

Cultures of the sea. Life on the Andalusian Coast

David Florido, Curator

INTRODUCTION

When we think of the sea today, it conjures up images of pleasure, prestige, tasty morsels and healthy living. But these associations are quite recent: for most of human history, the earth's vast, unexplored seas and oceans have terrified us. Our shores have been borders exposed to real and imaginary perils that came from the great unknown: natural disasters, mythological creatures, Barbary pirates and fantastic animals.

Despite that perception of alienness and fear, people have always lived along the coast, whether in important urban trading hubs or in fishing communities. Over time, these shore dwellers developed a wealth of knowledge and skills that have allowed them to coexist with the sea, and yet we have often portrayed them as creatures living on the fringes of civilisation.

Seafolk are still viewed with suspicion, surprise or distrust today, even though we value their environment, products and way of life, and despite the fact that many of their cultural expressions have become a part of our collective identity.

Acknowledging them allows us to know ourselves better and appreciate our culture but, more importantly, it is the first step towards repaying the debt we owe to everyone who, by striving to decipher the mysteries of the sea, taught us to love it.

For all those men and women, here and now, let us take to the seas.

THE SEA AS A FRONTIER

Bodies punished by the sun and scarred by salt, living in tiny, half-empty villages of hand-built huts, far from the sophisticated cities and fertile valleys; families who eke out a living on those inhospitable sands; and a line of watchtowers that have dotted this coastal landscape since the sixteenth century, guarding our watery border with the Islamic societies on the southern Mediterranean shore.

Until the late 1800s, the coast represented an economic boundary, as the place where the authority of aristocrats, townships and even the crown ended. But it was also a cultural border, for the men and women who lived there, their faces were carved by the elements, had different ways of understanding, expressing themselves, measuring space and experiencing atmospheric phenomena.

Others viewed them as backward communities who had to be evangelised or indoctrinated in the ways of progress; as workers whose skills could be exploited to profit the fishing and shipping industries; or as a metaphor for the poor yet principled rebel who aspires to a freedom unfettered by political constraints.

Over the centuries, the landscape of our shores and coastal communities has been a physical, civilising frontier as well as a feared yet fascinating boundary that spoke to the souls of poets and adventurers.

THE TRANSFORMATION OF THE COAST

Sleepy vessels basking in the sun, the hustle and bustle of boats being pulled ashore or put out to sea, men distributing the catch or mending nets, women with bags of fish and bundled lunches, huts with caulkers and carpenters hard at work, the sharp odour of tar... And in the background, the sands, the salt marshes and the mountains that guard Andalusia's shores, dotted with lighthouses, church towers and landmark trees to help sailors get their bearings.

And so it was for centuries, until a wave of cement washed over our beaches and flooded them with hotels, restaurants and sun umbrellas galore. Sunbathing became a recreational activity and status symbol, and scantily clothed bodies ceased to be scandalous. Eating habits also changed and the fishing community's relationship with tourism grew more complicated, as the industry brought prosperity but also posed a threat.

Meanwhile, the seagulls endure as timeless witnesses to an ever-changing landscape.

FEAR OF THE UNKNOWN

Prior to the seventeenth century, medieval and Renaissance cartographers drew sea monsters as a blend of real physical animals and symbolic mythological creatures. They used them to represent the perils of the *Mare Tenebrosum* or Sea of Darkness, as the Atlantic was once called, as well as the diversity of God's creation or the presence of chaos and sin.

Many of these images were the result of encounters with whales, walrus, giant squids, etc., but they were also rooted in a mythic literary tradition begun in antiquity and revived by Friar Isidore of Seville and others.

Despite these perceived dangers, mariners of the ancient and medieval world did venture into the unknown waters of the North and West Atlantic and along the African coast in search of valuable metals, slaves, salted fish and other commodities.

At the same time, African pirates often landed on our beaches to raid, pillage and take captives from the few inhabited coastal enclaves.

FASCINATION

Our fishing communities have traditionally held a strong fascination for others. Outsiders were often amazed, puzzled and charmed by a way of life that shaped and marked people's bodies and minds, and by the knowledge that enabled them to thrive in a seemingly hostile environment.

Beginning in the late nineteenth century, writers and a few political leaders tried to implement reforms that would bring these independent individuals living on the geographical, political and symbolic outskirts of society into the fold of civilisation. However, their economic reliance on the sea proved impervious to reform.

Today that fascinated gaze has been transferred to tourists, who visit the maritime fringes in the hope of reconnecting with nature and different forms of culture.

PEOPLE OF THE SEA

THE COAST: SETTLERS AND MIGRATIONS

Navigation has always been vital for moving goods and people, as well as their cultural customs and ideas. And the coastline, in addition to a frontier, has long been a place where men and women live and work side by side, where Mediterranean, Cantabrian and Atlantic elements have mingled to produce the particular vocabulary, fishing methods, lifestyles, ways of preserving and cooking food, beliefs, celebrations and rites which have shaped the culture of the sea and its related occupations.

Since the fourteenth century, there have been accounts of fishermen and fish merchants coming to our Andalusian shores from northern Spain, although this was particularly true in the 1700s, when Catalan fishers and salted fish vendors brought their techniques and business models here.

Andalusian mariners have also sailed away in search of better fishing grounds and opportunities. Fishing, raiding (piracy) and slaving campaigns were frequent in North African waters since the late Middle Ages. The closure of African fishing grounds in the 1960s forced many families to relocate to ports in Catalonia and Valencia. In recent years, thanks to the industrialisation of our fleet, it is now common to find Andalusian boats and sailors fishing off many Atlantic countries and in international waters. Similarly, more and more African mariners are now sailing our shores.

PLACES AND TIMES

Every beach, neighbourhood and port has constituted a distinctive space with its own pace, life cycle, architecture, smells, etc. These places had such intense personalities that they were often perceived as both repellent and attractive, like a stigmatised border zone.

The spaces of everyday life were segregated by sex. Taverns, ports and boats were the places where men work and relax, while the home and the rest of the town were the domain of women.

They also had their own rhythm and sense of time. Evenings and mornings were part of a daily cycle that revolved around working at sea and defined the entire community: going down to the port in the small hours, heading out to sea, selling the catch at market, stopping by the tavern, resting at home in the afternoon... and then doing it all again.

Until the mid-twentieth century, fishermen always went out during the “dark moon” or new moon phase. Their work depended on the lunar cycle, and less light usually meant more fish. The full moon period, incompatible with a good catch, was spent repairing and mending tackle. New technology has eliminated these constraints.

THE BEACHES

For centuries, coastal communities spent most of their waking hours on the sand: it was there that they organised tasks, mended and assembled fishing tackle, built and repaired boats, struck deals, enjoyed their leisure time and celebrated their festivities. There was no separation between the

coastline and the “beachfront”, then occupied by the humble abodes of seafaring families.

Today, the few fishermen’s beaches that still exist remind us of what our shores looked like before the tourism boom began in the 1960s. Set apart from the hotels, apartments, restaurants and beach clubs that now cater to visitors, these stretches of sand are testaments to our history and to the determination of a few families to defend their place and their memories. Although we may think of such places as exotic vestiges of bygone era, they are still thriving microcosms brimming with vitality.

THE NEIGHBOURHOODS

Andalusian fishing villages or neighbourhoods have been the product of traditional DIY building methods and, starting in the twentieth century, of government housing policies and industrialisation. They tend to be developed areas with a simple layout of one-storey houses or identical blocks of flats, generally equipped with only the bare necessities.

