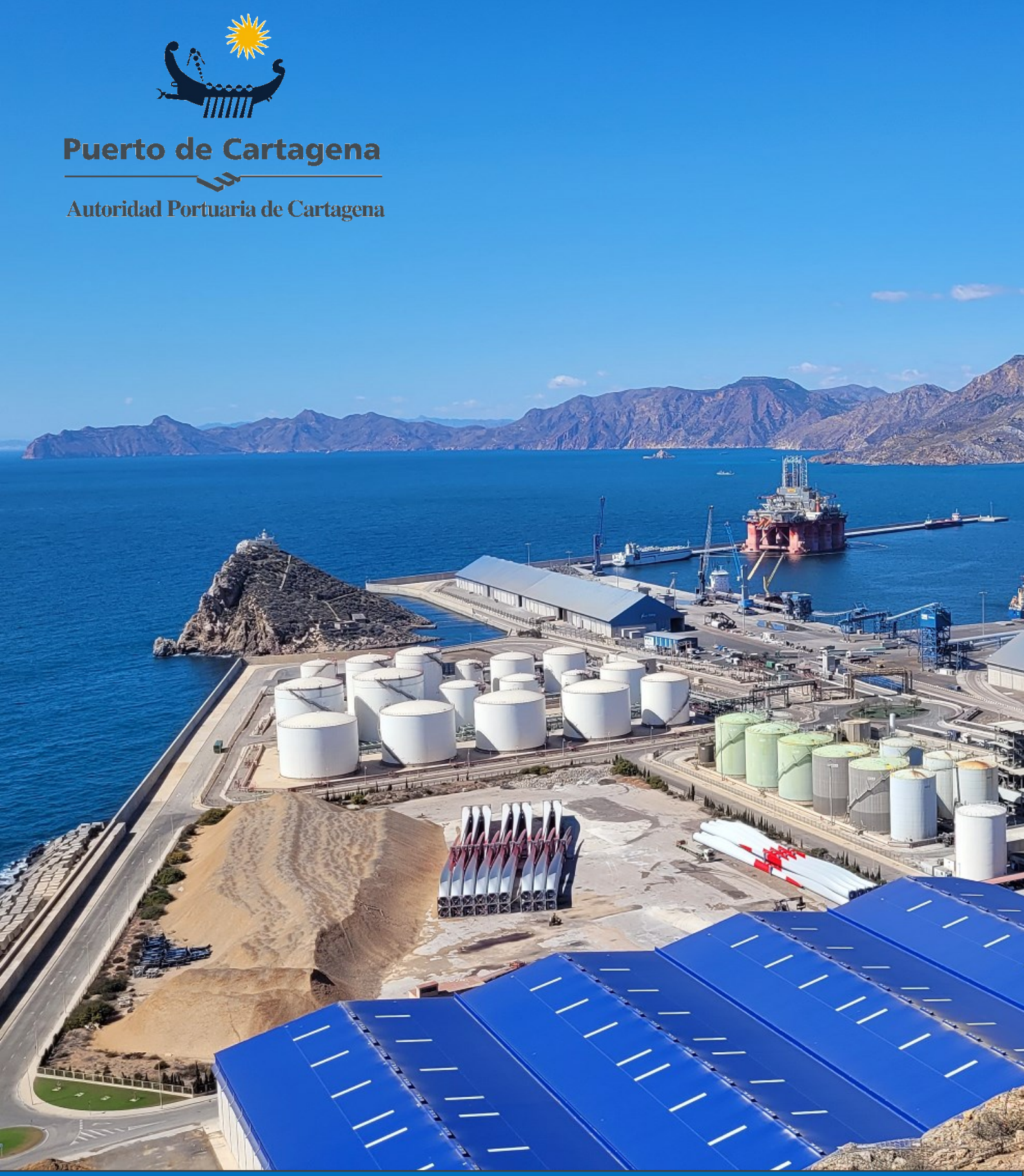
Puerto de Cartagena

Autoridad Portuaria de Cartagena



Environmental Declaration 2023

GOBIERNO DE ESPAÑA
MINISTERIO DE TRANSPORTES Y MOVILIDAD SOSTENIBLE
Puertos del Estado

OBJETIVOS DE DESARROLLO SOSTENIBLE

EMAS
GESTIÓN AMBIENTAL VERIFICADA
ES-MU-000017

EMAS AWARDS
WINNER 2019
Micro and small
Public organisations

SISTEMA DE ECOGESTIÓN Y ECOAUDITORÍA

Cartagena Port Authority

Environmental Declaration 2023

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Production and design: Sustainability Department
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EMAS VERIFIED ENVIRONMENTAL MANAGEMENT ES-MU-000017
ECOPORTS
ISO 9001 - ISO 14001 ISO 45001- EMAS BUREAU VERITAS Certification
OBJETIVOS DE DESARROLLO SOSTENIBLE
Desarrollo Sostenible Región de Murcia

1. Introduction

This Environmental Declaration aims to meet the information needs that society and other interested parties require on the conditions that port activity has on the environment and the measures that are being carried out to control and minimize these conditions.

Organizations recognized with the EMAS (Eco-Management and Audit Scheme) Registry, Regulation EU 1221/2009, amended by Regulations EU 2017/1505 and EU 2018/2026, have a defined environmental policy, an implemented environmental management system, and periodically report on the operation of said system through a public Environmental Declaration verified by independent bodies. These entities are recognized by the competent body of the Regional Environmental Administration with EMAS logo that guarantees the reliability and veracity of the information given by said companies.

Respect for the environment is a commitment made by Cartagena Port Authority that goes far beyond mere legal compliance, materialized in our determined and firm commitment to the EMAS registration, the highest exponent of environmental excellence in management. EMAS registration requirements are much higher than those by the ISO 14001 standard, since, in addition to guaranteeing legal compliance, they require total transparency in environmental management by making environmental performance public, whatever the result is, whether positive or negative. Through the Environmental Declaration, interested parties can participate by contributing ideas, suggestions, and can show their doubts and/or discrepancies.
This Environmental Declaration clearly outlines our environmental performance for 2023, as well as our vision for ensuring future sustainability.

With this 2023 Environmental Declaration, we reach 16 years on the path of environmental excellence. This effort for a job well done, for the respect of our ecosystems, for the dissemination and promotion of environmental commitment among the Port Community in Cartagena has allowed us to continue growing without compromising the future of the next generations, evidenced by the good results of our controls of the quality of the port waters, of the levels of dust immission that we measure in our bulk terminals or the management work in the natural environment, which provide us with valuable information on the environmental health of the seven natural areas included within the Natura 2000 Network that surround us.

We are now ten EMAS-registered companies operating in the Port of Cartagena, and several more are completing the process. This makes us the leading European port in terms of EMAS Registry implementation, making this EMAS Registry the best tool for addressing the environmental challenges that society demands in the future.

Our commitment to the Society also includes our firm commitment to contribute to the achievement of the United Nations Sustainable Development Goals. For this reason, we have adhered to the Global Compact and have integrated these Sustainable Development Goals in our strategic lines and in our company objectives. We are also extending our Vision to the Port Community, which is why we have implemented a platform of "Commitment to the Sustainable Development of the port of Cartagena", to which companies that share with us the same concerns and commitments for the Sustainability of our port. https://www.pactomundial.org/tag/ods/
https://ods.apc.es/
We have also designed a new web portal specifically for environmental and sustainability initiatives, pioneering this new approach to environmental outreach and promotion in the Spanish port system. https://observatorio.apc.es/

This Environmental Declaration complements the public information disseminated through the Annual Report and the Sustainability Report.

All the information about this Port Authority and its different publications is available on our website:
www.apc.es

El Presidente,
Pedro Pablo Hernández Hernández

El Director General,
José María Gómez Fuster

El Presidente del Comité de Empresa,
Diego Zaplana Ros


TRANSOCEAN
BARENTS

OBJETIVOS DE DESARROLLO SOSTENIBLE

CONTRIBUCIÓN DIRECTA

5 IGUALDAD DE GÉNERO

8 TRABAJO DECENTE Y CRECIMIENTO ECONÓMICO

9 INDUSTRIA, INNOVACIÓN E INFRAESTRUCTURA

13 ACCIÓN POR EL CLIMA

14 VIDA SUBMARINA

17 ALIANZAS PARA LOGRAR LOS OBJETIVOS

CONTRIBUCIÓN INDIRECTA

3 SALUD Y BIENESTAR

6 AGUA LIMPIA Y SANEAMIENTO

7 ENERGÍA ASEQUIBLE Y NO CONTAMINANTE

11 CIUDADES Y COMUNIDADES SOSTENIBLES

12 PRODUCCIÓN Y CONSUMO RESPONSABLES

15 VIDA DE ECOSISTEMAS TERRESTRES

CONTRIBUCIÓN MENOR

1 FIN DE LA POBREZA

2 HAMBRE CERO

4 EDUCACIÓN DE CALIDAD

10 REDUCCIÓN DE LAS DESIGUALDADES

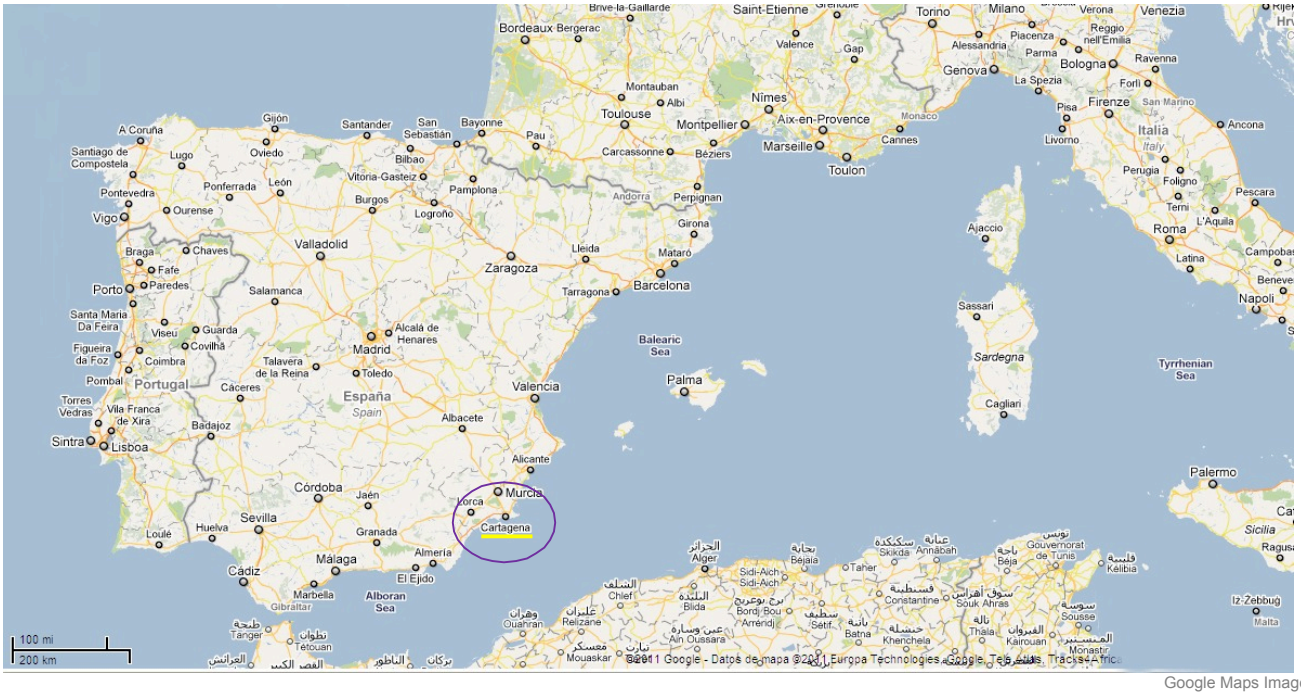
16 PAZ, JUSTICIA E INSTITUCIONES SÓLIDAS

2 Port Description

2.1 Location, physical data

The port of Cartagena is located in the Southeast of Spain, within the Autonomous Community of the Region of Murcia. It represents the natural outlet by sea of the Region, Cartagena Area and many of the nearby provinces of other communities, such as Castilla la Mancha.

The geographical location is Longitude 0º 59 'W and latitude 37º 35' N. The prevailing wind regime is S.SW and S.SE and its maximum tidal run is 0.65 m. The port is made up of two docks separated from each other and connected by road with a separation of about 5 km by road and 1.5 miles by sea.



Google Maps Image

Floating surface (Hectares)	Cartagena	Escombreras	Total
Commercial	108.30	105.18	213.48
Fishing	1.23		1.23
Rest	9.66		9.66
Total	119.19	105.18	**224.37**

Anchorage (Hectares)	**4,983**

Land area (m^2)	Total
Roads	262,534
Conventional warehouses	543,099
Rest	1,528,212
Total	**2,396,241**

Cold stores (m^3)	**47,700**
Fishing facilities (m^2)	6,145
Free warehouse (m2) outside service area	10,200

Buildings and facilities fot public use (m^2)	Cartagena	Escombreras	Total
	5,587.50	585	**6,270.5**

Docks length	m.
Cartagena	6,975
Escombreras	7,142
Total	**14,117**

Shleter docks	m.
Curra Dock	600
Navidad Dock	190
Southeast dock	1000
Total	1,790

Distribution of docks and berths
Cartagena dock
Cruise terminal
Fishing boats
Sports and leisure boats
Container terminal
General merchandise terminal
Fruit and Vegetable Terminal
Escombreras dock
Large gas tankers docking
Fertilizer dock
General merchandise terminal
Solid Bulk Terminals
Cement dock
Liquid bulk terminal
Terminal for oil and hydrocarbons
Double berth for oil tankers of 315,000 tons. .
Multipurpose Terminal

In addition, Navantia shipyards and the facilities of the Spanish Navy are located in Cartagena dock, which include Cartagena Military Arsenal and the Submarine Base.

2.2 Legal framework

The Port Authorities have their legal basis in Royal Legislative Decree 2/2011, of September 5, which approves the Consolidated Text of the Law on State Ports and the Merchant Marine (TRLPEMM). Likewise, the General Budgetary Law and the other legal provisions that govern the General State Administration are applicable to them.

The law grants exclusive jurisdiction over the Ports of General Interest to the State Administration (art.149.1.20ª of the Constitution) and establishes the appointment of the governing bodies of the Port Authorities to the Autonomous Communities.

The State Ports Public Agency, dependent on the Ministry of Development, is defined as the body in charge of executing the Government's port policy and the coordination and control of the efficiency of the State-Owned Port System, together with the general coordination with the different government agencies. the General State Administration that establish controls in port areas.

Cartagena Port Authority is a Public Body, with its own personality and assets, independent of those of the State, dependent on the Public Body Ports of the State, being in charge of the administration, management, control and operation of the Port of Cartagena. Its main functions are the ordering of the port public domain, granting of concessions and authorizations, planning, project and construction of works, surveillance and police within the port's service area and the maintenance of navigation aid signs.

The Board of Directors is represented by the Chairwoman of Cartagena Port Authority who is appointed by the Regional Government and accepted by the State Ports Public Organization.

