-scale infrastructure of water that, paradoxically, has also led to the demise of the delta itself, preventing river sediments from countering the scouring movements of the sea. Similarly, anthropologist Atsuro Morita (2016) has argued that the Chao Phraya Delta in Thailand shifted, during the twentieth century, from an aquatic landscape of canals and flood-adaptive architecture to a terrestrial landscape of roads and cities – a transformation that remains ambiguous and unstable. Does a delta only exist as sedimented terraform? Does a delta extend into the sea, and how far should we follow its currents? We can think about the land carried away by the eroding action of the waves as still part of the delta, as historical and geological memory. And the rice fields made possible by the accumulated sediments behind the large river dams are, in a way, a latent delta.

In the Kızılırmak Delta, farmers’ narratives of migration, of work and of agricultural development are entangled with, and inseparable from, their experiences of broader ecological change in the delta. These are connected to the unpredictable rhythms of different kinds of water through the delta, which punctuate stories and experiences of farmers’ everyday life in the delta. State planners helped envision the marshes and swamps of the delta as an economically productive agrarian landscape, and Ismail and Emine were not simply swept into this transformation: they were agents and participants in it. Their stories about living through seasonal floods, of rotting seedlings, mouldering houses and frightening swamp forests were also narratives about family-making and class mobility. In their stories, different and incommensurable delta scales converge, fluidly. Their stories exceed the delta, even as they are central to its production as a landscape. In this volume, Alejandro Camargo has called attention to processes of stagnation – things that accumulate when water does not flow – and their political effects. In the Kızılırmak Delta, however, farmers experienced stagnant class mobilities, but they experienced water seepages and flows – as well as agro-economies and relationships between land and water – as in movement, ever changing.

Ismail’s questioning of missed opportunities in Istanbul punctuated his ongoing pride in the barn, courtyard and chicken coop that he has built himself. Emine compared the hard work of her youth, raising four children while working as an agricultural labourer in the flooded lowlands, with the easier tasks of tending to the small herd of buffaloes. Osman’s
rice fields in the former swamps were, to him, a complicated puzzle, which involved orchestrating a coordinated effort of water, labour, soil, climate, seeds, chemicals and markets. But Fatma maintained that the work was moral, too: part of their wealth would be donated, as zakat, to pious organizations; all the hired workers would break bread with the family, and farm dogs would drink milk fresh from the water buffaloes. During Ramadan, everyone would fast, even in the heat of the summer. The uncertain rhythms of deltaic waters were only part of an uncertain life that should nevertheless be moral, through the caring tending of the land, plants and animals, generosity towards neighbours and those in need, and raising respectful and honest children.

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Notes

1. The concern with unruly marsh people characterized many other state and imperial powers in the late nineteenth and early twentieth centuries (Gruppuso 2018).
2. During the time of my fieldwork, the wetland was characterized by three large and interconnected bodies of water. These lakes change form depending on the seasonal rhythms of waterflows, including the flows of irrigation drainage. Fishermen know how to navigate from one lake to the next, following hidden canals opened through the reeds.

References