In these seafaring quarters, one inevitably encounters fishing news and gossip, people working on nets, and families gathered round the front doors of their homes—a special way of life that makes fishing villages unique and heightens their exotic appeal to outsiders.

THE INDUSTRIAL VILLAGES

The industrialisation of Andalusian fishing in the late nineteenth century gave rise to new “villages” for transforming production on a grand scale.

These settlements were built in different towns and cities: on the Mediterranean coast, they appeared near sardine and anchovy canneries, and along the Atlantic, they were established close to *almadraba* and seine fisheries. The intense smell of these fish factories was a defining feature of all those places. The *almadraba* (tuna net fishing) settlements enjoyed comprehensive social services (school, church, healthcare, company stores) and technological advances (electricity and running water) that were unimaginable for most working-class people at the time. Even so, living conditions were difficult.

THE PORTS

Over the course of the twentieth century, many Andalusian beaches were divided up to create ports exclusively for fishermen. Since the 1990s, these have become multifunctional spaces, serving as marinas for recreational and tourist crafts as well as fishing vessels.

Visitors and locals alike come to the ports to experience the daily hustle and bustle of the fishing industry. Wharves, markets, tackle sheds and salting houses are a hive of constant activity. By strolling through these places and conversing with sea folk, we can get a better idea of the ways of thinking and doing that define this culture.

THE WEIRS

Tidal weirs are part of a unique landscape that characterised the Atlantic coast of Cádiz and can still be seen today at Rota, Chipiona and Sanlúcar de Barrameda.

Sources dating back as far as the fourteenth century speak of coastal communities building semicircular barriers of oyster-rich limestone, which they compacted with oysters, goose barnacles, limpets, seaweed and other living organisms. These barriers allowed people to catch fish and shellfish on land by taking advantage of tidal movements, the rocky substrate beneath the sand, and the natural tendency of fish, molluscs and crustaceans to seek shelter.

The weirs have become valuable allies of nature thanks to the rich variety of plants and animals (including birds) they attract, their use as nursery ponds and their ability to counteract coastal erosion.

They are also valuable cultural artefacts because of the construction techniques used to build them and the traditional fishing and maintenance activities of shellfish gatherers and weir fishers. Originally the property of feudal lords, in later times the tidal weirs were owned by religious institutions and private citizens before becoming public heritage which local associations now work to preserve.

SPEECH AND FORMS OF EXPRESSION

People of the sea have a very unique way of talking. Information is conveyed orally using a remarkably rich lexicon related to fishing methods, the weather and natural elements, and many of the terms that originated in the working world have since spilled over into every other area of life. Moreover, each community has its own variations, constructing systems of expression that mark social and local boundaries.

The now-forgotten melodies sung or chanted on the hardest jobs—*tallas* for rowing or *salomas* for hauling up the *almadraba* nets—helped to establish a working rhythm while also creating a sense of solidarity and belonging.

Other vocal expressions, like the *cantes de jabegotes*, were sung while performing nautical tasks on the shores of Málaga.

MEALS

The homes and courtyards of seafaring families have always been used to dry, smoke, salt, brine or otherwise preserve the products of their labour, which constituted an important part of their diet. However, they also obtained food from nearby fields, marshes and rivers or by trading with farming families.

Mariners have long been renowned for their skill in the kitchen. In addition to gutting and cleaning fish, they also knew how to prepare nourishing dishes. In fact, when a boat had to stay out for days at a time, the cook kept the entire crew fed, and even today almost every sailor knows several recipes by heart. At home, salting and preserving work was done by men and women alike, whether or not they were employed in the fish factories.

Nowadays, municipal authorities in many coastal towns organise culinary festivals dedicated to their signature marine delicacies (sardines, prawns, tuna, sea bream, oysters, sea urchins), which have become symbols of local identity.

SIMPLE SEAFARING RECIPES

Traditional fishermen's dishes are plain and simple fare, products of hard times and a waste-not, want-not mentality. The species that fetched the highest prices were always sold, while the less desirable ones—whitebait or “trash fish”—were taken home to consume stewed, seasoned or fried.

Fishing families also used different methods to preserve fish, which tends to spoil very quickly. Over the years, their humble recipes gradually acquired more ingredients and better quality fish, and today some of them are even served at gourmet restaurants.

RITUALS AND CELEBRATIONS

Festivities are where fishing communities come together, express themselves and proudly claim their heritage.

Boats, ports, taverns, institutions and domestic spaces all reflect the extent of popular and official religious devotion to the *Virgen del Carmen*, Our Lady of Mount Carmel. Although some claim that her veneration is derived from ancient Mediterranean deities, it actually owes more to the influence of Italy in the eighteenth century. The twentieth century witnessed a tremendous surge in devotees after she was declared patron of the Spanish Navy in 1901, and subsequently thanks to the new July festivities introduced by the Franco regime in 1936.

Before then, every coastal community celebrated the feast day of its particular divine patron. Some still do today: Saint Anthony is venerated by the fishermen of Carboneras and Punta del Moral (Ayamonte), Saint Nicholas of Tolentino and Our Lady of the Sea in Adra (Almería), and Saint Anne in Roquetas del Mar (Almería). Another moment of great ceremonial significance on many beaches is Saint John's Eve, especially among the *almadraba* tuna fishing families who brought this tradition from Huelva to the coast of Cádiz.

But the culture of the sea is also present in other festive settings, such as the protest songs of Carnival (Cádiz, Barbate, Isla Cristina and Punta Umbría), the veneration of certain Holy Week images, and different special occasions.

Today, Andalusia's maritime and fishing heritage and identity are honoured at neighbourhood festivals, sporting competitions, culinary contests and processions on both land and sea, some of which have also become popular tourist attractions.

WOMEN OF THE SEA

Despite being cornerstones of communities that work and live by the sea for centuries, women have rarely been noticed or acknowledged.

In a profoundly masculine world of inflexible gender boundaries, it has been (and still is) rare to find a woman on a fishing boat, exacerbating that lack of recognition. This gender bias is deeply ingrained in seafaring societies and has consequently been echoed by government officials and the

scientific and academic communities, simultaneously perpetuating and explaining the invisibility of these women.

When they do appear in work or social settings, they tend to be performing tasks which, though essential, are still considered “secondary”, ancillary or an extension of their household chores.

Nevertheless, women have historically participated in tasks related to boat “paperwork”, mending and assembling tackle, selling the catch (though less frequently in the dockside markets) and distributing it via informal networks, or working at fishmongers’ stalls and especially in fish factories.

We have found no evidence that women ever participated in other tasks, such as boat building, and although they used to work in the salt industry, their numbers gradually dwindled to nothing.

VISIBILITY

Women became more visible with the advent of industrialisation, when young girls and teens were employed as stevedores at the canneries, under harsh working conditions only made bearable by the solidarity among co-workers. Until the 1990s, when a woman got married or had her first child, she was expected to stop working and devote herself to hearth and home.

RESPONSIBILITIES AND EXCLUSIONS TODAY

Although inequality still exists, women are now considerably more visible in the social and working world of fishing communities.

For years, most fishing tasks and venues were reserved for men, which left the women in charge of supporting and caring for the family. They run the households and frugally manage the earnings of their husbands, sons and daughters.

Fishing vessels are now inherited equally by brothers and sisters, and it is not unusual to find girls enrolled in courses to become mariners or skippers. Yet very few actually go to sea, and those that do are always surrounded by family. This is a legacy of historical sexism as well as the fact that women have long been excluded from the work-related places where the knowledge needed to succeed at fishing is passed from generation to generation.