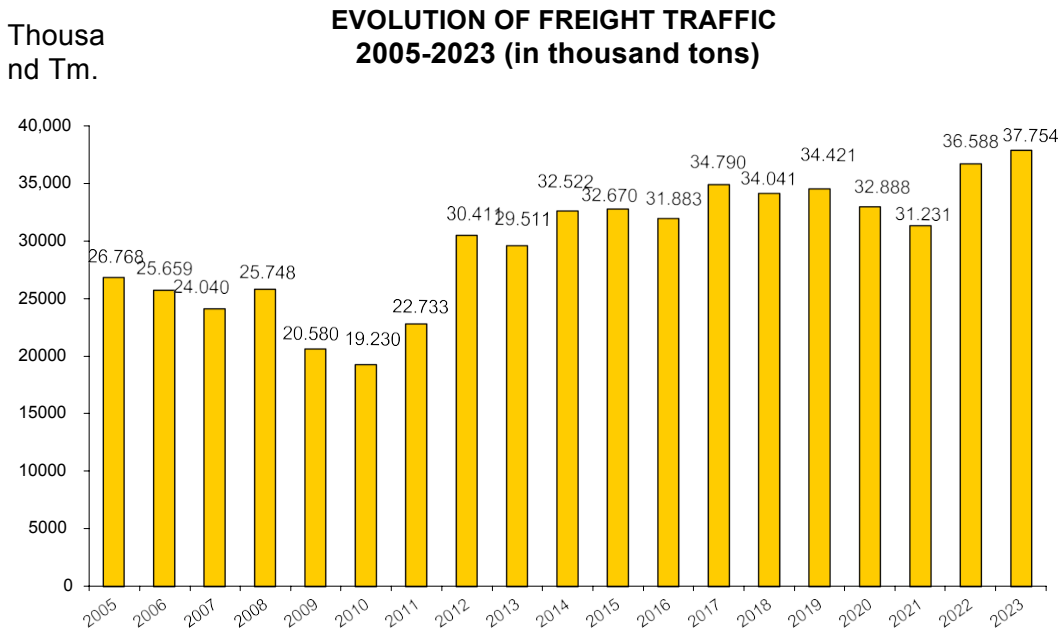
As a consultation and participation body of the Port Community is the Navigation and Port Council where companies, groups and Organizations of the Port Community have representation. This Council does not have decision-making capacity in the management of the port, but it is a body of assistance and information of the Maritime Captaincy and the President of the Port Authority, as established under the art. 34 TRLPEMM.
More information on the composition of the governing bodies and consultation at http://www.apc.es/webapc/puerto/autoridad/consejo .

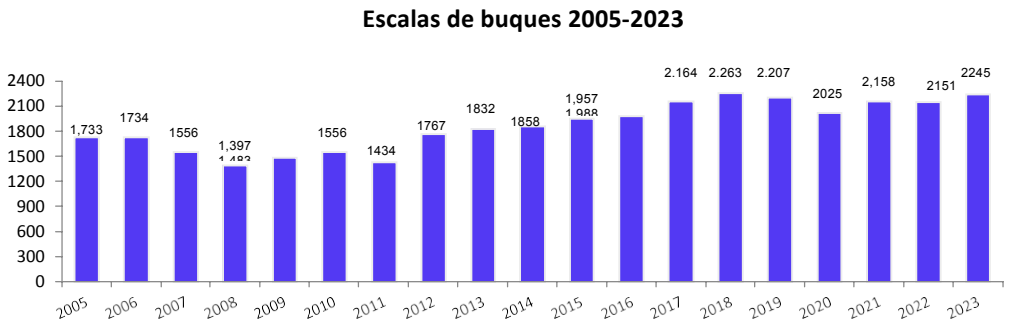
Compliance with the legal requirements applicable to each environmental aspect is verified by the external auditing company, in accordance with EC Regulation 1221/2009, ammended by the EU 1505/2017 Regulation, including the reference to those legal requirements in the development of each environmental aspect in this statement.

2.3 Port traffic summary

In 2023, a total of 37,754,017 tons of merchandise were handled at the Port of Cartagena, representing a 3.26% increase over the previous year, a record figure.
(Tm = metric tons)

GOODS	2021 Tm.	2022 Tm.	2023 Tm.	%
General goods	966,391	1007910	949091	-5.84%
Liquid bulk	24,047,180	28011168	27763255	-0.89%
Solid bulks	6,021,397	7338162	8749361	19.23%
Supplies, local traffic, transshipments and fresh fish	177,708	205881	292310	41.97%
TOTAL GOODS	**31,212,676**	**36563132**	**37754017**	**3.26%**
Total vessels	2,158	2151	2245	4.37%
Cruise berths	79	184	147	-20.11%
Passangers	69,988	175714	187764	6.86%
Containers	50,541	52130	50123	-3.85%
Heads of cattle	384,710	637315	478763	-24.88%





2.4 Economic results

Summary of financial year 2023 (thousands of €):

The net amount of the turnover reached the amount of € 49,979, with an increase of 3.06% compared to the previous year.
Average turnover per ton was € 1.33 / t. compared to € 1.32 / t. the previous year.

Operating expenses amounted to € 35,791, 4.54% lower than the previous year, leaving the final operating result at € 18,131, -8.13% compared to 2022.

Personnel expenses have increased by 3.77%, reaching € 9,351.

Cast flow has fallen by 13.83% to € 35,149.
The result for the year after tax was **€ 22,092**, -4.11% compared to 2022.

The profitability of Cartagena Port Authority in 2023 was 6.55% compared to **5.68%** the previous year.

Further information at http://www.apc.es/webapc/publicaciones/documentacion

2.5 Management of the public domain, projects and works

Management of the public domain, works and activities.

During 2023, more than 100 activities or facilities authorized to operate in the Port of Cartagena remain active, which together with the rest of the port taxes have generated income of € 47,641,940.

INFRASTRUCTURES AND WORKS:

In 2023, investments were made for an amount of € 10 million.
The main actions have been the following ones:

Cartagena dock

Plaza Mayor Phase 1. Alfonso XII Dock and Plaza Héroes de Cavite square

Much of the work carried out on the Port of Cartagena's Maritime Façade over the last twenty-five years presents itself as a complex superposition of fragmented situations with no capacity to attract citizens, which has fostered a disconnect between the port area and the city.
The transformations carried out by the institutions involved have constructed a reality without a global perspective, and only address the scale of each specific situation. The new image of the port introduces new buildings that enhance their own content, generating intertwined effects, but always from a collection of places that do not function as a group.

The planned work within Plaza Mayor aims to address urban planning issues that improve the port's permeability and connection with the rest of the city. This improved accessibility must go hand in hand with the pursuit of developing uses along the waterfront that create a public space that fosters new ways of building cities and adds productive value based on culture, creativity, and innovation, while always respecting and integrating existing cultural heritage.

The works carried out during 2023 included:

- Renovation of furniture and installation of low-energy lighting at Plaza Héroes de Cavite Square.
- Renovation of buried utilities. Laying of cables and commissioning of the entire electrical network.
- Improving accessibility. Installation of signage.
- Upgrading Plaza Héroes de Cavite Square Installation of irrigation, creation of interior paths, and lowering of the perimeter curb.
- Planting of all landscaping for the project: mobile pergolas, flowerbeds with palm trees and climbing plants, grass and shrubs at

Plaza Héroes de Cavite, planter benches, and bleacher benches. The certified investment in 2,023 was € 980,344.81 The works were received in June 2023 and settled in January 2024 for a total amount of €3,911,365.39

APC central building refurbishment.

The Cartagena Port Authority headquarters is located in the centre of Cartagena, across from Plaza Heroes de Cavite Sauare, very close to the Alfonso XII Pier. It is a two-story building, built in 1926, with a constructed area of 2,900 m2. The last renovation was completed in 1994.

The current plan is to completely refurbish its interior, replacing interior and exterior woodwork, flooring, ceilings, and fixtures. The project will also address roof issues and relocate the air conditioning system. At the same time, the former management residence is undergoing comprehensive renovations, converting it into executive offices and administrative areas.

The works were awarded to the company Edificio Central APC-UTE, with a budget of €2,614,466.42, excluding VAT. The certified investment in 2,023 was € 941,901.40 and it is scheduled to be completed in March 2025.

Various works were carried out during 2022, as follows:

Preliminary installation work was carried out to remove all supplies from the construction site and leave the administrative area operational.

Following this work, the demolition of interior partitions and cladding was completed, as well as the demolition of the area adjacent to the Director's House. Demolition continued on the rear staircase; interspersed with this demolition, new composite sheet metal slabs were built to replace those demolished. The intermediate slab dividing the first floor into two levels was also completed.

The building's extension area in the central courtyard was lowered, and the micropiles and foundations required for this extension were installed.

Structural reinforcement was added to the upper face of the existing slab throughout the first floor of Phase I.

Treatment to prevent rising damp in the existing walls also began, with surface chipping and drilling, followed by injections.

During 2023, Phase I work continued, completing the new structures, demolitions, and installing new installations, HVAC, and masonry.

ESCOMBRERAS DOCK.

Paving of the operations area at the Multipurpose and South docks.

The urban development process for the Escombreras expansion has been carried out in phases, and once most of the concessionaires' warehouses were built, several areas remained with temporary paving and no services.

This project includes the provision of lighting and drinking water services, and the implementation of permanent paving with several pavings at the ends of the multipurpose docks and the South Dock, as well as in other intermediate areas that serve as connections or passages between the rest of the docks. This expands the available areas for cargo storage, making it possible to license them and generating income for the APC. And the connectivity of all docks is improved by improving the flow of goods. During 2022, part of the drainage work and part of the demolition and earthworks were completed. In 2023, the stormwater network was completed around the concessionaires' warehouses at the South and Multipurpose Docks. Next, the hot-mix asphalt paving of these streets was completed. The concrete paving at the ends of both piers and the asphalt paving near the railway track remain to be completed.

The works were contracted to ETOSA-GONZALEZ SOTO-NILA ESCOMBRERAS U.T.E. for €4,387,897.54, excluding VAT. The certified investment in 2023 was of € 878,772.28 It is under temporary suspension with a maximum date until May 15, 2024.

New fenders at the Santa Lucía pier and bays 10 to 14 of the LBT.

The APC is standardizing the type of defenses used in its docks to save on maintenance. Therefore, a plan was designed to replace the existing shield defenses, many of which were worn out and needed to be replaced with cylindrical ones. During 2022, the project was completed at the Santa Lucía Pier in the Cartagena Basin and at the docks of Fronts 13 to 14 of the TGL in Escombreras. Due to the change of pilots, cylindrical fenders will not be installed on Faces 10 through 12. The necessary deep micropile foundations have also been constructed. The civil works required for their proper installation are included. Testing of the Berthing Aid System installations is underway. The work was completed in May 2023.
The contract was awarded to the company UTE DEFENSAS, with a budget of €2,024,438.72, excluding VAT. A modification was processed, leaving the contracted budget at €1,951,796.50. The certified investment in 2023 was € 481,293.34 The works were received in June 2023 and settled in July 2023 for a total amount of €2,136,153.63.

Upgrading GERS on Faces 10 to 14 of the LBT.

To ensure compliance with safety regulations in this type of terminal, the APC has planned the supply and installation of 17 new Quick Escape Hooks on Faces 13 and 14. To this end, the existing GERS, which are over 25 years old on average, have been removed, and new pipelines have been built and existing foundations and installations have been improved. At the same time, the existing GERS on Fronts 10 and 11 have been updated so that they and the aforementioned can be operated remotely, either from a booth at the entrance to the TGL or from the APC Control Centre. During 2022, all GERS were installed and the planned pipelines were built. The necessary deep micropile foundations have also been constructed. The civil works necessary for its correct installation have been completed.
This project significantly improves security at the terminal.

The work was contracted to the joint venture ETOSA-PROSERTEK GANCHOS CARTAGENA, with a budget of €2,674,300.47, excluding VAT. The certified investment in 2023 was €654,589.18. The works were received in June 2023 and paid for in July 2023 for a total of €3,155,647.15.

New connection rack with bays 19 and 20.

Following requests from several clients to the APC for more berths and new loading and unloading points for petroleum products and derivatives, the APC intends with this project to enable Front 19 for the berthing and loading/unloading of vessels handling liquid bulk. Therefore, a new rack has been built connecting this front with the existing deployment areas in the Escombreras Basin Expansion. To this end, a new rack has been built parallel to the old Bastarreche Dock, on a 4-5 m strip reserved next to a service road. From the northern end of the aforementioned Dock, a rack section has been built over the Duques de Alba bays of the Tanker Dock (Front 19/20). This was achieved by constructing lattice girders cemented on the caissons of the Duques de Alba bays and attaching accessories such as trays. The works were completed in April 2023.

The contract was awarded in December 2021 for €2,759,700.93 to the company UTE RACK. A modification was processed, leaving the contracted budget at €3,304,306.46. The certified investment in 2023 was of € 928,716.80 The works were received in June 2023 and paid for in July 2023 for a total of €3,679,988.14.

New drinking water supply networks in the Cartagena and Escombreras docks.

Most of the port's drinking water supply networks were built before 2000, many of them using fiber cement. Due to the increasing number of breaks the APC designed a plan to renew them, aiming to replace them over several years.. These works will build new pipelines to avoid service galleries, which have numerous health and safety restrictions. Therefore, the Bastarreche, Maese, Príncipe Felipe, and Isaac Peral networks are being dismantled, the remains of the material are being treated according to current regulations, and new ductile iron pipes are being installed. In the Cartagena network, the objective is to remove the pipe from the service gallery that runs through Santa Lucía and San Pedro, placing the new pipe in a surface channel. Works began in September 2021. During 2022, most of the branches were built in the area of the Santa Lucía and San Pedro docks. In Escombreras, most of the pipelines at the different docks have been completed. Only the Príncipe Felipe Dock bypass and the branch line from the Pier at Fronts 13 and 14 of the TGL remain to be completed. The pipelines in the Lonja and Muelle Alfonso XII areas of the Cartagena basin remain to be built. The works were completed in August 2023

The contract was awarded to the company UTE URDECON-INICIA REDES ABASTECIMIENTO APC, with a budget of €2,294,214.88, excluding VAT. A modification was processed, leaving the contracted budget at €2,545,020.14. The certified investment in 2023 was of € 726,640.43 The works were received in September 2023 and settled in February 2024 for a total amount of €2,545,020.14.

3 Management policy

Autoridad Portuaria de Cartagena

POLITICA DE GESTION

La Autoridad Portuaria de Cartagena (APC), tiene establecidos entre sus objetivos estratégicos el ser excelentes en la Gestión Portuaria, fomentando el respeto al medio ambiente, la seguridad y salud en el trabajo, la innovación y potenciando la Responsabilidad Social, promoviendo el respaldo activo de su entorno socio-económico y con un equipo humano motivado y comprometido.

Para que el puerto de Cartagena avance hacia la Excelencia es necesario que la Comunidad Portuaria asuma también estos principios, por lo que la APC se erige en su líder marcando el rumbo e integrando su Política en todas las actividades que se desarrollan en el ámbito portuario. Conscientes de que nuestro activo más importante son las personas, la APC apuesta por un modelo de gestión integrado y participativo, en el que sus trabajadores son esenciales y donde la mejora continua es un principio fundamental.