However, many women have become experts at handling the paperwork for fishing boats, and some even do the accounts for the family vessel. They also continue to work in canning factories and are increasingly involved in sales. Other women have become consultants and business owners in new fields related to tourism, aquaculture or environmental education.

Women do play a very prominent role in ritual and festive contexts and are increasingly involved in planning and even inventing new ceremonies, but they have yet to achieve the recognition of executive roles in religious brotherhoods and other organisations.

Finally, thanks to their talent for networking and cooperation, women from fishing communities are starting to forge political alliances and occupy leadership positions.

KNOW-HOW: TRADITIONAL SAILING AND FISHING WISDOM

LAUNCHING AND HAULING UP BOATS

Today Andalusia has nearly twenty ports for harbouring fishing boats. But until only a few decades ago, it was customary for smaller vessels to be hauled up on the beach.

Every fishing trip began by launching the boat into the surf and ended by beaching or hauling it back up on the sand. On days when the sea was rough, these operations were quite dangerous and could only be carried out thanks to the cumulative know-how of generations of fishermen. The boats were launched and hauled up using ropes, greased logs and human, animal or tractor traction, depending on the era, and winches were essential once the vessel left the water.

USING THE SENSES AND OBSERVING NATURE

The deeply etched lines on an old mariner's face are not just a literary trope: they are the reflection of the fisherman's unique relationship with his surroundings. In order to do his job properly, he needs to know how to use his body and senses and become a keen observer of nature.

The seaman's own anatomy is his first and most convenient resource. Paces, fathoms, feet, cubits and spans—all human-based units of measurement—were and, in some cases, still are used to measure tackle, vessels or depths.

A sailor also needed to know all about the different winds and how they are related to the tides and other atmospheric conditions in order to handle sails. And only an experienced understanding of the behaviour of certain fish or birds could save him from perilous and unexpected weather changes or tell him where and how deep to cast nets or drop traps.

Observation and memory were also fundamental for locating and finding his way back to the best fishing spots; the wisest mariners took bearings to draw their own mental maps.

This complex combination of facts and procedures comprises something called **traditional ecological knowledge**: a changing, cumulative, experience-based, local, non-standardisable, personal body of knowledge. A person with TEK is able to interpret the connections between human, animal and environmental factors and unite physical capabilities with technological devices, from fishing nets to cutting-edge sonar or GPS.

BEARINGS FOR SAILING AND FISHING

TAKING A BEARING ON A LAND OBJECT

As Andalusian fishermen tended to sail close to shore, being able to take bearings from an object on land was a vital skill. The technique, which required personal experience and good eyesight, consisted in memorising certain natural or man-made landmarks visible from the boat (hills, prominent buildings, trees, lighthouses or city/town lights, etc.) that were always the same distance from each other.

When sailing a certain course, these bearings were sighted (end to end) from a predetermined point at sea. After adjusting for depth and travel time, such bearings allowed mariners to pinpoint the exact location of fishing grounds, dangerous waters or good sailing routes.

This information on shallows and coastlines was printed in official publications called rutters to help mariners find the best routes. Rutters provided information on the coast in profile, i.e., as seen from a ship, whereas current electronic charts present an overhead view like maps.

TRADITIONAL ECOLOGICAL KNOWLEDGE: PRACTICAL WISDOM

In 1966, a mid-flight accident caused a US bomber to lose four atomic bombs that were scattered along the coast of Palomares, Almería. One fell into deep water but was spotted by a fisherman from Águilas named Francisco Simó (thereafter renowned as “Paco the bomb bloke”), who quickly sighted several coastal landmarks to mark the spot where the bomb sank.

A team of mathematicians, physicists, geographers and a tracking system that used submersible robots and exhaustive grid mapping were unable to locate the device, and recovering it became a top priority for the US government.

Paco claimed to know where an unidentified object had fallen, but no one took him seriously until the military grew desperate and finally decided to check out the bearings he had taken on coastal landmarks. The submersible robot found the bomb, and Paco Simó tried (unsuccessfully) to claim salvage rights and put a price on knowledge of incalculable value.

SHARING KNOWLEDGE OF OCEAN FLOORS AND FISHING GROUNDS

Having accurate information about the seabed is vital for both fishing and sailing. Shoals, sandbars, reefs and rocks are biotopes for different types of fish, but they can also be quite perilous. Some of these features are named after certain events which were retold so often they became familiar points of reference and made their way onto the Spanish Navy’s nautical charts.

However, reliable information on fishing grounds is only shared within tight-knit social and family groups. With the exception of sailing routes, this knowledge is jealously guarded, and sometimes information is even falsified to preserve it.

The same is not true of sporadic or mobile fishing zones, whose locations are shared, with the expectation of reciprocity, in dockside chats or over the radio or telephone.

Many fishermen would jot down valuable information in private notebooks and try to memorise the contents. But this specialised knowledge, built into each individual’s body and mind, is hard to put into words and can only truly be acquired through imitation and experience.

With the advent of technology, mariners incorporated those instruments deemed useful and effective by their peers. Word of mouth is the best publicity among seafarers, who do not usually go in for general instruction or training processes. Experience on the bridge and at the helm is how they gradually accumulate their wealth of traditional knowledge.

THE EFFECTS OF NEW TECHNOLOGY

Trawling and seine fishing boats began to use motors in the 1920s, and although this did not affect how fishing spots were located, it did lead to other changes. As sails gradually disappeared from our shores (they were used in conjunction with motors until the 1950s), boats began to be equipped with small bridges and were able to travel faster and cover longer routes.

Working methods started to change in the mid-twentieth century, especially with the incorporation of technology originally devised for military use. Radar and sonar made it possible to sail even

when visibility was poor, detect banks of fish, and visualise the seabed and water column. Seiners and trawlers began using mechanical winches and power blocks in the 1970s, which meant more catches with fewer hands on deck, and over the next two decades these innovations spread to smaller vessels which had been considered residual up to that point.

In the 1980s and 90s, mechanised winches became commonplace on net, longline and trap fishing vessels, whose crews also shrank in consequence. And by the twenty-first century, Andalusia's entire artisanal fishing fleet was equipped with depth finders (colour sounders), radar, chart plotters and GPS.

All these devices have transformed conventional methods of navigating, fishing and acquiring knowledge, once based on constant interaction and struggle with the marine ecosystem. But even armed with the latest technology, a wise fisherman still applies his hard-earned knowledge and always pays close attention to the sea.

Nowadays, for safety and monitoring purposes, the entire fleet is equipped with electronic satellite trackers. The Regional Government of Andalusia manages these transponders, known as "green boxes", for boats under 12 metres long, while the Spanish authorities are responsible for the "blue boxes" on all larger vessels.

MAKING FISHING VESSELS

FROM HISTORICAL SHIPYARDS TO MODERN BOATBUILDING

Andalusia's historical shipyards (called *atarazanas* or *dársenas*, words derived from Arabic) were characterised by their strategic locations and the rules made by different authorities to regulate the supply of materials such as lumber, tar, iron, artillery, hemp, rigging, etc. Wood was particularly heavily regulated: measures such as creating a royal office dedicated to supplying timber (1733), royal by-laws governing the forests reserved for naval use (1748), and a navy engineers corps to ensure proper forest management (1770) all denote the Bourbon monarchy's interest in the wise use of Spain's woodlands in order to, among other things, maintain its fleet.

When coastal forests grew thin, others were found further inland. This explains the existence of the Maritime Province of Segura de la Sierra (1748–1833), which spanned territories in Jaén, Murcia and southern Castile-La Mancha. Logs felled there were driven down the River Guadalquivir to the naval yard of La Carraca (San Fernando, Cádiz) or down the Segura to Cartagena, Murcia.

Additionally, more than thirty kilns were built in the Granada forests, which led to the creation of a royal tar and bitumen factory (1759–1825). The central government forced local residents to supply pitch, a public service which, being deemed harsh and dangerous, came with certain privileges, such as exemption from mandatory naval service or pensions for widowed spouses.

PRESENT-DAY BOATYARDS

The growing and increasingly modern fleet of vessels on the water today is served by various boatyards in Andalusian ports. Their trading names reveal that most started out as family businesses and, like traditional knowledge, have been passed down from generation to generation.

Since the late twentieth century, the number of artisanal boatyards and shipyards has been dwindling due to problems in the fishing industry, the preference for new materialism like fibreglass, and EU regulations that limit the growth of each country's total fleet.

Even so, there are still people and projects wholeheartedly committed to preserving and celebrating the art of traditional boatbuilding. In fact, Andalusia's Historical Heritage Act recognises it as an "activity of ethnological interest" in the towns of Coria del Río, Seville, and El Pedregalejo, Málaga.

THE CRAFT: A DIALOGUE WITH NATURE

This age-old craft is concerned with designing, building, maintaining and repairing fishing boats.

Boat builders or marine carpenters combine different natural elements with the skill of a true alchemist. Their capable hands use wood, resin, tar, iron, fire and salt water to create structures dominated by curves, applying the natural arithmetic which they have learned to interpret and replicate. Aided by tools that are extensions of their hands, minds and eyes, these artisans slowly, painstakingly and precisely transform drawings and scale models into life-size vessels.

At every step in the process, they have to stop and make sure that "the whole" is still well-balanced, solid and aesthetically pleasing, in order to take the right decisions and correct any flaws that might imperceptibly mar the perfection of the finished boat, the product of years of versatile practical wisdom.

THE JÁBEGA BOAT: A MEDITERRANEAN ICON

Today fishermen do not go out in *jábega* boats, which are only used in races and processions of Our Lady of Mount Carmel. Yet there has always been an important social component to all its uses, past and present. *Jabegotes*, relatives and neighbours once gathered round these boats to pull in the nets, and nowadays they are at the centre of spirited contests and holy processions. For this reason, the *jábega* is a symbol of the Mediterranean *marengo*, the seafaring communities of Málaga and Granada.

Some *marengo* boat builders claim that these vessels were inherited from the Phoenicians, based on their measurements and the fact that its prow resembles those of other boats from the ancient eastern Mediterranean world. The discovery of two Phoenician boats in Murcia towards the end of the twentieth century confirmed the similarity in size, proportions and construction methods.

THE JÁBEGA BOAT: CONSTRUCTION

1. CHOOSING THE WOOD

The process begins by choosing the right type of wood for each part of the boat, depending on its hardness, porosity, flexibility, amount of resin and resistance to changes in temperature and humidity. Malleable cedar for the scale model; hard oak and red eucalyptus for the backbone; and Aleppo pine for the frames, because of the shape of its branches and its resistance to rot.

The trees are felled in the last new moon of November or the waning moon of January, when they have less sap and therefore take less time to season. Once the wood arrives at the boatyard, it must be air-dried for at least three months, and some pieces must be immersed in salt water.

Felling the trees at the right time, salt water, wind and even the orientation of the boatyard's facilities are all crucial to obtaining seaworthy timber.

2. FROM SCALE MODEL TO LAYOUT BOARD

The scale model is a miniature of one side of the boat, made of overlapping cedar planks. The general lines of the boat are copied from the plan and drawn at full scale on the layout board, which is then used to make the templates with the help of a compass.

In this way, builders obtain the measurements of the structure's different parts so that they can be sawn from the wood.

3. FRAMING THE BACKBONE AND LAYING THE KEEL

The framing process begins with the structural elements at each end (stem, forefoot and rabbet in the bow, sternpost or *coaste*, knee and rabbit at the stern) and continues with the keel or *embón*. Each piece is traced, cut and sanded according to the template, and the entire structure is held together by stop-splayed scarf joints, also called *trait de Jupiter* or "bolt of lightning" joints, of the same type found on ancient Phoenician vessels.

4. INSTALLING THE FRAMES AND FINISHING THE STRUCTURE

The frames are divided into two sections—floor (plan) and futtock (*estemenara* o *estemelara*)—that are screwed together and extend from the rubbing strake or *tabla llave* to the keel. A central or master frame is made first, from which all the rest are obtained using templates. Once drawn, the pieces are sawn and planed down to achieve just the right curves.

Each frame is painstakingly levelled with reference to the plan and layout board, and the scantling is used to calculate its angles, which are more pronounced the farther they are from the master frame. The frames are then temporarily assembled with glue and galvanised pins

The final step in the framing process is installing the *palamora* or keelson, which secures the frames to the keel and to each other, and the *cinta* or sheer strake, which does the same along the top of the frames, as the uppermost plank in the hull. The complicated curved shape is achieved using a combination of moisture, heat and, most importantly, the marine carpenter's eye for the most suitable planks.

5. DECKS AND SUPERSTRUCTURE

The topside begins to take shape with the installation of the four thwarts, which not only serve as seats for rowing but also provide structural reinforcement, much like deck beams on larger ships.

Next, builders install the *tabla llave* or rubbing strake (which joins the sheer strake to the hull), the *saltillo* and *buchín* (small deck areas in the bow and stern), the *tragante* (a wooden block that supports the *espadilla* or steering oar) and the *bolillos* (vertical pieces mounted on the sheer strake that reinforce the entire structure). A box is carved so that the *bolillos* fit into the strake.

In the bow, instead of *bolillos* there are two pairs of *maniquetas*, protruding elements which are now merely decorative but were once used to tie off ropes while fishing.

The final element is the *taco de la red*, a thick piece of wood on the port side over which nets are hauled up.

Finally, the bow is fitted with decorative elements—*espolón*, *chapanza*, *toíno* and *galleta*—that are more ornamental and symbolic than functional.

6. PLANKING THE HULL, CAULKING AND ADDING BILGE KEELS

Whole wooden planks, without any fissures or knots that might weaken them, are the usual choice when it comes to building a boat hull.

However, when a straight plank is laid over the curved structure, the angle or scantling will be different for each frame, and the boards must therefore be carefully bent to fit them using the processes of *mojado* (wetting) and *fasquiado* (planking).

There are three types of hull planks (*vocales*, *centrales* and *apalauras*) which are installed by alternating between sides. The structure is turned over to begin the planking or *entablamento*, in which the boards are temporarily secured to the frames so that they will mould to the curve or *arrufo*.

The boat is made waterproof by caulking, and the first step is to pack hemp or cotton oakum into the gaps between planks using caulking irons and mallets. The joints are then sealed with tar and putty and given a coat of anti-fouling paint and decorative paint.

Traditional *jábegas* are fitted with two bilge keels on each side, which make them easier to launch and pull up on the sand.

The last step is carving the oars and *espadilla* or steering oar used to steer the vessel.

When the construction process was completed, after many months, the entire community turned out for the christening ceremony and inaugural launch.

THE TAR MAKER'S CRAFT

In Andalusia, people who worked in the forest making tar from the hearts of pine trees were called *alquitrانeros* or *pezgueros*.