Para ello, esta Autoridad Portuaria declara su compromiso con:

- Prestar sus servicios generales y de señalización marítima, teniendo en cuenta las necesidades y expectativas de nuestros clientes y grupos de interés, de manera eficaz, segura, sostenible e innovadora.
- Fomentar los servicios portuarios (practicaje, remolque, amarre, pasaje, recepción de desechos y manipulación de mercancías) de acuerdo a unas premisas de calidad, seguridad, innovación y respeto al medio ambiente.
- Velar por la libre competencia de nuestros servicios comerciales con el fin de mejorar.
- Generar VALOR social, económico y ambiental para Cartagena y la Región.
- Impulsar y fomentar la sostenibilidad, la innovación y la excelencia en la comunidad portuaria.
- Identificar, actualizar sistemática y permanentemente y cumplir con las exigencias legales, normativas u otros requisitos que la APC suscriba.
- Implantar en la APC la mejora continua como norma de conducta en su gestión.
- Asumir los principales marcos de referencia internacionales para la gestión sostenible, manteniendo un firme compromiso con los Diez Principios del Pacto Mundial, los Principios Rectores sobre Empresa y Derechos Humanos y difundir en nuestro entorno social y económico el conocimiento y cumplimiento de los Objetivos de Desarrollo Sostenible (ODS).
- Fomentar una cultura del bienestar que proporcione un ambiente de trabajo seguro, estilos de vida saludables y un compromiso con el entorno y la comunidad.

Es responsabilidad de la Presidencia y de las personas en quien ésta delegue, que la Política de Gestión sea conocida, entendida, aceptada, aplicada y mantenida al día a todos los niveles de la organización. Los directivos y mandos tienen la especial obligación de conocer la Política y las normas del Sistema de Gestión, fomentar su correcta aplicación y exigir su cumplimiento.

Cartagena, a 23 de Julio de 2020

Dª. Yolanda Muñoz Gómez
- Presidenta -

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DIRECCIÓN DE VALIDACIÓN : https://sede.administracion.gob.es/pagSedeFront/servicios/consultaCSV.htm
FIRMANTE(1) : FERMIN ROL ROL | FECHA : 21/09/2020 10:34 | Sin acción específica
FIRMANTE(2) : MARIA YOLANDA MUÑOZ GOMEZ | FECHA : 21/09/2020 19:17 | Sin acción específica

4 Management system

4.1 Documentation

In 2012, the definitive integration of the Environmental Management and Safety and Health Systems at work was completed, and from that moment on, it was called a single **Integrated Management System (SIG).** In this GIS there were a total of 21 procedures, 16 technical instructions and 87 record formats, including all those referring to environmental aspects. At present, the system has been updated to a Global Management System of the company covering not only safety, prevention, environment or quality, but the rest of the activities, emphasizing corporate social responsibility.
They are complemented by the UNE EN ISO 14001:2015 Standard, UNE EN ISO 9001:2015 Standard, UNE EN ISO 45001:2018 Standard, Commission Regulation (EU) 2018/2026 of 19 December 2018, Commission Regulation (EU) 2017/1505 of 28 August 2017 and Regulation EC 1221/2009 of the European Parliament and of the Council of 25 November 2009 (EMAS), the Internal Emergency Plan (rev.7), the Internal Maritime Plan (rev. 3) and the Plan for the Reception and Handling of Waste Generated by Ships and Cargo Residue (rev.6).2015 Standard, UNE EN ISO 45001:

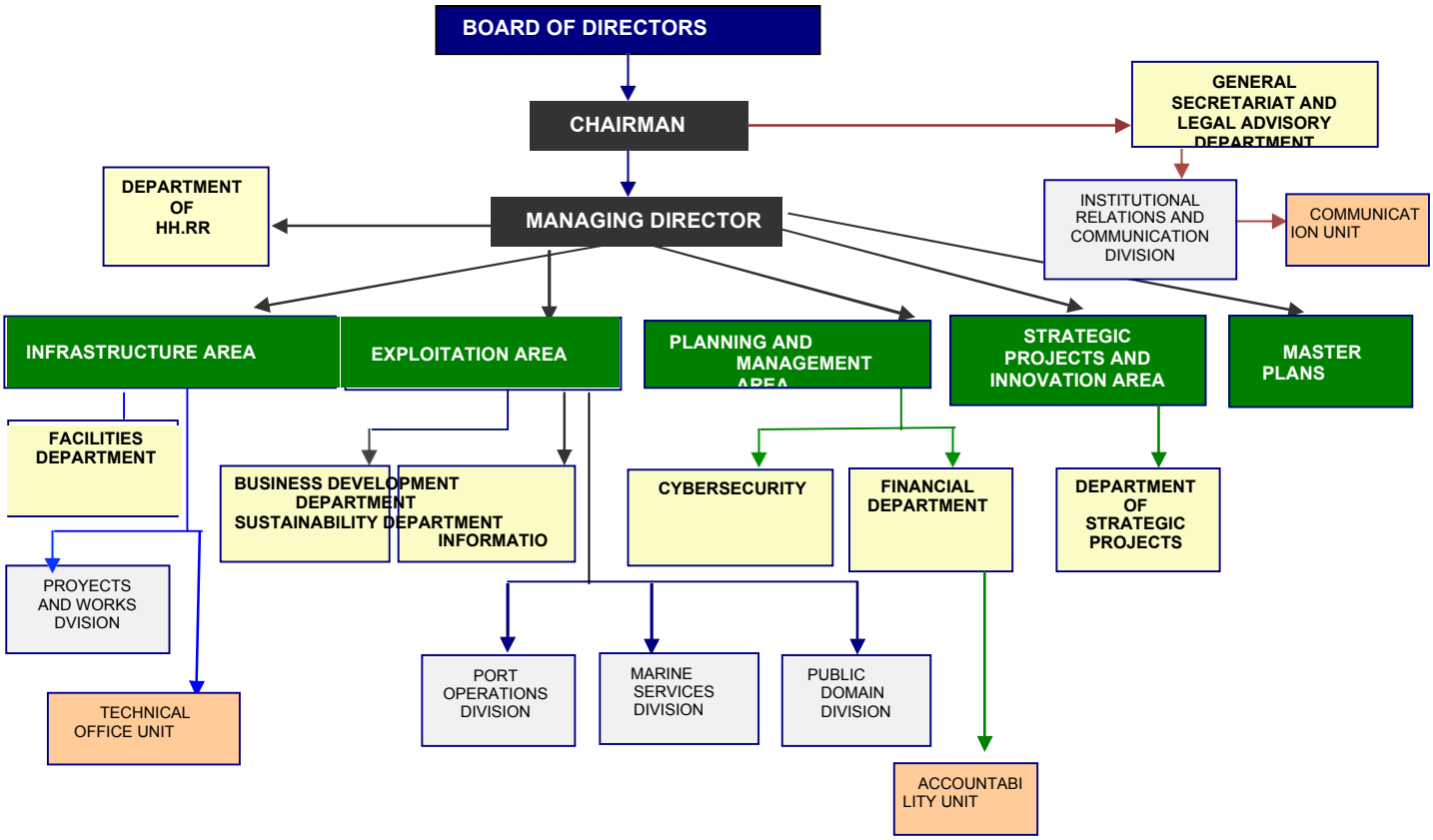
4.2 External audits

Since the Environmental Management System was implemented in June 2003, a total of 21 external audits have been carried out, conducted by Lloyd's Register Quality Assurance until 2020 and by Bureau Veritas since 2021. The Certificate of Approval for Standard 14001:2015, 9001:2015, and 45001:2018, and the verification of the Environmental Declaration in accordance with Commission Regulations (EU) 2017/1505 of August 28, 2017, and Regulation (EC) 1221/2009 of the European Parliament and of the Council of November 25, 2009 (EMAS), are attached as an annex.
The external audits are carried out in a fully integrated manner.

4.3 Organization chart

The management organization chart for 2023 is part of the Board of Directors, where in addition to the Chairwoman, General Director, Secretary and Maritime Captain, the Autonomous Community of the Region of Murcia (4 members), Hon. Cartagena City Council (2 members), Central State Administration (3 members) and Business and Trade Union Organizations (4 members) are represented.

The organizational unit responsible for the implementation and maintenance of the Integrated Management System, since 2021, is the Innovation Division of the Port Authority of Cartagena.



4.4 Inventory of environmental aspects

Prior definitions:
Environmental aspect: Element of the activities, products or services of an organization that may interact with the environment.
Environmental impact: Any change in the environment, whether adverse or beneficial, derived in whole or in part from the activities, products or services of an organization.

An Inventory of Environmental Aspects has been carried out where all the possible effects that the activity of the port may have on the environment are collected. It is made up of 31 aspects and it defines its associated environmental impacts, both direct and indirect, as well as its importance.

Evaluation criteria have been established to define whether these aspects are considered significant, taking into account non-compliance with legal requirements, the appreciable social impact, the impact on natural resources, the information available and above all the occurrence and consequences of environmental risk. Depending on this occurrence and consequences, the aspect is defined as significant or not significant. Significant environmental aspects are the first to be taken into account when defining objectives and targets aimed at reducing the impact of these aspects.
The criteria is as follows:

Environmental Risk			
	Consequences		
Occurrence	Minor	Medium	Serious
Low	NO	NO	**YES**
Medium	NO	**YES**	**YES**
High	NO	**YES**	**YES**

YES = Significant Environmental Aspect NO = Non-significant Environmental Aspect

Waste management and supplies in ship maintenance operations in Escombreras Dock

Inventory of environmental aspects			
Aspect Identification	**Significant**	**Possible associated impact**	**Direct or indirect**
Water consumption	YES	Consumption of a non-renewable natural resource, of special importance due to the existing drought in the area	Direct
Control of potential sources of emission of aerosols contaminated with Legionella	YES	Potential air pollution - infection to people	Direct
Noise emission into the atmosphere	YES	Atmosphere pollution, possible social impact	Indirect
Submarine noise	YES	Noise pollution for marine fauna caused by ships, works, dredging, etc.	Direct and indirect
Generation of used oils, oil filters and used oil containers	YES	Soil and water pollution	Direct
Generation of emissions into the atmosphere in the collection and handling of bulk	YES	Atmosphere pollution, possible social impact	Indirect
Generation of dredging waste and movement of materials in port works	YES	Potential pollution of soil, water and marine ecosystems.	Direct
Accidents that can generate fires	YES	Soil, water and atmosphere pollution. Possible social impact	Direct and indirect
Generation of waste from ships and loading/unloading operations	YES	Potential soil and water pollution	Indirect
Waste from port water	YES	Potential water pollution	Indirect
Maritime accidents	YES	Potential water pollution	Indirect
Generation of wastewater discharged into a cesspool (situation totally eliminated)	NO	Soil and water pollution	Indirect
Consumption of electrical energy	NO	Consumption of a non-renewable natural resource	Direct
Paper consumption	NO	Consumption of a non-renewable natural resource	Direct
Generation of urban-assimilable waste	NO	Potential pollution of soil, water and atmosphere.	Direct and indirect
Generation of used batteries	NO	Soil and water pollution	Direct
Generation of rags and absorbent material contaminated with used oil	NO	Soil and water pollution	Direct

Generation of empty paint drums and cans	NO	Soil and water pollution	Direct
Generation of inert waste in port works	NO	Soil, water and atmosphere pollution	Direct
Generation of dust emissions on port construction sites -	NO	Atmosphere pollution, possible social impact	Direct
Generation of domestic wastewater to sewerage	NO	Water pollution	Direct
Generation of used paper	NO	Loss of a recyclable manufactured product	Direct
Generation of toner and ink cartridges	NO	Loss of a recyclable manufactured product	Direct
Batteries generation	NO	Potential soil and water pollution	Direct
Generation of fluorescent lamps, tubes and lamps containing mercury	NO	Soil and atmosphere pollution	Direct
Fuel consumption	NO	Consumption of a non-renewable natural resource	Direct
Generation of electrical, electronic and computer equipment out of use	NO	Occupation of useful space in dependencies, possible soil and water pollution	Direct
Accidental spills	NO	Soil and water pollution	Direct and Indirect
Traffic accidents in the service area	NO	Possible contamination of soil, water and atmosphere (if dangerous goods are involved)	Direct and indirect
Emission of combustion gases due to port land transport	NO	Pollution into the atmosphere	Direct and Indirect
Generation of used tires, rubber fenders and scrap	NO	Soil and water pollution	Direct and indirect

At the end of 2016 and due to the retirement of the Medical Assistant, the medical care service was externalized, which is why the generation of biosanitary waste disappears as an aspect

The inventory of aspects has been revised in 2019, introducing underwater noise as a new aspect to consider. The consequence of this is the development of an underwater noise strategy within the environmental management of the port. In 2023 no new aspects have been incorporated.

4.5 Objectives and goal

Taking into account the Environmental Aspects with significant impacts, a series of objectives and goals are established annually aimed at eliminating or reducing these impacts as much as possible.

The main objectives and goals developed in recent years have been the following:

YEAR	OBJECTIVE	% PERFORMANCE
2009/2010	Development and implementation of a public competition for ideas for environmental improvement actions	100
2009/2010	10% reduction in the levels of suspended particles (PM10) at the Solid Bulk Terminal (multi-year objective (2009-1010)	100
2009/2010	Installation of photovoltaic panels for energy use in the Fishermen's Association of Cartagena (multi-year objective (2009-1010)	100
2010	Reduction of uncontrolled water consumption by 10% in Cartagena and Escombreras docks	100
2010	Training actions on land-sea spillage control for Port Police and Environment personnel	100
2010/2011	Preparation of the noise map of the port in the Service Area of Cartagena dock (multi-year objective 2010/2011)	100
2010	Control and effective measurement of 95% of the total electrical energy consumed in the port	100
2011/2012	Construction of a new green point for the collection of hazardous waste in the workshops of the Port Authority	100
2011/2012	Actions to promote business excellence in the Port Community	100
2011/2012	Forestry improvement actions in the quarry of Escombreras expansion	100
2011/2012	Improvements in the cleaning and image of the mooring dock	100
2011/2012	CO2 emissions offset by the Port Authority	100
2011/2012	Improvements in the citizen environment of the Container Terminal and General Merchandise	75
2011/2012	Optimizing energy efficiency in Cartagena Port Authoprity buildings	100
2012/2013	Implement an Integrated Management System	100
2012/2013	Development of the Agreement with the Autonomous Community of the Region of Murcia for the control of land-sea discharges and water quality	100
2012/2013	Fostering business excellence in the Port Community	50
2012/2013	To implement a Corporate Social Responsibility Management System	100
2012/2013	To improve staff training	100
2012/2013	To improve preventive inspections carried out by the Port Police	100
2012/2013	Monitoring and control of preventive planning	100
2012/2013	To improve the coordination of business activities in Cartagena Port Authority	100
2014/2015	To implement ROM 5.1-13 for the quality control of coastal port waters	100
2015/2016	To implement ROM 5.1-13 for the quality control of coastal port waters- Adaptation of R.D. 817/2015 and control of non-native species- CARLIT	100
2017	Preparation of the noise map of Escombreras dock	100
2018	Conservation and promotion of biodiversity in the port	100
2019/2020	Expansion of the number of pollutant measuring stations	100%
2019/2020	Calculation of the Carbon Footprint Scope 3	100%
2020/2021	Improvement in water quality controls	100%
2020/2021	Improvement in air quality controls	100%
2020/2021	Underwater noise study and control project	100%
2020/2021	Measures to promote the calculation of the Carbon Footprint in the port community	100%
2022	Pilot project for reforestation with Posidonia oceanica in port waters	100%
2022	3D bionomic mapping of the UGAP2	100%
2022	Campaign to control opportunistic species on Escombreras Island and Mazarrón Lighthouse	100%
2022	Improvement in environmental monitoring of the environment	100%
2022	Improvements in air and water quality controls	100%
2022	Life Port Sounds Project underwater noise (multi-year)	100%

2022/23	New pedestrian paths and bike lanes	In progress
2022/23	Expand EMAS companies in the Port Community	In progress
2023	Pilot project for reforestation with Posidonia oceanica in port waters, new planting	100
2023	Environmental consulting for a research center project	100
2023	Commitment to the biodiversity of the environment	100
2023	Rat extermination campaign on Escombreras Island	100
2023	Improved air quality network - relocation of cabin expansion	100
2023	Review of the Ship Waste and Waste Reception Plan	100
2023	Promoting research and training activities of the APC-CMN Environment Chair	100
2023	Installation of Calacortina barrier	100

There are other actions related to the environment and sustainability already developed or under development:

- Improvements in sustainable mobility with new pedestrian paths and bike lanes projected in the area of the Navidad and El Espalmador Lighthouses
- New plantations of native species in Sierra de La Fausilla Cabo de Palos Lighthouse
- Surveillance of birds and the natural environment in Cartagena and the surroundings of Mazarrón Lighthouse
- Sierra de la Fausilla and Escombreras Island: bird surveillance, anthemis chrysantha and genetic study and monitoring of reptiles on the island
- Palomas Island: Monitoring of the breeding colonies of Scopoli's shearwater and European shag, chickens ringing
- To expand companies adhering to the good environmental practices agreement
- EMAS and ODS registry public dissemination
- EMAS European Forum in the Port of Cartagena
- Awareness actions on marine litter and reduction in the use of plastics, Clean Sweep Operation
- Acquisition of electric and hybrid vehicles
- Marking seabirds with gps devices to study their habits
- Cleaning of funds in port areas
- Studies of underwater noise and its effect on cetaceans
- Studies of damage caused by works and increased traffic to cetaceans and turtles
- Studies on the impact of cruise ships on the city's environmental pollution
- Study of the role of springs for the development of young fish
- Study on the presence of microplastics in port waters
- Dissemination of biodiversity and port ecosystems – Posidonia oceanica educational module
- Launch of the sustainability observatory. https://observatorio.apc.es/

5 Natural resource management

5.1 Water

Total water consumption in the port during 2023 has meant a decrease in the general total for both basins of -0.47%, going from 149,365 m3 (2022) to 148,662 m3. This increase is practically negligible and has come from an increase in the Cartagena dock of 26.61%, accompanied by a decrease in the Escombreras del Río dock of -12.36%

Total water consumption per docks:

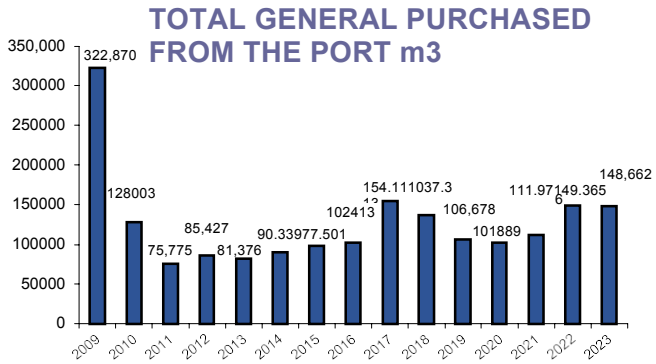
- ✓ In the Cartagena basin, up 26.61%, from 46,793 m3 to 59,176 m3
- ✓ In the Escombreras basin, -12.36%, going from 102,104 m3 to 89,486 m3

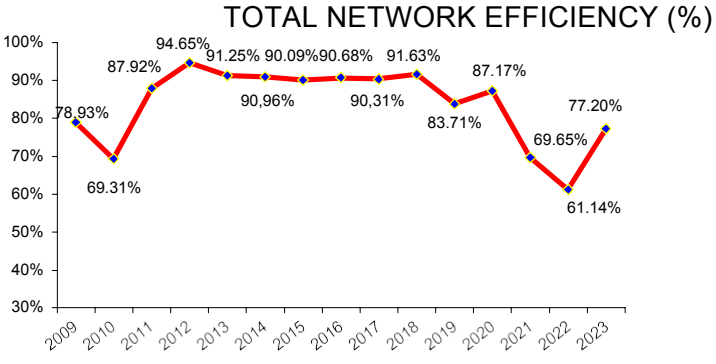
Evolution of uncontrolled consumption and network efficiency:

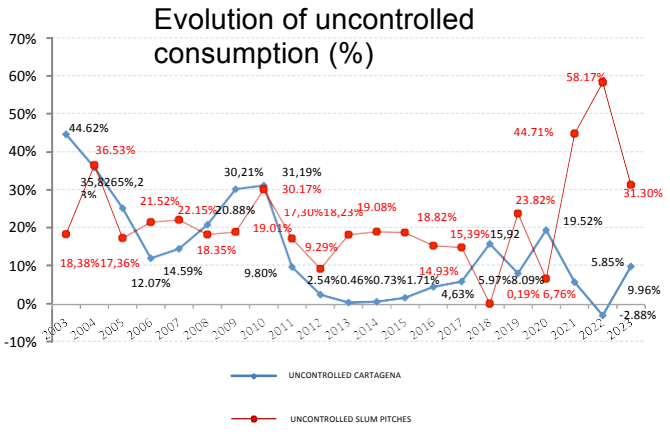
In the Cartagena basin, uncontrolled consumption has decreased from -1,886 m3 to 5,893 m3, bringing the partial network efficiency of the Cartagena basin to 90.04%, which is close to the historical network efficiency of this basin.
In the Escombreras basin, uncontrolled consumption has decreased from 59,390 m3 to 28,007 m3, placing the partial network efficiency at 68.70%, still affected by the network renovation works.

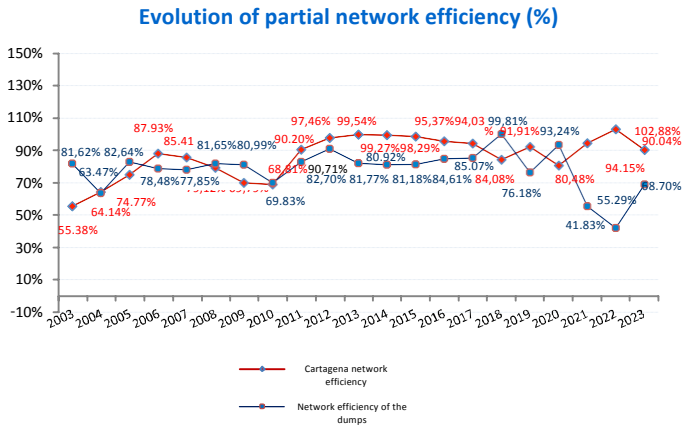
In own facilities there has been a decrease of -30.37%, from 17,427 m3 to 12,135 m3

In the total calculation of both docks, uncontrolled consumption represents a decrease of -41.07% for the total port. Compared to the total volume consumed, this indicates that network efficiency increases from 61.14% in 2022 to 77.20%.









5.2 Discharges, surveillance and water quality

All the facilities of Cartagena Port Authority have adequate sanitation systems, either through a septic tank, a septic tank with a treatment plant or connected to its own sanitation network.

In Escombreras dock, due to the impossibility of connection to the municipal network, all the facilities have their own sanitation systems with a watertight pit or purification-digestion system.

In order to ensure compliance with the regulations in this matter, and independently of the periodic inspection carried out by technicians from the Sustainability Department, in all the conditions of authorization or concession for new facilities that are authorized in the port, specific clauses on emissions, waste, discharges, safety and prevention are included. In this way, it is obliged to comply with prescriptions that go beyond strict legal compliance.

In December 2016, the review of the authorization of discharges to the sewerage was received, including the planned controls and analytics, the obligation to present an annual report carried out by an ECA (Environmental Control Entity) on the suitability of the sanitation systems, characterization of discharges and operation of the entire network. This discharge authorization replaces the previous one of 26/06/2007 and sets the periodicity of the analytics annually.
All water and sewage analysis have been contracted to Laboratorios Munuera, S.L.U., certified according to Standard 9001 for quality management, 14001 for environmental management, 45001 for safety and prevention, and registered in EMAS.
As a consequence of this new authorization, between December 2017 and January 2018, an industrial oil and grease separator was installed in the connection to the restaurant of Club Náutico de Santa Lucía watersport club, and the pumping well and collector were cleaned, as well as the the complete revision of the control equipment and impulsion pumps.

Since April 2018, annual ECA reports have been carried out accompanied by analytical paths at the two discharge points to the municipal network, detecting that some parameters were slightly above the limit values, which has forced extreme vigilance over the users who discharge to our collector. To this end, a series of more rigorous requirements, controls and periodic analytics than those that the City Council itself imposes in its discharge authorizations have been incorporated into all the authorizations / concessions procedures that require pouring into the sewage network.

The 2023 ECA inspection and report were carried out in June and July, detecting a slight excess of COD and BOD in the discharge from the Club Náutico S. Lucía Restaurant. Corrective cleaning measures are therefore being taken in the network and the pumping well, repeating the analyses and verifying that they are within legal limits.

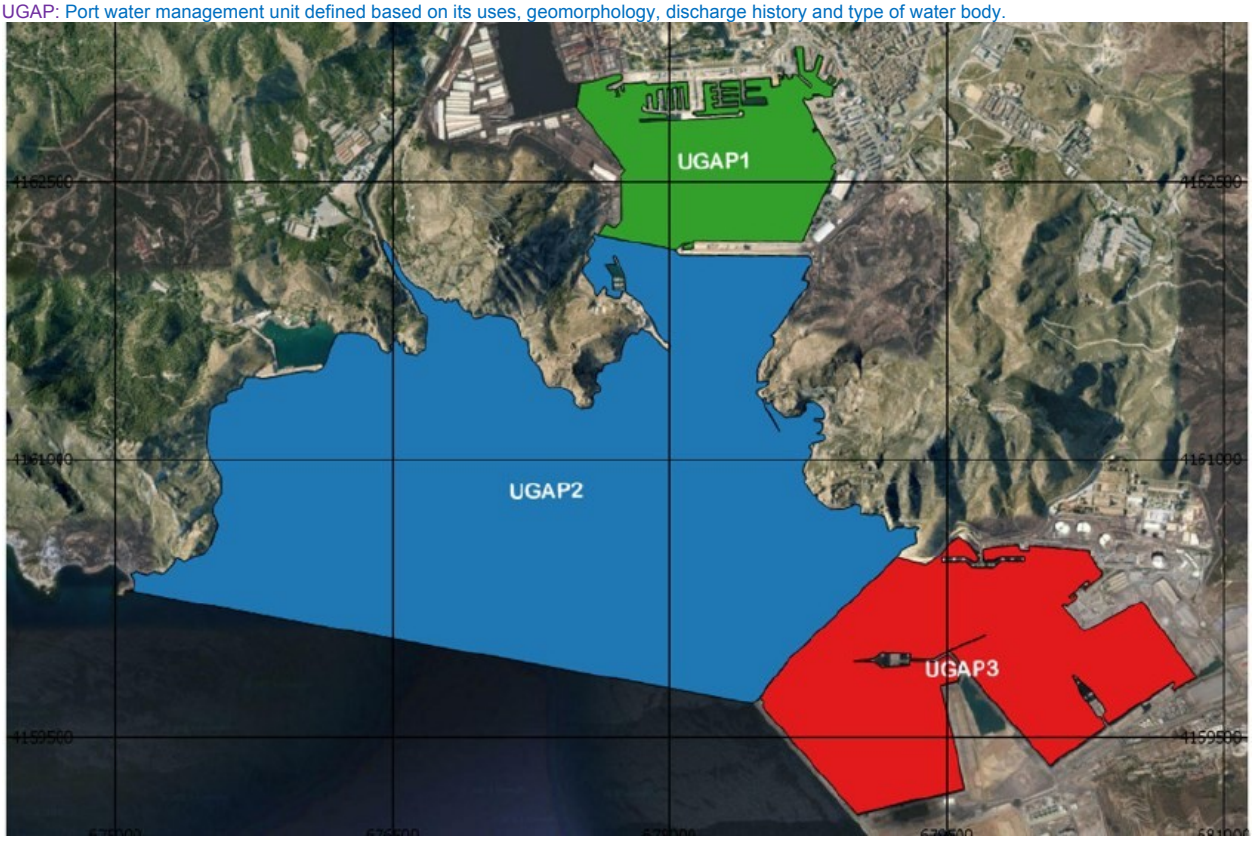
Sampling in the pumping well of S.Lucía Terminal for containers20/04/2023

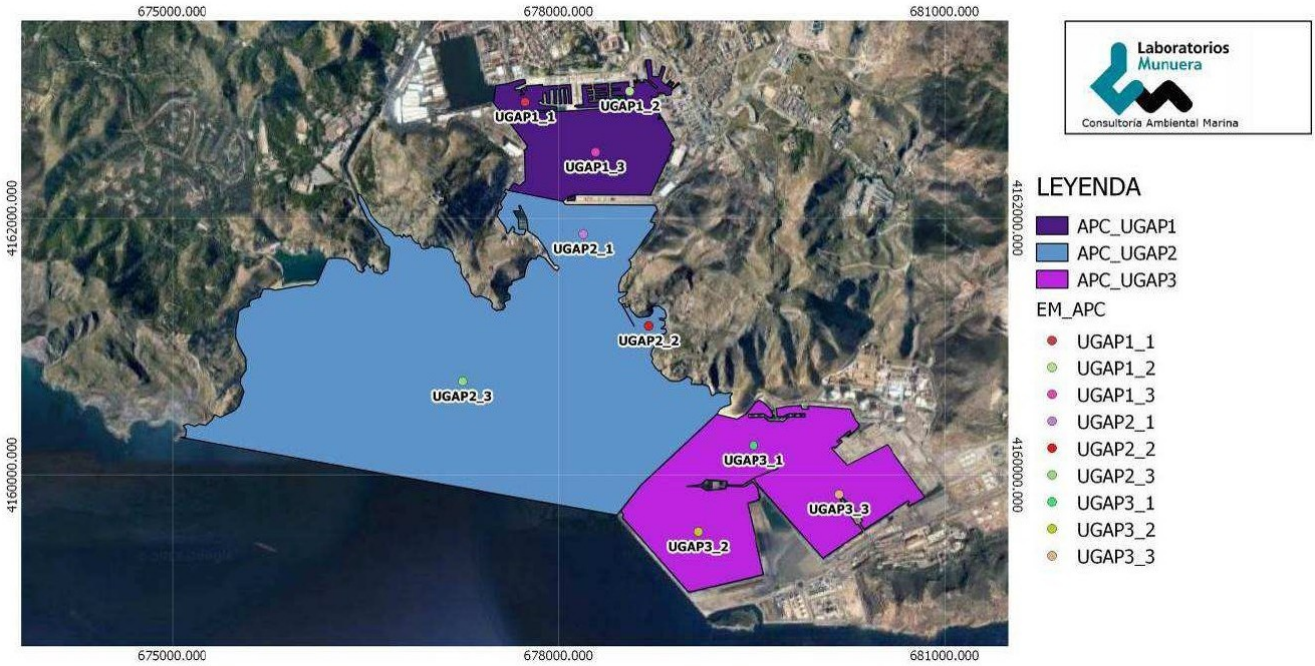
ECA inspection of the two pumping wells in the Cartagena basin, carried out by MUNUERA Laboratories and verified by Hidrogea

Control Calidad Aguas Portuarias

Delimitation of UGAPS (Port Water Management Units)

UGAP: Port water management unit defined based on its uses, geomorphology, discharge history and type of water body.