Their job, which required an intimate knowledge of all sorts of chemical processes, began by firing the resinous cores of stumps and roots in a kiln to obtain dark liquid pitch. When cooked, it turned into tar or bitumen, a solid substance that is diluted and used as a sealant in caulking. The same process also produced turpentine which, mixed with linseed oil, is used to season and protect wood. The tar makers' work was so important that Charles III actually had a royal tar factory established to ensure that all the ships in his navy would be properly waterproofed.

In Andalusia, fishing nets, rope and twine were coated in tar, as they would otherwise rot and deteriorate quite quickly, and fishing boats were regularly tarred until the 1960s. The cables and metal tackle used in *almadraba* fishing are still coated with tar today.

HISTORIC VESSELS

Boat designs have changed with the incorporation of new technology.

The use of motors, which were combined with sails until the mid-twentieth century, made a V-shaped profile more desirable than the old U-shape. New decks and holds were added to house the motor, salt, ice and larger catches.

More powerful motors made it possible to design more spacious boats, with fan-shaped and eventually square sterns. Meanwhile, artisanal vessels were doing away with sails and adding small bridges and decks.

In the 1970s, the bridge became larger and moved from the centre to the bow in order to accommodate new technological instruments and winches, power blocks and other mechanical devices.

Today, wood has largely been replaced by fibreglass and, on larger vessels, steel, as these materials are less costly to maintain.

WHAT IS FISHING TACKLE

WHAT IS FISHING TACKLE?

Fishing tackle is the general term for any human invention used to catch fish, crustaceans or molluscs. Called *artes de pesca* or “fishing arts” in Spanish, traditional tackle is the result and manifestation of fishermen's specific knowledge about the feeding, breeding and migration habits of different species and of the sea (depths, tides and weather conditions).

Each element is designed according to this expertise knowledge, which differs with each season, and how it interacts with the environment. The action of surface (buoys) and depth elements (sinkers, stones or weights), combined to suit the precise depth at which the prey are usually found, determines the efficacy of each contraption.

Historically, fishermen's guilds set rules to regulate fishing rights, closed and open seasons, mesh sizes, number of hooks, and where and how the catches were distributed. As Sáñez Reguart wrote in the late eighteenth century, they were intended to "serve the common good of all fishermen and ensure the survival of the species”.

1. TRAPS

Traps are cages baited with meat and dropped to the bottom to lure octopus and different kinds of fish and crustaceans. The shape of each trap varies depending on the intended prey and local customs.

Traps have been used throughout history, although the materials used to make them have changed. Plant fibres and other natural elements have given way to plastic. In some spots along the coast, clay pots (called *pucheros*, *alcatruces* or *cangilonos*) are used instead of traps to catch octopi. In fact, octopus pots have become one of the fastest-growing types of fishing tackle in recent years.

Traps are dropped in lines or rows, and as they stay in one place for several days at a time, trapping zones or spots were usually assigned by drawing lots.

2. HOOKS

There are many different types of hook tackle, which vary depending on depth, size of the target species' mouth, and fishing strategy.

On the bottom, hooks are used to catch rockfish (croaker, snapper, grouper, dentex, forkbeard, rubberlip grunt, red-banded and blackspot sea bream, etc.). **Longline** fishing is the most common method in Andalusia and involves dropping a long main line to which hooks are attached after being baited in baskets that used to be made of wicker but are now plastic. These lines may be vertical, to reach a greater depth, or horizontal. Pelagic longlines near the surface are used to catch larger species such as bluefin tuna, swordfish or dogfish.

Other types of tackle that use hooks are **chivos** (for octopus), **jigs** (for squid) and, to a lesser extent, variations on the traditional **rod** and **line** (*chambel*, *volantín*, *caballera*, *parguera*, *tablilla* and *palillo*).

The **espinel**, a type of longline anchored in the sand, has disappeared today because it is not compatible with the touristic and recreational use of our beaches.

3. SHELLFISHING AND SHORE FISHING TACKLE

Different devices have been used to catch shellfish and fish on our beaches, estuaries and rivers for centuries.

Rake (*rastro*)

This is a rectangular iron box with teeth to which a small pouch is sewn. On the shore or in shallow water, the shellfish gatherer pushes the teeth of the rake into the bottom with the help of a long handle and drags it along while slowly walking backwards. After each run, the person must sift through the catch to find the keepers: molluscs (clams, cockles and striped venus clams) and fish that tend to bury themselves in sediment, such as sole.

Cast net (*tarraya* or *esparavel*)

This is a circular net with lead weights along the edge. When a fisherman standing on shore observes the presence of fish, he throws it over them and the weights make it sink to the bottom, trapping the fish beneath the mesh. It is suitable for shallow waters in rivers, beaches, estuaries and weirs and today is only used for recreational fishing.

Gig (*fisga*)

This handheld trident was once quite widespread in Andalusia, though now it is only used to spear fish in tidal weirs.

4. BOAT FISHING TACKLE AND GEAR

In time, rakes were adapted for boat fishing. A stockless anchor is thrown off the stern, while several dredges are attached to ropes and shot off the bow davit (a square metal piece). At that moment, the boat starts moving backwards, slowly dredging the bottom; until the 1970s, this was done with a windlass powered by the sailor's own feet, a gruelling task now performed by mechanical winches.

The size and gauge of the dredges vary depending on what species they are meant to catch. Some of the most prized are the smooth clam and the rough cockle, a mollusc that supports a substantial canning industry on the Mediterranean coast and in Ayamonte.

Hydraulic dredges

The hydraulic dredge is an Italian invention that came to Andalusia in the mid-1900s. It differs from a conventional dredge in that it uses two jets of water to churn up sediment on the seabed as it is towed along.

This technique is heavily debated because it alters the underwater habitat, can potentially harm the reproduction of other species, and overlaps with other forms of fishing.

5. NET FISHING TACKLE

In Andalusia, the term *artes de red* or "net arts" applies to an astonishing variety of mesh gear

consisting of one, two or, more commonly, three layers of netting. On **trammel nets**, for instance, the two outer layers or walls (*albitanas*) do not trap the fish but guide them into the slack inner panel of netting where they become entangled.

Mesh size (the measurement of each hole in the netting) varies depending on the target species, and different types of nets are often named after their intended prey: *cazonal* (dogfish), *sardinal* (sardines), *milvera* (frigate mackerel), *arte de breca* (common pandora), *arte de merluza* (hake), *arte de acedía* (plaice), *arte de langostino* (prawn) and many local variants.

Until the mid-twentieth century, the netting and ropes were made of plant fibres (hemp or esparto grass). They used corks, inflated skins, casks, gourds or hollow glass balls as floats and buoys, and clay balls, stones or lead weights for ballast.

Plant fibres were eventually replaced by nylon, which lasts longer and is less costly to maintain. Later came nets made of *tripilla* or synthetic monofilament, which are even easier to maintain and more durable but unfortunately not biodegradable.

The latest innovation is a foot rope with built-in weights that can be adjusted to make the net sink or float.

Nets are used on the sea floor and the surface. Placing nets on the bottom requires a precise knowledge of the seabed and the behavioural patterns of target species, taking advantage of when they change depths to feed or mate. Surface nets are cast at certain times of year, coinciding with the migrations of pelagic species (sardines, anchovies, frigate mackerel, albacore, flying fish, etc.).

ASSEMBLING NETS

Proper assembly is essential for nets to work, as the mesh must form a bag or bunt strong enough to resist the pull of ocean currents and boat traction.

Twine is used to stitch the netting panels and connect them to two ropes, the float/head line and lead/foot line. The number of stitches and of corks and weights on each line depends on the fisherman's skill and experience. Each net is a unique product of the expertise and knowledge of the person who makes and uses it in a specific ecological context.