Results of the controls carried out in 2023

- **CHEMICAL WATER QUALITY CONTROL**

✓ Heavy metals - Priority substances, Annex IV RD817 / 2015: (36 controls)

Cadmium: The 36 controls below reference levels for environmental quality standards Nickel All controls below the detection level of the analytical technique
Mercury: All controls below reference levels for environmental quality standards
Lead: All controls below reference levels for environmental quality standards

✓ Preferred substances, Annex V RD817 / 2015 (36 controls)

Arsenic: All controls below reference levels for environmental quality standards Copper: All controls below reference levels for environmental quality standards Chromium: All controls below reference levels for environmental quality standards Zinc: All controls below reference levels for environmental quality standards

✓ Hydrocarbons (36 controls)

In all cases below the reference levels for environmental quality standards or below the detection rate of the analytical technique. The recorded values are indicative of a state of maximum Ecological Potential of the waters

✓ Other substances (12 controls)

Detergents, total phenols and free residual chlorine: All controls below the detection level of the analytical technique
Oils and fats: All controls below reference levels for environmental quality standards

- **PHYSICAL-CHEMICAL WATER QUALITY CONTROL (36 controls)**

✓ Dissolved oxygen

At all points averages above 96%, even reaching 104%.
The Quality objectives to be applied are included in RD 817/2015 and document ROM 5.1. Both establish a minimum concentration of 70% of Dissolved Oxygen saturation as the Maximum Ecological Potential Limit as an indicator of the quality of the coastal water masses greatly modified by the presence of ports.

✓ Turbidity

In all controls values between 0.3 and 1 NTU. The value established as the maximum potential limit is <4 NTU At the control point of waters outside the port the value was 0.3

✓ Transparency (Secchi Disk)

In Cartagena dock, values lower than the reference levels have been detected: In the Escombreras basin and the UGAP 2 area, transparency values range between 7m and 14m.

✓ Total suspended solids
In all cases below the reference levels for environmental quality standards or below the detection rate of the analytical technique.

NUTRIENTS

Nutrients, according to Royal Decree 817/2015, quality objectives are only defined for Mediterranean coastal waters; their application is not contemplated for "Transitional or Coastal Waters Heavily Modified by the Presence of Ports." Regarding the specific Standard ROM 5.1-13, no Physical-Chemical Quality Objectives are defined for nutrients.

✓ Ammonium
Ammonium levels in UGAP 1 (Cartagena basin) continue to show values well above the permitted levels (4.6 mg/l), reaching an annual average of 161 mg/l. This ammonia comes from the discharge from the municipal rainwater collector that empties under ASCAR and which was located and communicated to the City Council and Autonomous Community of the Region of Murcia in 2016.

✓ Nitrates
In general, nitrate levels comply with the Good / Moderate limit established by RD817 / 2015, being in many cases below the detection limit of the analytical technique. In UGAP 1.2 and in UGAP 1.3 and UGAP 2.1, nitrate levels are, although slightly, above the permitted limits for the same reason as ammonium.

✓ Nitrites
They are an indicator of recent spills and are associated with high bacteriological activity. All controls are at very low levels or below the detection level, with the exception of the sampling point near the municipal stormwater collector outlet, which had an annual average of 2.71 mg/l. High levels of ammonia result in high nitrite and nitrate values.

✓ Phosphates
All controls below the detection limit and reference level.

✓ Silica
All tests are below reference levels.

✓ FAN index
This index is not considered as a quality index for “Transition or Coastal Waters Highly Modified by the Presence of Ports” (RD 817/2015). At all points the FAN index is at the maximum ecological level with the exception of UGAP_1.2 where the presence of ammonium makes this index moderate. Out of 36 controls, 32 correspond to the highest quality level.

- **PHYSICAL-CHEMICAL QUALITY CONTROL OF THE SEDIMENT –** Annual Frequency

✓ Granulometry: In the granulometry, a dominance of the intermediate fraction from 63 µm to 2 mm is detected, with station UGAP_2_2 standing out with 99.3%, the second fraction with the highest representation being that of coarse sands >2 mm with 20.5% at UGAP_3_2, with the highest proportion of fines <63 µm at station UGAP_2_3 with 9.9%.

✓ Microbiology: E.coli and Enterococci: In all controls, the values recorded between <10 and 60 are well below the reference of 45,000 cfu/g.

✓ Organic Quality Index of the sediment (ICO): Total Organic Carbon, Total Phosphorus and Kjeldahl Nitrogen Considering the results of the parameters under study and the subsequent calculation of the ICO Index, we would have a good quality in 4 points, moderate in 4 and poor in 1 point.

✓ ICES Index 2015: ICES 2015 establishes thresholds to determine whether a sediment is non-hazardous. Based on the results obtained in the sediments under study, the levels of cadmium, lead and zinc are above the action levels. The rest of the metals (Arsenic, Mercury, Copper, Chromium, Nickel and PCBs) do meet the action levels. The result concludes that the sediment is not dangerous.

- **BIOLOGICAL QUALITY CONTROL OF WATERS AND BENTES**

✓ Phytoplankton - Chlorophyll a. – Clorofila a. Quarterly frequency (36 samples)
In relation to the class change limits established by RD817/2015 and ROM 5.1-13, the results obtained correspond to very good water quality at all points, except UGAP 3.3.

✓ Coastal Cartography (CARLIT) – Three-year frequency.
Completed in 2020, upcoming in 2023. The section of coast between Punta de la Torrosa and Cabo Tiñoso remains pending.

✓ Invasive species monitoring: They have not been detected in any sampling.

ENVIRONMENTAL QUALITY ASSESSMENT

It is carried out with the hierarchical integration from the FQ quality of the sediment, biological quality of the water, FQ quality of the water and chemical quality of the water and is as follows:

2022

UGAP	Punto Muestreo	Calidad FQ sedimento	Calidad Biológica Agua	Calidad FQ Agua	Calidad Química Agua y Sedimento	Clasificación como Calidad Ambiental
UGAP1	UGAP1_1	MODERADO	MUY BUENO	MUY BUENO	MODERADO	MODERADO
	UGAP1_2	DEFICIENTE	MUY BUENO	MODERADO		MODERADO
	UGAP1_3	BUENO	MUY BUENO	MUY BUENO		MODERADO
UGAP2	UGAP2_1	BUENO	MUY BUENO	MUY BUENO	BUENO	BUENO
	UGAP2_2	BUENO	MUY BUENO	MUY BUENO		BUENO
	UGAP2_3	BUENO	MUY BUENO	MUY BUENO		BUENO
UGAP3	UGAP3_1	MODERADO	MUY BUENO	MUY BUENO	BUENO	BUENO
	UGAP3_2	BUENO	MUY BUENO	MUY BUENO		BUENO
	UGAP3_3	BUENO	MUY BUENO	MUY BUENO		BUENO

2023

UGAP	Punto Muestreo	Calidad FQ sedimento	Calidad Biológica Agua	Calidad FQ Agua	Calidad Química Agua y Sedimento	Clasificación como Calidad Ambiental
UGAP1	UGAP1_1	DEFICIENTE	MUY BUENO	MUY BUENO	MODERADO	MODERADO
	UGAP1_2	MODERADO	MUY BUENO	MALA		DEFICIENTE
	UGAP1_3	BUENO	MUY BUENO	MUY BUENO		BUENO
UGAP2	UGAP2_1	BUENO	MUY BUENO	MUY BUENO	BUENO	BUENO
	UGAP2_2	BUENO	MUY BUENO	MUY BUENO		BUENO
	UGAP2_3	MODERADO	MUY BUENO	MUY BUENO		BUENO
UGAP3	UGAP3_1	BUENO	MUY BUENO	MUY BUENO	BUENO	BUENO
	UGAP3_2	MODERADO	MUY BUENO	MUY BUENO		BUENO
	UGAP3_3	MODERADO	MUY BUENO	MUY BUENO		BUENO

The overall result is GOOD and cannot be considered very good due to the presence of historical metals in the sediment and the ammonium from the municipal stormwater collector, which is completely unrelated to port activity.

ROM 5.1-13: Recommendations for maritime works of State Ports, in its section on quality control of port waters (2013)

ROM 817/ 2015: Royal Decree 817/2015, of September 11, which establishes the criteria for monitoring and evaluating the state of surface waters and environmental quality standards

Image of UGAP1.3 sediments

Water control of Escombreras expansion UGAP 3.2

AÑO 2022 Resultados obtenidos en el sedimento y valoración CIEM 2015.

PARÁMETRO (CIEM 2015)	UGAP1_AGUAS	UGAP2_AGUAS	UGAP3_AGUAS	UMBRAL SEDIMENTO NO PELIGROSO
ARSENICO	32.8	26.3	123	1000
MERCURIO	11	2	2.7	17
COBRE	102	45.5	252	2500
CROMO	17.2	12.9	18.4	1000
CADMIO	4.51	1.15	2.52	72
NIQUEL	6.61	8.85	8.6	1000
Pcb's (28,52,101,118,138,153,180)	< 0.0080	< 0.0080	< 0.0080	4
SUMATORIO PAH´s	< 0.080	0.08	< 0.080	110
PLOMO	210	148	340	2500
ZINC	487	338	762	2500

Escombreras Dock, very good water quality

Study of microplastics present in port waters

This study was carried out in 2019 by the team led by Francisco Javier Bayo Bernal, professor at the Department of Chemical and Environmental Engineering at the Polytechnic University of Cartagena.

The project has addressed for the first time the identification, distribution, sources, and fate of microplastics in the marine ecosystem of the port area (both in Zone 1 and Zone 2), which includes three different areas: Cartagena dock, Escombreras dock and Cala Cortina beach. This study proposes the realization of specific analyzes of all these areas, which indicate the presence, variability and trends in the concentration of microplastics over a year. With these general premises, it shall be possible to know and interpret the behavior of these micro-pollutants and their presence in the different areas, and it shall be possible to relate to the different anthropic activities carried out in the marine environment. At the same time, the research work shall also provide knowledge about the presence and characterization of microplastics in the port area that is encompassed within the Natura 2000 Network.

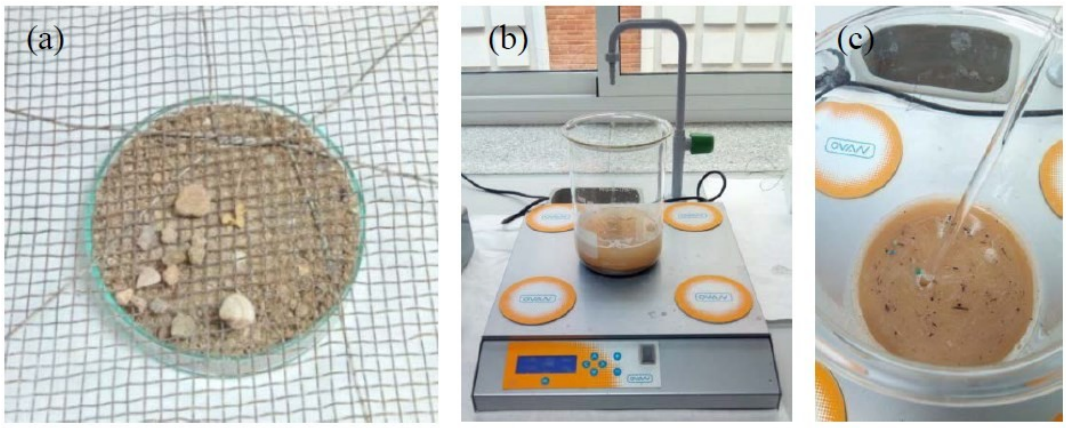


Figura 3.7. *Procesado de muestras de sedimento costero: (a) Tamiz de luz de paso de 5 mm, (b) agitación de la mezcla sedimento-disolución salina, (c) vista superior del proceso*

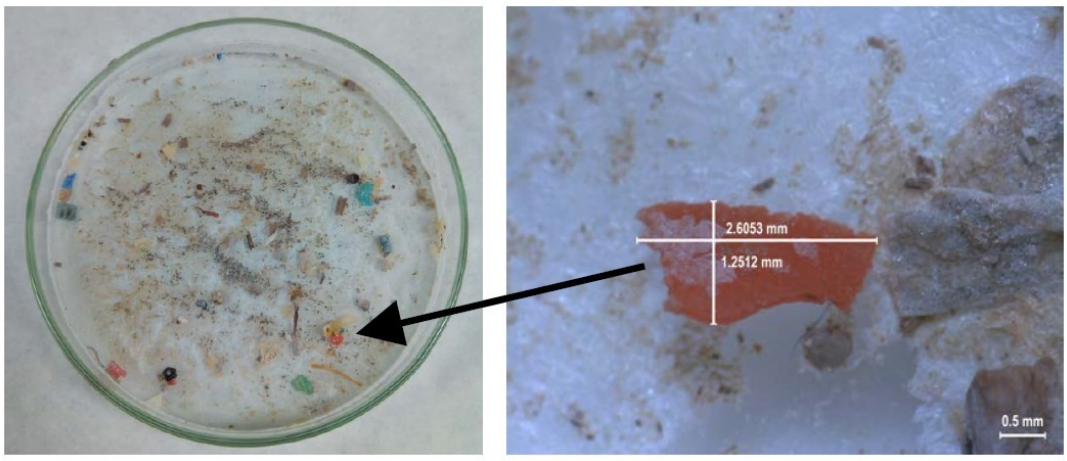


Figura 3.10. *Imagen obtenida al estereomicroscopio de una micropartícula aislada en una de las muestras analizadas*

The conclusions of the study have been the following ones:

COASTAL SEDIMENTS

The analyses carried out on coastal sediments showed the following conclusions:

1. PM particles were found in all the analysed samples of coastal sediments, in a concentration that varied between 8.0 and 143.2 PM / kg of dry sediment, with a mean value of 30.0 ± 7.3 PM / kg, assuming 41.9% of the total ML analyzed by infrared spectroscopy (FTIR).
2. The mean value of PM in the coastal sediment samples collected during the month of June was higher than those of the months of March and September, although without statistically significant differences.
3. The highest concentration of PM occurred in Z3 or the most remote area from the shore of the beach, possibly due to its proximity to the road and the area where pedestrians pass, descending towards Z2 and Z1, which makes us think of a transfer of MP from land to sea and not so much in the opposite direction. These differences were not statistically significant either.