Unlike other parts of Spain, in Andalusia nets were assembled and mended almost exclusively by men, although women did occasionally work on them at home.

Purse seine

This method reached our shores in the early twentieth century and, as a more mobile and intensive method, immediately met with opposition from fishermen working on *sardinal* and *jábega* boats.

The purse seine has a thick rope or purse line along the bottom which, when the boat dropping the mesh curtain comes full circle, pulls the net closed at the bottom. The resulting "purse" is quite large, with smaller mesh at the bunt end to form a kind of pouch that will hold the fish when they are lifted aboard.

The first such nets were *tarrafas*, used in Huelva to supply the fish canning industry. In the 1920s, growing demand led them to be replaced by trawls, which moved to the more plentiful fisheries off North Africa.

Different techniques have been used over the years to locate or attract shoals of fish, such as looking for the luminescence they give off on dark nights (*pesca al arda*), following birds or baiting (*enguar*) the water with cured and minced roe. The advent of sonar and colour sounders in the 1960s gave rise to *pesca al aparato* or “instrument fishing”, in which the skipper reads the screen to locate fish. Light is also used to attract fish, whether in the form of underwater fishing lights, lamps aboard small boats, or spotlights on a vessel’s bridge.

Purse seines, which do not affect the sea floor and produce little to no bycatch, are currently used for catching anchovies, sardines, and jack and Atlantic mackerel.

Dragnets

Beach seines

These are fundamental for understanding the history of fishing in Andalusia. Used since ancient times, they became widespread after the sixteenth century due to the influence of Mediterranean cultures. Beach seine nets had different names depending on their size and mesh: *lavada*, *boliche*, *chinchorro*, *birorta* and *jábega* or *arte real* (the largest, most complex and with the widest openings).

The net consists of two separate wings of netting joined at the bottom to form a denser bag or bunt where the fish is collected. It has a head rope with cork floats, a foot rope with lead weights, and a buoy over the mouth to keep it open.

Beach seines are used to trap a shoal of fish off the coast. One rope is left on land and the net is taken out by a sailing or rowing boat, which follows a semicircular trajectory. At just the right spot, the skipper will give the signal (with lights if it is dark) to drop the net and begin pulling it in from the shore. On the beach, every mariner takes a small piece of rope, ties it to the tow lines (cords connecting the net to land) and starts to pull, moving up towards the dry sand. When he runs out of room, he goes back down to the shore and repeats the movement as often as necessary. The secret to not losing the catch is for everyone to pull on the tow lines in unison, picking up the pace as the bag nears the shores.

These nets have proved effective for catching sardines, Atlantic and jack mackerel, European anchovies, bogue and, in the summer months, even smaller tunas, as they trap anything moving along the coast at the moment they are cast. Beach seines were banned in the 1980s due to their substantial bycatch (when not employed properly) and incompatibility with sun-and-sand tourism.

Yet older fisherman fondly recall how they used to “fill many an empty belly”, as impoverished men, women and children would often help pull in the catch in exchange for a small amount of money or fish.

Boat trawls

Fishing with pair trawlers became widespread in the eighteenth century. Imported from Catalonia, this method involved dragging a bag-shaped net attached to two sailing vessels (*pareja de bous* in Catalan, meaning pair or team of oxen). As its popularity grew, pair trawling began to encroach on the territories and markets once dominated by more traditional fishing gear (*jábegas*, trammel nets,

traps, hooks), which generated significant conflict. The Ministry of the Navy even banned pair trawlers in certain places and times for conservation reasons or to protect jobs. All restrictions on pair trawling had been lifted by the late nineteenth century, when the first mechanically powered trawlers appeared.

Today, Andalusian trawlers bring in a wide variety of fish and molluscs, in addition to having a monopoly on certain shellfish like Norway lobster or prawns. Their main technical challenges are to avoid eroding the seabed and use nets that allow smaller fish to escape.

WHAT IS A PESQUERÍA?

Fishing tackle is just one part of the different strategies and approaches which encompass all activities related to the location, catch, extraction, processing and sale of marine species, the organisation and execution of seafaring duties, and the use of tools and gear. The sum of all these elements is called a *pesquería* (literally “fishery”) or fishing method and is the historical result of knowledge acquired through practice and experience, partly shared and enriched each day on every vessel, beach and dock.

Pesquerías can be classified by target species, *modus operandi*, gear/tackle or other factors. The following are officially recognised by the authorities today:

- Trawl fishing (*bacá*)
- Fishing with surrounding nets (*traiña*)
- Small-scale fishing. This is practised all along the Andalusian coast, although in some ports it is the only type of fishing allowed. It includes a very wide array of tackle based on meshes, hooks (set bottom lines), traps (cages, pots, *alcatruces*) or rakes that are assembled and used differently in each port, depending on the community’s traditional way of working and interacting with their environment. Only one type of tackle is used on each fishing trip, although they can be combined by days or periods if authorised in advance.
- Hydraulic dredge fishing
- Surface longline fishing
- *Almadraba* fishing

THE ALMADRABA

Some fishing methods have extended beyond the working docks of a few coastal towns and become symbols of social identity and pride for a much larger community.

Of all the fishing methods practised in Andalusian waters, the *almadraba* deserves special mention because of its uninterrupted history (having been used since at least the ninth century BC), its importance for the regional economy (supplying major international trading networks), its role in forging a bond between the people and the land, and its ability to generate a rich universe of social narratives, imagery and all kinds of cultural elements. Moreover, this fishing method has enjoyed a privileged status thanks to the association of *almadrabas* and bluefin tuna with aristocratic families and powerful businesses since the Middle Ages.

ITS CULTURAL LEGACY

Tuna appeared alongside Melqart/Hercules on ancient Punic and Roman coins to identify important industrial fisheries in the Strait of Gibraltar and the Mediterranean Sea, and today the same species can be seen on the heraldic devices of towns like Barbate, Conil de la Frontera and Adra.

The cultural legacy of the *almadraba* is incredibly rich and diverse: architectural remains, place names, vessels, knowledge of fishing techniques and practices and catch distribution, celebrations and rituals, food and culinary customs, works of art and literature, impressive documentation (thanks to its association with noble houses), and a unique vocabulary and speech formed by the interaction of different cultures in the constant migrations to and from the three major tuna fisheries (Portugal, Andalusia and the Mediterranean between Sicily and Spain's eastern seaboard).

Yet new ways of killing and commercialising tuna, and above all the incorporation of workers unrelated to the older generations, are changing many of the practices that have been passed from father to son for centuries.

One example of this transformation is the disappearance of *el santito*, a sacred object consisting of a scapular and an image of the Virgin Mary that tuna fishermen used to tie to the *mojarcio* or main cable of the trap. Though not officially sanctioned by the church, such devotional items have long been cherished in close-knit social circles as charms that ensure a good catch and avoid the sea's perils. *Tallas* and *salomas*, the rhythmic songs and chants that once made it easier to perform the gruelling tasks of rowing or pulling up the net with each *levantá* or hoist, have also vanished.

TUNA MIGRATIONS

The *almadraba* technique is a cultural response to a cyclical migration phenomenon: every year, starting in April/May, several tuna species make their way from the Atlantic to the Mediterranean in search of saltier, warmer breeding grounds (inward-bound tuna) and around August begin returning to the Atlantic (outward-bound tuna). These migrations have inspired multiple fishing methods, although the most impressive and remarkable is undoubtedly the use of *almadrabas* to catch bluefin tuna.

Tunas travel in schools and can endure a very wide range of water temperatures thanks to their almost mammalian metabolism. This fish's hydrodynamic design, musculature, enormous gills and a heart ten times larger than that of similarly sized species makes it an excellent swimmer, a genuine ocean athlete capable of covering four hundred kilometres in just one day and moving at speed of up to 90 kilometres per hour.

An adult bluefin can grow to be four metres long and weigh over half a tonne. It is a great hunter and only has one natural predator aside from humans: the orca, which can send an entire school into a panic.

HISTORICAL VARIATIONS

The *almadraba* is a passive fishing method that relies on shoals of tuna passing close to shore, as it can only be set where the seabed is flat, sandy and shallow. Historical evidence shows that it has been used, with different types of tackle, almost without interruption since Phoenician/Punic times.

There were two basic *almadraba* systems: *de visto* or *de tiro*, in which the traps were mobile, and *de trampa fija*, the stationary method that became increasingly popular in the eighteenth century due to Sicilian, eastern Spanish and Portuguese influences and, by the late 1800s, was the only one still being used.

Since ancient times, facilities for salting, packing and long-distance trading have always cropped up near *almadraba* fisheries. Just as deep-frozen tuna is now shipped from Spain to the rest of Europe, Russia and Japan, in the days of the Roman Empire, amphorae filled with salted fish and gourmet sauces made in Andalusia were distributed throughout the Mediterranean Basin.

MOBILE ALMADRABAS

When the *atalayeros* or spotters glimpsed a school of tuna, the fishing began. From their high towers, they gave precise orders to vessels stationed between the shore and the sea, which began carrying out a sequence of complex operations to first slow the fish with nets called *sedales*, and later hem them in and pull them to shore with the *cinta gruesa*, a larger and stronger net. Once the catch was hauled up on shore, the frenzied business of butchering, salting and packing began.

In the ancient and Islamic world, *almadraba* fishing was so profitable that it supported an entire class of industrial and shipping magnates, and in the late medieval and early modern era, it was a vital source of income for great aristocratic families like the ducal House of Medina Sidonia.

The crown of Castile rewarded this family for their service in the conflictive border zone of the Strait by granting them the exclusive right to set *almadraba* traps. That monopoly was confirmed in the late sixteenth century and endured until the early 1800s, although it was the source of many disputes among noble houses, municipal councils and the monarchy itself.

From the thirteenth to the seventeenth centuries, *almadraba* communities also created stable population centres and a line of defence against coastal raids by North African pirates. Conil de la Frontera and Zahara de los Atunes were both prominent during this period, and Torre de Hércules (between Cádiz and San Fernando), Tarifa and Lepe-La Redondela were also very active.

Almadraba fishing was a fascinating micro-verse that caught the attention of writers, artists and even Jesuits, who in the sixteenth century set out to evangelise these coastal peoples on the geographical and cultural edge of civilisation.

STATIONARY ALMADRABAS

There have been several models of fixed *almadrabas*, which were used at different times in different places. They arrived in the Gulf of Cádiz in the eighteenth century, after successful experiments at Zahara and La Tuta/El Terrón (Lepe-Cartaya). Local fishermen made their own adaptations to the systems imported from Portugal and Benidorm, which used two types of fixed traps: Sicilian *almadrabas*, with various compartments and no closing gate, and *almadrabas de buche*, which had a single chamber and *endiches* or closing gates.

In the end they came up with a combination of the two: a trap with more than one compartment, *endiches* for closing the mouth, and a *copo* which, like a ground-net, raises the tuna to the “killing chamber” where men on barges haul them in.

The new system had to be tailored to the Strait’s heavy currents and overcome the opposition of

fishermen's guilds, which lasted until 1870 in Conil and Zahara because it changed their traditional way of working and required fewer hands.

When the aristocratic monopoly ended in 1814, the number of *almadrabas* multiplied and many companies from Galicia, eastern Spain and Italy flocked to Andalusia. With titled lords no longer controlling the economy, a more profit-centred approach to the fishing business introduced a new processing industry based on oil-packed fish in the late nineteenth century.

FROM THE NATIONAL ALMADRABA FISHING CONSORTIUM (1928–1971) TO TODAY

In the first quarter of the twentieth century, a corporate consolidation process gave rise to the National *Almadraba* Fishing Consortium, the result of an alliance between the national government and a group of powerful industry leaders. Its creation triggered such a public outcry that the issue was even brought before the Spanish Congress. There were three main protests: many business owners (especially in Huelva) had been excluded; limits were placed on the traditional distribution of tuna meat and offal among workers, declaring that offal was instead to be burnt and turned into silage or fertiliser; and the *almadrabas* were hindering the growth of the sardine industry and fleet in the Gulf of Cádiz.

After overcoming this initial resistance, the consortium implemented a system of factory towns and workers' housing. It gradually industrialised processing facilities, automating and mechanising as many tasks as possible to boost productivity. The best model of this idea was the factory town of Sanct-Petri, an urban prototype with a square and avenues, a farmers' market, shops, a clinic, a church and a cinema. It housed 100 skilled workers and, in peak season, could accommodate about 1,500 people. It even had a local mayor from 1947.

However, the working-class families did not earn enough to get by, and most tried to supplement their income by using their own tackle to fish on the beach or selling the perquisites they received, leftover tar or ropes they had remade from mesh fibres. Little by little, their working conditions and wages improved, and by the 1950s they had clean running water, cheap fuel, a company store, and free electricity and medical care.

Since the 1980s, only four *almadrabas* are still set in Andalusia. They are based in Conil, Zahara de los Atunes, Barbate and Tarifa and run by local families. New slaughtering methods have been introduced in the last decade to avoid stressing the tuna and satisfy the growing demand for raw fish. Fattening ponds are also being installed near *almadraba* traps so that they can continue to operate into the autumn months.

MEDITERRANEAN ALMADRABAS

Tuna have also been fished off our Mediterranean coast for centuries. Archaeological remains between the Strait and Almería and place names like Atunara (La Línea de la Concepción, Cádiz) remind us of the tuna's presence here since Phoenician times.

Almería was a force to be reckoned with in the sixteenth and seventeenth centuries, especially thanks to the *almadraba* of Cabo de Gata, and later those of Roquetas (1671) and Agua Amarga (1705). The Dukes of Medina Sidonia also set *almadrabas* off the Almería coast in the eighteenth century, although local residents protested.

Almería had as many as seven active *almadrabas* in the 1800s and 1900s, although they only targeted smaller tuna species during the outbound season. The village of Almadraba de Monteleiva

owes its existence to the most important one, the Cabo de Gata *almadraba*.

During the consortium years, an *almadraba* was set off Atunara from 1951 to 1994 that also had company facilities on shore. There was another at Punta Chullera (Estepona, Málaga) in the 1980s that is no longer in existence.

SHARING THE BOUNTY WITH *ALMADRABA* WORKERS

Thanks to historical continuity of *almadraba* fishing and the combination of multiple cultural influences, from the central Mediterranean to the Portuguese coast, workers have often received different types of bonuses, rewards or payment in kind to complement their wages.

SALT PANS

THEIR RELEVANCE AS CULTURAL LANDSCAPES

Salt pans prove beyond a doubt that coastal communities are able to live in harmony with their environment. The interaction of the tides, winds, sun, mud and human activity have produced a landscape of high ecological value. The different temperatures and salinity levels in pools and channels of varying depth create small pockets of life, each with its own rich and complex network of relations between micro-organisms, algae, fish, crustaceans, molluscs and birds. Salt-loving plants also encourage migratory species to nest in these places, expanding the scope of their environmental effects.