4. The simultaneous study of month and sampling area showed higher ML values for Z1 and Z2 during the month of September, probably due to the episode of Cold Drop suffered during this month, although without statistically significant differences.
5. The concentrations of PM found in this study were almost always above the mean value found by the Ministry for the Ecological Transition and the Demographic Challenge for the reference beach in our region: La Llana beach in San Pedro del Pinatar.
6. The fibre form was the most isolated in coastal sediments, followed by the film, fragment, foam and microspherule form. In addition, the highest concentration of fibres appeared in June, followed by September and March, with statistically significant differences, which could indicate a source of the textile used by beach users during the summer season, without appreciating differences with statistical significance according to the beach area. The fragment form presented differences with statistical significance according to the sampling area, with a higher concentration in Z3 than in Z2 and Z1, which may indicate a process of MP fragmentation closer to the shore.
7. The coastal sediment samples with the largest particle size showed a greater capacity to retain MP as a fragment.
8. The most abundant PM colour in coastal sediments was white, followed by blue and red, representing these three colours around 75% of the total colours analyzed.
9. The average size of PM in coastal sediments was 1.5 ± 0.1 mm, a range between 150 µm and 8.0 mm, being the size between 1.0 and 2.0 mm the most frequently found.
10. The four plastic polymers mostly found in the isolated PMs were low-density polyethylene (LDPE), polypropylene (PP), acrylate (ACRYL) and high-density polyethylene (HDPE), all of them representing more than 80% of the total polymers identified in coastal sediments.

MARINE SEDIMENTS

The analyses carried out on marine sediments showed the following conclusions:

1. Not all the analysed samples of marine sediments presented PM in their composition, with a maximum value of 59.2 PM / kg and an average of 19.4 ± 2.4 PM / kg, assuming PM 34.2% of the total. of microparticles (ML) analysed.
2. The concentration of PM in marine sediments increased from the samples collected at the shallowest point (8.0 m) to those in the area of maximum depth (24.0 m), although these differences were not statistically significant.
3. Only three different forms of PM were found in marine sediments: fibre, film and fragment, with neither foam nor microspherules appearing in the form of primary PM.
4. The fibre concentration increased again from the samples collected at the point of shallowest depth to those of the point of maximum depth, although there was also no statistical significance.
5. The size of MP found in marine sediments ranged between 210 µm for a film and 9 mm for a fibre with an average size of 1.2 ± 0.1 mm.
6. The largest size corresponded to the fibre form, followed by the film and the fragment form.
7. 9 different colours were identified for the set of PM isolated in marine sediments, being the main ones white, blue, red and green, and without any appreciable spatial trend according to sampling point.
8. About 78% of the PM were opaque and 22% transparent.
9. The main constituent polymers of PM in marine sediments were: polyvinyl (PV), polypropylene (PP), low-density polyethylene (LDPE) and acrylate (ACRYL), indicating that the density of the polymer acts as an important storage factor. for these micropollutants.
10. The analysis of a greater number of samples in subsequent years and in other parts of the port area would give rise to a greater temporal and spatial database, which would help to clarify those trends that have been manifested in this study, even without statistical significance, as well as to clarify the importance of anthropic activity in the content of these micro-pollutants in the marine ecosystem, as well as in the port area that is encompassed within the Natura 2000 Network.

The main conclusions of the joint analysis of both samples are:

1. The average sizes of the fibre, film and fragment forms were lower in marine sediments than the corresponding ones in coastal sediments, which speaks of the decomposition or weathering process suffered by these micro-pollutants on the seabed.

2. The PM concentration gradient from the areas furthest from the shore, in coastal sediments, towards the deepest sampling point, in marine sediments, allows us to identify a flow of these micro-pollutants in the land-sea direction, rather than in the opposite direction.

"Clean Sweep Operation"

On October 24, 2019, the Port Authority of Cartagena joined the "Operation Clean Sweep" project, promoted by Plastics Europe and the Spanish Association of Plastics Industries, which seeks to eliminate the loss of plastic waste into the sea and the environment.

Further information at www.opcleansweep.eu

5.3 Cleaning port waters

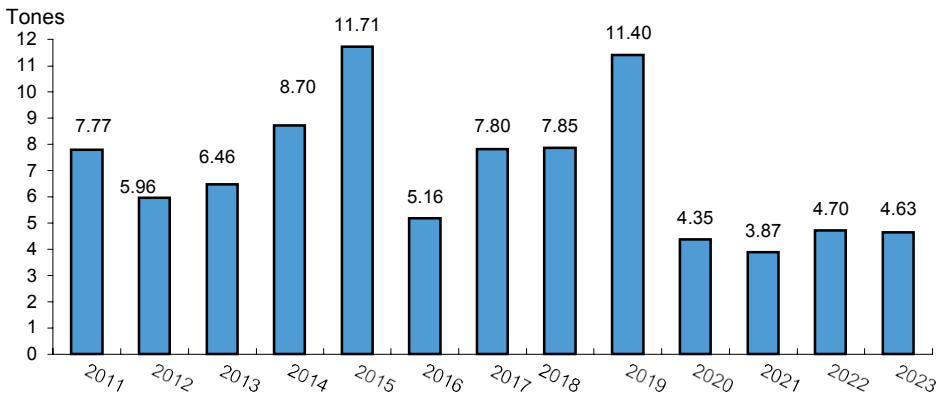
During 2023, a total of 4.62 tons were removed from the surface of port waters.

Tm. = metric tons

Since this new vessel came into operation, the segregated control of the different types of waste that are extracted from the surface of the waters has been carried out, with the following result for 2022:

- Fat materials: 0 kg. Total in the period January-December 2023: 4.629 Tm.
- Algae: 7 kg. (0.16%) Total in the period 2003 - 2023: **880.190 Tm.**
- Organic remains: 2,340 kg. (50.55%)
- Wood: 343 kg. (7.41%)
- Plastics: 707 kg. (15.27%)
- Others: 1,231 kg. (26.60%)

Waste collected from the Port waters (Tm.)



"Pelican" Vessel

A good indicator of the state of the port waters are the results of the analyses carried out each year on the waters of Calacortina Beach, which although it is outside the Service Zone, it is located between the two docks, passing in front of it all the maritime traffic entering and leaving the port. The results of the periodic analyses carried out by the Department of Health of the Autonomous Community of the Region of Murcia since 2002 have consistently resulted in the water being classified as "suitable for bathing with good or very good quality."

Regarding the water quality at Calacortina Beach, it has been awarded the Blue Flag from 2007 to 2023 without interruption.

https://www.murciasalud.es/pagina.php?id=516481&idsec=305
https://nayadeciudadano.sanidad.gob.es/Splayas/ciudadano/ciudadanoVerZonaAction.do

The Port Authority installs and maintains, annually, during the bathing season, an anti-pollution barrier to preserve the beach from any possible spill that could affect it, and no spill has been recorded in the last 15 years.

This beach was chosen as the second-best beach in Spain in 2020, and in 2023 it was again selected as a favorite for the same award.

Calacortina Beach

New blue flag for Port Yach, this makes four blue flags in the Port of Cartagena.

https://www.banderaazul.org/sites/default/files/2023/RuedaPrensa2023/RELACI%C3%93N%20DE%20PUERTOS%20GALARDONADOS%202023.pdf


IMO 9444
Stena Bulk

5.4 Electric power

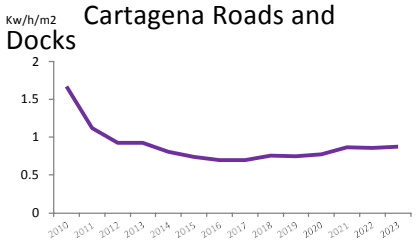
During 2023, there has been a variation in the total electrical energy purchased at the port of 3.07% compared to 2022, controlled own consumption has increased by 6.62%, leaving the energy sold + other facilities with a decrease of -6.81%.

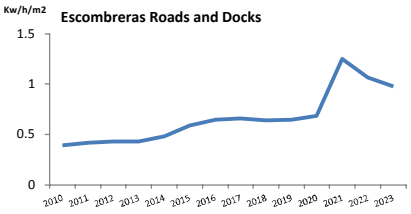
Taking into account the consumptions registered in our own controlled facilities (buildings), roads and docks, efficiency indicators expressed in kWh / m2 / year have been calculated, which have given the following results:

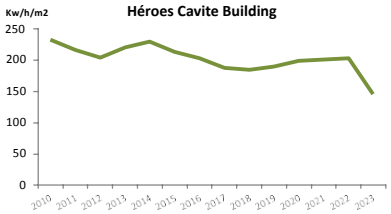
Efficiency indicators	2022			2023			Variation 2022/2023
	Kwh/year	m2	Indicator	Kwh/year	m2	Indicator	
Héroes de Cavite building	331906	1639	202.5051	239185	1639	145.933496	-27.94%
S. Lucia Workshop Building	318230	1685	188.8605	283074	1685	167.996439	-11.05%
Cartagena Roads and Docks	433281	505985	0.8563	441556	505985	0.8727	1.91%
Escombreras Roads and Docks	1086594	1022009	1.0632	1000601	1022009	0.9791	-7.91%
Total own facilities	2353676	1532118	1.5362	2509444	1532118	1.6379	6.62%

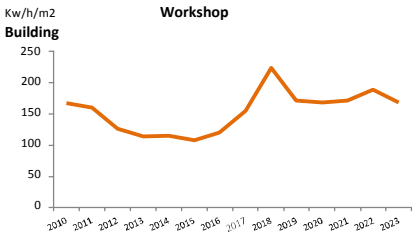
These indicators are used to more effectively monitor electricity consumption in facilities under the control of the Port Authority.

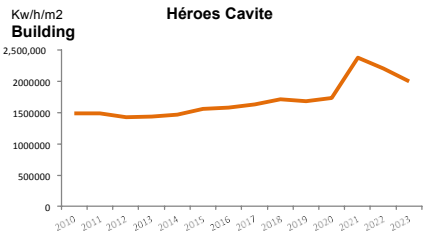
The evolution of consumption is summarized in the following table and graphs:

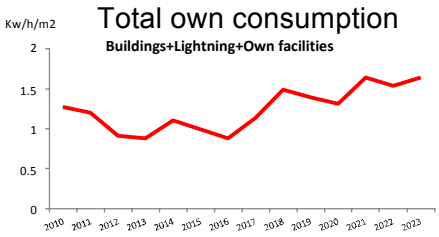








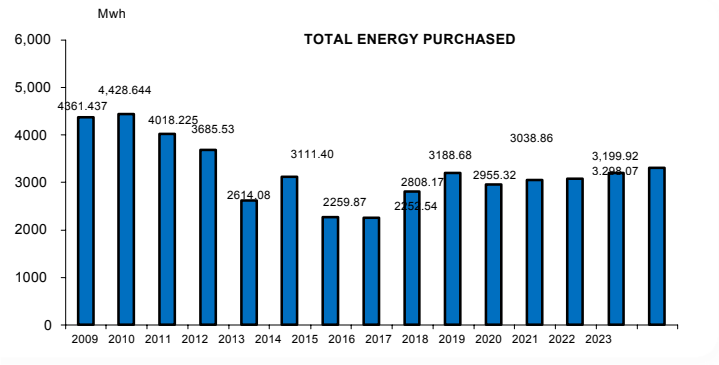


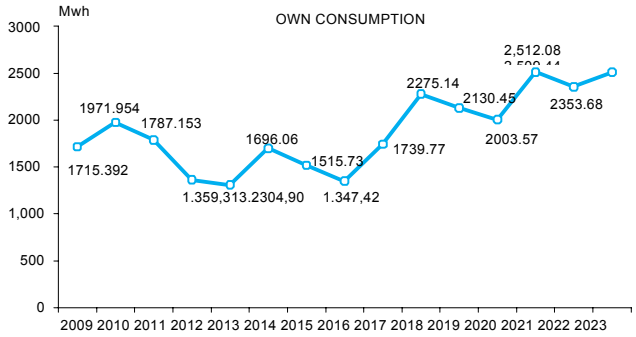


Total energy purchased, sold, consumption by own facilities and the rest not controlled.

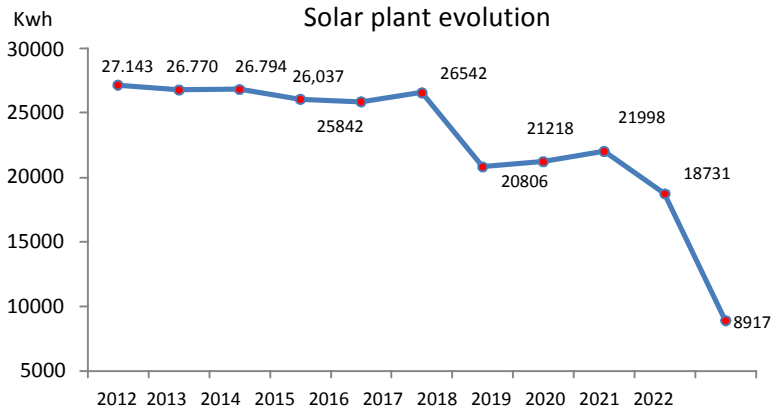
In 2023, all purchased energy will be certified by Iberdrola as coming from renewable sources, including energy purchased, energy sold, and energy consumed by its own facilities.

Mwh.	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Difference 22/23 Mwh.	Difference 22/23 %
Total purchased	2614.08	3111.40	2529.87	2252.54	2808.17	3188.68	2955.32	3038.86	3078.98	3199.92	3298.07	98.151	3.07%
Own controlled	1304.90	1696.06	1515.73	1347.42	1739.77	2275.14	2130.45	2003.57	2512.08	2353.68	2509.44	155.768	6.62%
Total sold	238.53	265.13	224.03	218.46	332.83	288.44	258.01	249.17	199.66	218.08	212.42	-5.663	-2.60%
Uncontrolled + Rest of facilities	1,070.65	1150.21	914.13	686.66	735.57	625.10	566.85	786.12	367.25	628.17	576.21	-51.954	-8.27%





On the other hand, the solar plant installed at the Fishermen's Guild is nearing the end of its useful life and has been decommissioned in 2023. New solar installation projects and hydrogen use are underway as part of the 2030 environmental strategy.



The drop in performance is clearly noticeable.

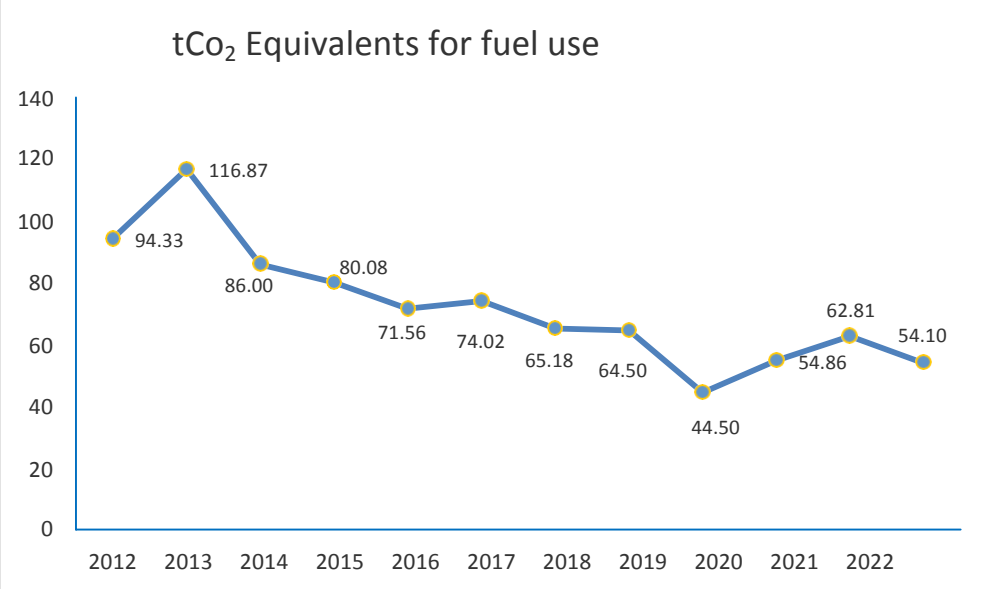
5.5 Fuel

Fuel consumption is generated by service vehicles, electric generators and vessels.
In 2023, a total of 53,433 litres of fuel were consumed, of which 13,000 litres were diesel, 227 litres were autogas (LPG), 1,915 litres were 95-octane gasoline, and 38,291 litres were CNG (6,050 kg). This represents a variation of -0.62% compared to 2022.

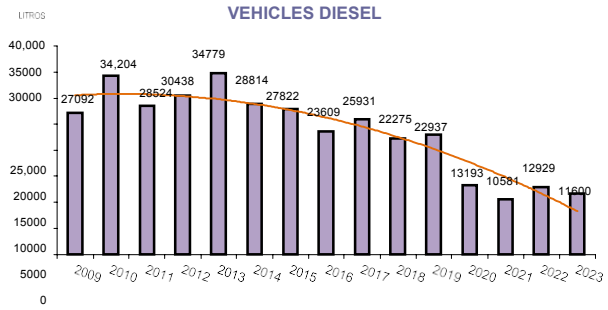
Broken down by vehicle type: 11,600 litres of diesel were consumed by service vehicles, 1,400 litres of diesel by boats, 1,915 litres of gasoline by hybrid vehicles, 227 litres of LPG consumed exclusively by a vehicle assigned to custodians, and 38,291 litres (6,050 kg) of CNG by newly purchased CNG vehicles.
There has been no consumption of the generating sets, which are only used when there are power failures.

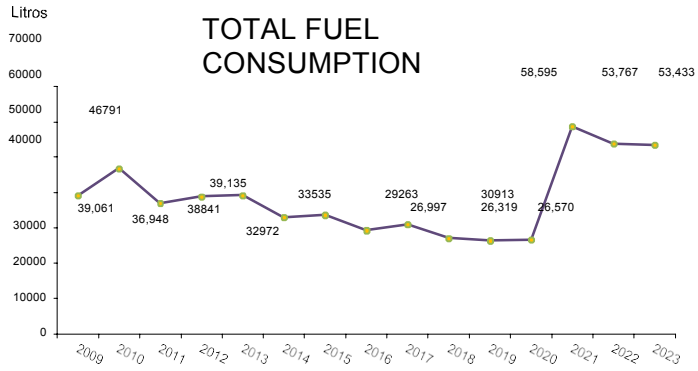
To better understand the implications of using CNG as a fuel, it is important to note that the 38,291 litres of CNG (6,050 kg) produced CO2 equivalent emissions of 16.432 tCO2 equ., compared to the 32.344 tCO2 equ. emitted by the 13,000 litres of diesel consumed.

litres	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	22/ 23%
Diesel vehicles	28524	30438	34779	28814	27822	23609	25931	22275	22937	13193	10581	12929	11600	-10.28%
Generator sets	1000	1566	0	0	0	0	0	0	0	0	0	0	0	0.00%
LPG Autogas				871	3311	2125	2479	1376	360	175	221	117	227	94.28%
Vehicles Diesel + CNG + LPG + Gasoline	28,524	30438	34779	29685	31454	25929	29913	25501	24219	25770	57845	51592	52033	0.85%
Vessels	7,423	6837	4356	3287	2081	3334	1000	1496	2100	800	750	2175	1400	-35.63%
Gasoline 95					321	195	1503	1850	922	2433	3411	4943	1915	-61.26%
CNG Vehicles										9,969	43633	33603	38291	13.95%
TOTAL	36,948	38841	39135	32972	33535	29263	30913	26997	26319	26570	**58595**	**53767**	**53433**	**-0.62%**



The trend in the future shall be to gradually replace diesel vehicles with hybrid, electric or CNG gas vehicles. In 2018, four new hybrid vehicles were purchased and in 2020 another five CNG vehicles were purchased.





Hybrid vehicles purchased in 2023

Hybrid vehicles for service purchased in 2023

5.6 Consumption of print toner, ink cartridges and paper

Paper consumption in 2023 remained slightly variable, with 565 packages compared to 555 the previous year, a +1.8% increase, while toner deliveries to the manager increased by 132.65%, from 49 units in 2021 to 114 in 2022, totaling 65 kg of empty cartridges.

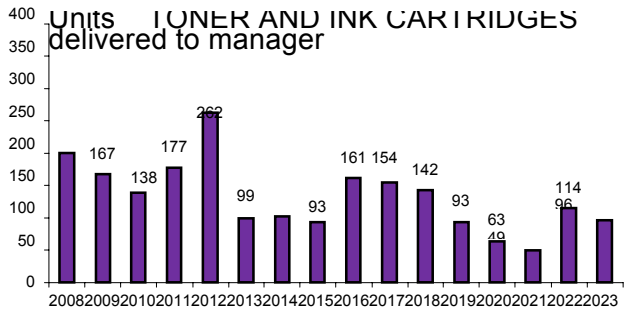
It should be noted that toner for large printers and ink cartridges for personal printers are counted, so it is difficult to establish a trend, since, although the cost of toner is usually similar each year, the cost of ink cartridges is different for each user. Besides that, the consumption of paper presents ups and downs due to the management of the purchase since sometimes stocks are made for several years to optimize spending.

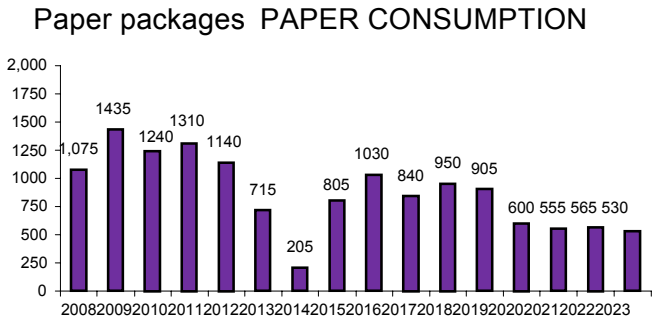
PAPER CONSUMPTION

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	%
500 paper packages	1310	1140	715	205	805	1030	840	950	905	600	555	565	530	-6.19%
Tones	3.301	2.873	1.802	0.517	2.029	2.596	2.117	2.394	2.281	1.512	1.398	1.424	1.336	-6.18%

TONER AND INK CARTRIDGES DELIVERED TO THE MANAGER

units	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	%
Managed toner and ink cartridges	177	262	99	102	93	161	154	142	93	63	49	114	96	-15.79%





6 Waste management

6.1 Own waste

Cartagena Port Authority is registered as a small waste producer in the Autonomous Community of the Region of Murcia under the number 2913 since 2/11/1999.
During 2023, a total 1,855 kg of own hazardous waste have been collected at Cartagena Port Authority Workshops green point.

In addition, a total of 249,580 kg of non-hazardous and inert waste was collected from this Cartagena Port Authority's facilities and from the public containers for selective collection distributed throughout the port's Service Area (this waste includes, in addition to paper and cardboard, light packaging and organic waste, alkaline batteries, septic tank sludge, toner and ink cartridges, and inert waste).

A selective collection system for non-hazardous waste is in place, extensive to all areas of public use, facilities and all ships that dock in the port, with a provision in the Service Area of 58 containers of 4.5 m3 and 310 800l containers for selective collection, including 10 underground containers and a paper compactor in the leisure area of Paseo de Alfonso XII.

The amounts of non-hazardous waste correspond to all the Port Authority's own facilities and to the containers for public use distributed throughout the port's Service Area, it does not include waste delivered by ships or those of concessionary and authorized companies.

There is no Port Authority facility containing PCBs or PCTs.

Main non-hazardous waste collected in the Service Area

Quantities in Kg	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Paper and paperboard	5605	1683	2231	1869	2048	2059	2633	2400	2238	2457	4148	**3456**
Light Containers	400	503	454	1456	1475	561	462	636	637	635	3580	**4194**
Organic waste	153,750	120150	121880	132270	143332	141013	131031	123639	110313	137200	176256	**188609**

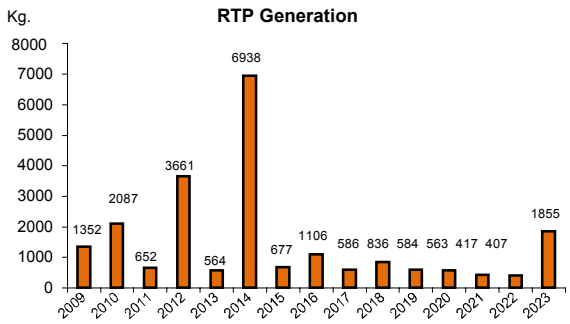
Hazardous Waste Kg.

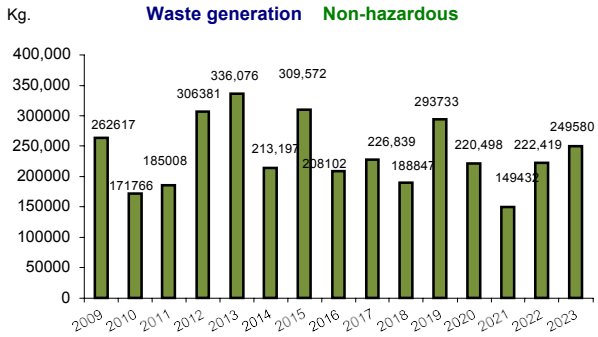
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
2087	652	3661	564	6938	677	1106	586	836	584	563	471	**407**	**1855**

Non-hazardous Waste Kg.

2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
171766	185008	306381	336076	213197	309572	208102	226839	188847	293733	220498	149432	**222419**	**249580**

Own hazardous WASTE 2023	EUROPEAN WASTE CODE	Kg.
Polluted material	150202	97
Aerosol cans	150111	6
Lead-acid batteries	160601	21
Mercury tubes and lamps	200121	90
Sludge and paint residue	080111	2
Contaminated metal containers	150110	9
Contaminated plastic containers	150110	8
Hydrocarbon water	160708	1620
Fireworks	160403	2
	Total	**1855**





The main legislation applicable to waste management is Law 7/2022 on waste and contaminated soil for a circular economy; Royal Decree 1055/2022 on packaging and packaging waste; Royal Decree 110/2015 on waste electrical and electronic equipment; and Royal Decree 553/2020, which regulates the transfer of waste within the Spanish territory.

6.2 Waste from other companies present in the port

All companies that operate within the Port Service Zone (concessions, authorizations, execution of works and provision of services), in addition to having the obligation to comply with the sectoral legislation that is applicable to them, shall previously provide to be authorized or contracted, their consent to the contractual clauses and additional environmental requirements that are included in all the specifications and conditions. In this way, an additional element of control over all aspects of the activity is added, incorporating specific clauses on industrial safety, risk prevention and respect for the environment. In this sense, and without prejudice to the powers that the law grants to other administrations, inspection and control over all companies is carried out by personnel from the Sustainability Department and the Port Police.
The abandonment of any waste, mixture with each other, incineration or delivery to an unauthorized manager is strictly prohibited.

6.3 Waste from ships and vessels

The main legislation applicable to waste management is Law 7/2022 on waste and contaminated soil for a circular economy; Royal Decree 1055/2022 on packaging and packaging waste; Royal Decree 110/2015 on waste electrical and electronic equipment; and Royal Decree 553/2020, which regulates the transfer of waste within the Spanish territory.

In the Port of Cartagena, the manager in charge of the installation is **Cartago Marpol, S.L.**, which has the UNE-EN-ISO 14001, 45001 and 9001 certifications, and is also registered within the Community System for Eco-management and Environmental Auditing (EU Regulations 2017 / 1505 and EC 1221/2009 EMAS) in the Region of Murcia (since 2008)

The obligation to have the EMAS registration for Marpol waste managers in Cartagena Port is a premise not imposed by any legislation, but by the port's environmental policy, which shall be extended to the rest of the port service operators.

Cartago Marpol, S.L. is authorized to collect the following Marpol waste at this port:

- Annex I Marpol: Oily waste
- Annex II Marpol: Waste from noxious liquid substances
- Annex IV Marpol: Sewage waste
- Annex V Marpol: Solid waste and Other residues and wastes (rest of hazardous, non-hazardous or inert waste)
- Annex VI Marpol: Waste from cleaning exhaust gas systems

This company has facilities in the Cabezo Beaza Industrial Park and in the port itself (San Pedro Dock), where it has boats, tankers, and special trucks for waste collection.

The regulations to be followed for the reception and handling of these residues and waste are described in the "Plan for the reception and handling of waste generated by ships and cargo residues," prepared by the Port Authority, currently under review on May 6, 2024, and already adapted to Royal Decree 128/2022.

During 2020 a total of 19,944 m3 Marpol waste has been received, from ships, cargo residues and stowage operations. This figure is lower than in 2022 -11.16%, with an increase in the number of services of 5.79%, 4,236 services in 2023.
It should be noted that since the Environmental Mangement System was implemented in 2003, the total Marpol waste collected amounts to 291,514 m_3, with 65,634 services.

In 2007, the collection of waste of harmful liquid substances began (Annex II Marpol), accompanied by a considerable increase in the delivery of toxic and dangerous waste from ships, which until that date was hardly carried out. Likewise, in 2018 the first waste removal service from the cleaning of the exhaust systems was carried out.

The amount of toxic and dangerous waste (included in Marpol V), separately collected and segregated, since 2007, reaches 22,805 m_3 with 18,126 services.

MARPOL V waste removal. New trucks

MARPOL waste management information for public dissemination on social networks

Gabarra Cartago for MARPOL service has a hydrocarbon water treatment plant.