Salt pans and evaporation ponds have been used for a variety of production and extraction activities: primarily salt harvesting, but also fish breeding and catching, hunting and obtaining raw materials to make things that local residents use in their daily lives.

THE IMPORTANCE OF SALT

Salt is one of the three basic substances needed to sustain life (the other two being air and water) and is essential to the metabolism of living things, and therefore to human nutrition.

It has also played a starring role in human history, thanks to the fact that it has over fourteen thousand uses, most of which are industrial. Salt is used to manufacture medicines, plastics, detergents, fertilisers, colourings and dyes, protect crops, make water potable, tan leather and de-ice roads.

On top of all this, until the technological revolution introduced industrial refrigeration, salt was the most important means of preserving fish and other foods. The salting industry was a cornerstone of trade in many economies of the past and is responsible for some of the most important archaeological sites on our shores, dating all the way back to protohistory. The commercial importance of salted products was so great that the Spanish crown even placed a special tax on salt, which was not repealed until 1869.

THEIR HISTORY

Salt pans have featured prominently in the history of Andalusia, where they are concentrated in the four major areas with intertidal salt marshes and lagoons: the western coast of Huelva, the Guadalquivir estuary, the Bay of Cádiz and Cabo de Gata.

They have presumably been around for ages, although the earliest written mentions and archaeological evidence date from Phoenician and Roman times and associate them with food salting facilities, a connection that continued into the Hispano-Islamic era.

After the Christian conquest, the monarchy made a bid to bring the strategic salt industry under its control. Philip II (1557–1598) introduced the Royal Salt Works Revenue, and in 1631 a royal decree seized all salt works for the crown and established a state monopoly on salt, levying taxes on its production and sale that went directly into the royal coffers, regardless of who owned and operated the facilities.

The fish salting industry experienced a boom in the eighteenth century, and the abolition of the salt monopoly in 1870 triggered the “salt works fever”, a proliferation of new salt production sites that shaped the coastal landscape of the twentieth century. Andalusian salt was exported to the Americas

and the rest of Europe in an era marked by the predominance of large landowners and the first business associations, workers' rights movements and labour strikes.

In the twentieth century, salt began to be transported by railway tracks and cars instead of donkeys, although the industry started to decline in the 1960s due to several factors: the possibility of preserving food by freezing rather than salting, competition from other regions, and the appearance of industrial-scale salt works and aquaculture farms.

Today we are witnessing a revival of traditional salt pans in protected nature areas, where recreational activities coexist with environmental, educational and research initiatives. Moreover, new kinds of salt products have appeared to cater for an increasingly demanding gourmet market.

HOW THEY WORK

Salt pans adapt to seasonal cycles to produce both salt and fish. These ponds are created by building an outer wall around an area of tilled soil to isolate it from the surrounding territory, a man-made barrier of stones and stakes that often takes advantage of natural landmarks.

On the Atlantic, they trap seawater thanks to the tides and a system of large and small sluice gates, and on the Mediterranean they do it with the help of waterwheels and pumps. Algae, silt and micro-organisms are gradually separated from the water as it moves from pond to pond, increasing its salinity.

The salt is harvested in the *tajo*, where barefoot *compañeros* break up and scrape the crystals using specific tools (*azoleta* and *ro*) until they have formed a *viracha* or salt mound in the main bay. After air-drying for a few days, the salt is taken away.

The loading traditionally began on the feast day of Saint Anthony: after crossing the *salero* or salt hill, each load was taken to the mill and ground to different thicknesses, from coarse to fine. Each season yielded two or three *razas* or harvests, depending on weather conditions, and ended in mid-September.

THE SALT WORKER'S CRAFT

The men and women of the salt pans have unique skills and knowledge related to salt harvesting, fishing, navigating canals and channels, assembling and maintaining fishing tackle, and fashioning the tools needed to thrive in a world of water and salt. They possess a practical wisdom based on the continuity of nature's cycles, expressed using a distinctive vocabulary and passed on directly through word and deed.

Their tools materialise the constant battle with the salt marshes. Handmade and customised to each worker and task, some of the most important are the iron **shovels** and square **spades** of gall oak wood (used to remove mud and silt), the **joraor** or **borer** (a curved holm oak stick used to make a hole or *ojal* in the crystallising ponds), the **azoleta** (for scraping off the salt) and the **vara** or **ro** (for sweeping it into mounds). Finally, the salt was loaded in large esparto grass **panniers** or onto wooden **pallets** and carried to carts or boats (*candreys*, barges, rowing boats or *bucetas*) which would take it through the maze of channels to the outside world.

Operations were overseen by the *capataz* (foreman) and his right hand, the *sotacapataz* (assistant foreman). The laborious, fast-paced job of salt harvesting was performed by *compañeros*, skilled

workers who had learned the craft as apprentices or *novicios*. The salt was removed from the pans by carriers or *acarreadores*, who loaded it onto donkeys and took it to the salt hill, where an emptier or *vaciador* dumped out the panniers' contents.

Children, called *hormiguillas* or little ants, were responsible for leading, feeding and cleaning the pack animals, running errands and other secondary tasks.

The *capataza*, the foreman's wife or daughter, was the glue that held her family and the entire salt-working community together.

THE DESPESQUE

The *despesque* or "fish clearing", done between November and April, is a tradition based on the need to balance out water levels and clean the mud at the bottom of salt ponds. It involves leaving the estuary open for few weeks to let young fish inside (gilt-head bream, monkfish, flathead grey mullets, eels, sole, European seabass, spotted seabass, etc.), which stay and grow fat in the first pool, as they would not survive in the saltier ones. A net called a *marco* is placed over the sluice gate so the adult specimens cannot escape.

When it is time for the *despesque*, the pond is partially drained. People walk through it pulling a small net called a *pandero*, initially at a shallow depth to catch the youngest fish, which are then released into a small adjacent pool, the *chiquero*. Until the 1940s, "fish clearing" was done at the beginning and end of each campaign as a form of communal celebration. However, since then it has become customary to sell the most valuable species.

The marshy channels and streams around the evaporation ponds were also popular spots for catching fish with the same kind of tackle used in intertidal zones: hooks on lines and traps (for crabs, seabass, bream or cuttlefish), *salcillos* (for crabs) and assorted manual shrimping gear (*camaronera*, *reliquia*, and *pujavante* or *mediomundo*). This diverse array of traditional equipment has now largely been replaced by *nasa holandesas*, traps placed parallel to the bottom that capture and retain every species which finds its way inside.

DAILY LIFE

The pace of life varied according to the seasons: laid back in the winter months, and hectic when the summer harvesting season came round.

Salt workers' houses stand out starkly on the marshy flats. Places of storage and shelter for people and animals, these structures were made of locally sourced materials and cemented with lime, representing the fusion of a unique human culture with its environment. The houses often had a small vegetable garden and a water tank filled with rainwater collected from drainpipes on the roof.

Inside, the fare was simple but plentiful: chickpea stews, wild game, meat or fish pottages, potato salad with hard-boiled eggs and paprika, and a few special dishes like shrimp or *verdigón* (cockle) fritters.

There has always been a strong connection between salt workers and farmers, as evidenced by the use of shared terminology (*labrar*, *huertas*, *tajo*, *cosecha*). Food and labour were also shared, by arrangements of mutual assistance or by offering payment in kind or permission to fish. Farm families also kept the donkeys fed in winter, as the animals could not survive on the *chapinas* and *borraza* (saltmarsh plants) that grew along the outer walls.