MARPOL WASTE COLLECTED IN THE PORT 2003-2023

	OILY (Annex I)		HARMFUL SUBSTANCES - (Annex II)		SEWAGE (Annex IV)		GARBAGE (Annex V)		OTHER WASTE (Annex V Toxic and hazardous waste)		EXHAUST SYSTEMS CLEANING (Marpol VI)		TOTAL WASTE m3	TOTAL Services
	m3	Services	m3	Services	m3	Services	m3	Services	m3	Services	m3	Services		
2003	3383	315			8753	10	3708	957					15844	1282
2004	2544	292			5025	6	3335	1013					10904	1311
2005	3396	358			2164	17	3318	1253					8878	1628
2006	3806	340			167	13	2955	1633					6928	1986
2007	3527	297	591	47	517	26	2429	1445	824	674			7888	2489
2008	3586	312	480	43	645	36	2366	1346	649	551			7727	2288
2009	2870	262	512	34	110	21	2808	1386	844	406			7144	2109
2010	3672	308	1114	31	862	42	3397	1455	1116	597			10161	2433
2011	4863	426	1489	11	738	39	3713	1498	1175	930			11978	2904
2012	5717	422	143	8	1077	23	3262	1689	1018	1104			11217	3246
2013	6408	520	215	20	102	17	3105	1713	1282	1471			11113	3731
2014	5843	506	107	7	1125	28	3350	1699	1164	1517			11589	3757
2015	6299	612	75	9	340	31	3905	1716	1393	1452			12011	3820
2016	9048	764	107	5	247	25	3821	1809	1583	1167			14806	3770
2017	9385	849	123	10	1331	78	4682	2057	1460	1089			16981	4083
2018	10199	987	221	11	2255	39	5216	2091	2651	1262	30	1	20573	4391
2019	8845	813	153	8	3723	38	5114	2187	1871	1337	31	4	19737	4387
2020	11335	777	226	12	8858	50	3928	1828	1485	1150	0	0	25832	3817
2021	9727	843	314	14	2691	38	3933	2004	1147	1062	0.1	1	17812	3962
2022	11398	862	310	9	2801	35	5965	1943	1952	1153	24.7	2	22450	4004
2023	11456	1003	494	23	211	14	6593	1992	1191	1204	0.0	0	19944	4236
Total amount	**138633**	**11874**	**5345**	**286**	**43742**	**626**	**80903**	**34714**	**22805**	**18126**	**86**	**8**	**291514**	**65634**

It should be noted that maritime transport is the one with the highest environmental performance, being the one with the least tones waste and emissions generated in relation to the volume of cargo transported. Apart from this, all the companies supplying fuels and lubricants to ships that operate in the port, comply with the provisions of *Royal Decree 1695/2012, of December 21, which approves the National Response for Marine Pollution System*, which repeals the RD 253/2004, of February 13, which establishes prevention measures and fight against pollution in the operations of loading, unloading and handling of hydrocarbons in the maritime and port areas.

El Espalmador green point

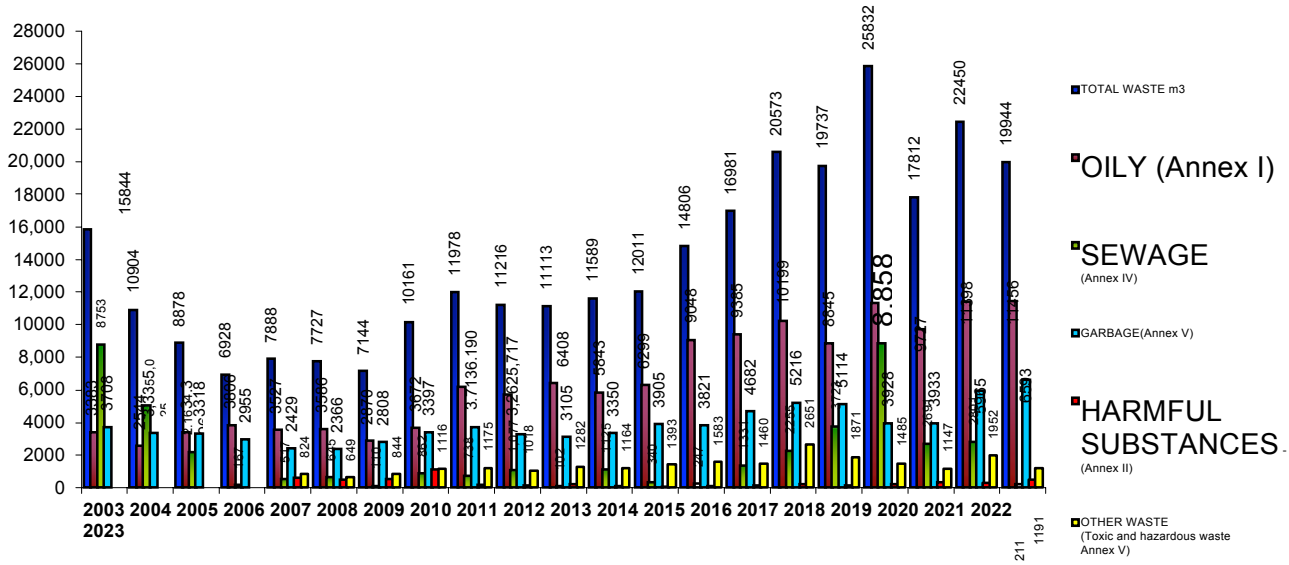

Santiago Dock green point

Regarding Marpol waste from the green points installed by Cartagena Port Authority, it should be noted that during 2016 the green point of the Santiago dock was relocated, renovating the containers and removing 0.8 m3 waste oil. The waste disposal facility in the El Espalmador craft area has been transferred to the new

concession granted to the El Chalet Yacht Club, which is responsible for the management and procurement of all waste from the concession, including the boats.

The other green points installed in the Real Club de Regatas de Cartagena, Cofradía de Pescadores, Astilleros Cartagena (Ascar), Yacht Port Cartagena and that of the Boteros Amarradores continue to operate, with no incidents recorded during 2023.

MARPOL WASTE DELIVERED BY VESSELS (m3) 2003-2023



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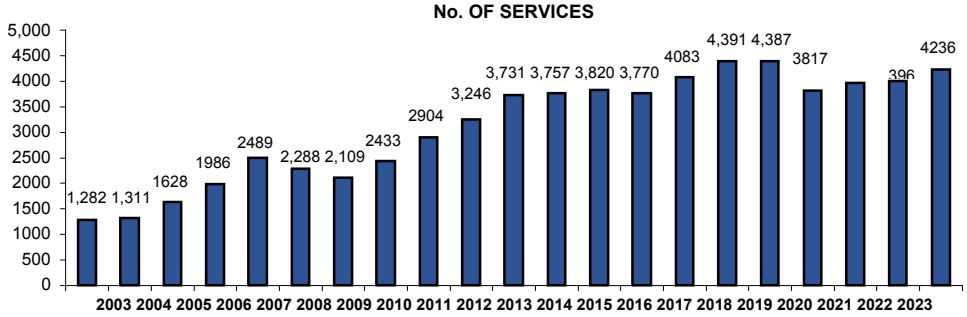
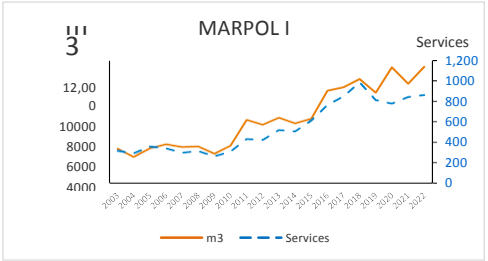
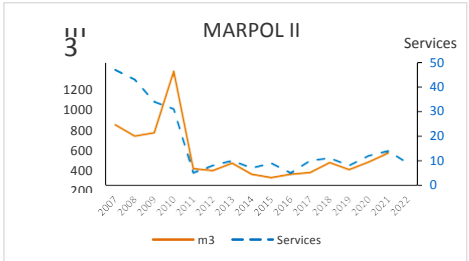
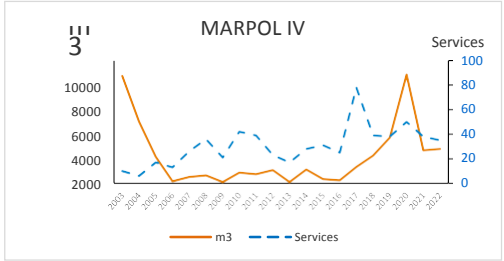
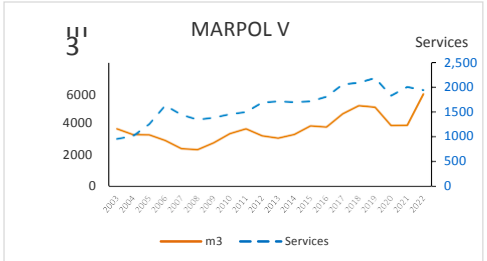
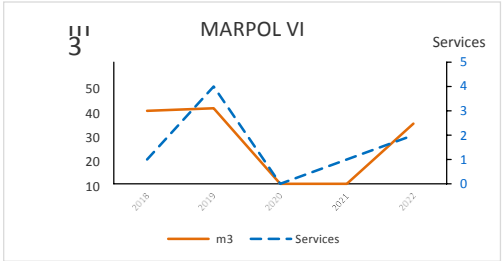












Marpol IV waste removal on cruise ships

Marpol V AND VI waste

Summary of environmental performance indicators 2023

Environmental performance indicators 2023 according to Annex IV of EMAS Regulation EC 1221/2009				
	Gross data	Relative data per employee		
Energy efficiency		**2021**	**2022**	**2023**
		185 employees	182 employees	180 employees
Consumption of electrical energy	2.509,44 Mw/h	13,578 Mw/h	12,93 Mw/h	13,941 Mw/h
Consumption of gasoil, Gasoline, CNG and autogas (PLG)	18.657 t. 247,405 Mw/h	0.103 t. 1,391 Mw/h	0.120 t. 1,563 Mw/h	0.103 t (0) 1,374 Mw/h
Efficiency in material consumption				
Paper	1.335 t.	0.0079 t.	0.0078 t.	0.0074 t (1)
Water consumption	12,135 m_3	66.205 m_3	95.75 m_3	67.41 m_3
Waste generation				
Own hazardous waste	1.855 t.	0.00305 t.	0.00223 t.	0.01030 t.
Hazardous waste from ships	11,395 t.	58.89 t.	63.12 t.	63.30 t (4)
Own non-hazardous waste	249.580 t.	1.154 t.	1.222 t.	1.386 t.
Non-hazardous waste from ships	1,397 t.	50.079 t.	21.29 t.	7.76 t (5)
Biodiversity				
Land use	2,389,892 m_2	12,512 m_2	13,131 m_2	13,131 m_2
Emissions				
Direct emissions Consumption of diesel, gasoline, CNG and gas (LPG)	13,000 m3 of diesel equivalent to 11,050 tons of diesel and 32,344 tons CO2 1,915 m3 of gasoline equivalent to 1,431 tons of gasoline and 4,764 tons CO2 0.227 m3 of LPG equivalent to 0.127 tons of LPG and 0.564 tons CO2 38,291 m3 of CNG equivalent to 6,050 tons of LNG and 16,432 tons CO2 Total: 54,105 t. CO2	0,233 t. CO_2	0,345 t. CO_2	0,300 t. CO_2 (2)
Indirect emissions Consumption of energy	0 t. CO_2	0 t. CO_2	0 t. CO_2	0 t. de CO_2 (3)

(0) 1 toe is equivalent to 11.627 MW; 1 t of diesel = 1.035 toe; 1 t of gasoline = 1.070 toe; 1 t of LPG = 1.13 toe; and 1 t of CNG = 1.35 toe. TEP = tonnes of oil equivalent. Source IEA (International Energy Agency)

(1) 1 sheet is equivalent to 0.063m2, 1 m2 of paper is equivalent to 80 gr., 530 packages are equivalent to 1.335 tons of paper

(2) 1 litre of diesel is equivalent to 0.85 kg and 1 litre of diesel is equivalent to emitting 2.471 kg of CO2, 1 t of diesel is equivalent to 2.905 t of CO2.
1 litre of LPG (Autogas) is equivalent to 0.56 kg and 1 litre of LPG is equivalent to emitting 1.656 kg of CO2, 1 t. of LPG is equivalent to 2.957 t. of CO2 1 litre of gasoline is equivalent to 0.747 kg and 1 litre of gasoline is equivalent to emitting 2.196 kg of CO2, 1 t. of gasoline is equivalent to 3.049 t. of CO2

1 litre of CNG is equivalent to 0.158 kg and 1 kg of CNG is equivalent to emitting 2.720 kg of CO2, 1 t. of LNG is equivalent to 2.720 t. of CO2
According to the Guide for calculating the carbon footprint of the Ministry of Agriculture, Food and Environment of April 2015, version 2.

(3) The energy consumed, supplied by Iberdrola, SAU, comes entirely from renewable sources, so it has no equivalent CO2 emissions.

(4) 1 m^3 oily residue (Marpol I) is equivalent to 0.92 t.

(5) 1 m^3 of garbage (Marpol V) is equivalent to 0.18 t. and 1m3 other waste (hazardous waste from ships - Marpol V) is equivalent to 0.4 t.

Black-headed Gull *(Chroicocephalus ridibundus)*, Cartagena dock

7 Emissions to the atmosphere

The movement of solid bulks is one of the traffics present in Cartagena Port that has experienced the greatest growth in recent years. This type of traffic, due to its nature and condition, generates high dust emissions when handled in bulk. Cartagena Port Authority, aware of the need to make the movement of this type of goods compatible with the maintenance of air quality levels in the environment that are not annoying for the city, moved the solid bulk terminal from the dock from Cartagena to the Escombreras dock, 6 km away. from the city and separated from it by a mountain range.

At the end of 2007, a new Solid Bulk Terminal, built on land reclaimed from the sea with the expansion of Escombreras, began to operate. This new Multipurpose Terminal, even further from the city, improves the existing facilities, making it possible for the handling of bulks to be carried out in better conditions of safety and respect for the environment.

In order to monitor the levels of immission* of dust (PM10) that are generated in the solid bulk terminal, a pollutant measuring booth was installed in 2004 (with analysers for PM_{10}, CO, NO_x, SO_2 particles, three meteorological stations and a complete computer system for real-time measurement and control, which was renewed and updated during 2008.
Two new cabins have been installed in 2020, equipped with the latest technology, adding measurement of PM 2.5.

It should be noted that there is no specific legislation that regulates the immission of particles in port areas or industrial facilities, so the only existing reference is the R.D. 102/2011, of January 28, on the improvement of air quality, applicable to urban agglomerations. This Royal Decree repeals the previous Royal Decree 1073/2002, of October 18, on the evaluation and management of air quality and establishes, for urban agglomerations, the maximum annual average at 40 μ g/m3.

Another important issue to take into account is the location of the measuring stations, installed in the bulk storage and handling areas, performing the measurement in-site, in this way the particles emitted in the port operation are measured with greater accuracy, unlike the rest of the stations that measure the particles present in the air in a given place (immission), but without being able to establish their origin. Therefore, it could be considered that the measurements made at the Bulk Terminals correspond to real emission values rather than immission*.

Loading of aggregates in Escombreras

Taking into account these previous considerations, the data registered during 2023 have been the following ones:

RESULTS REPORT OF THE P. FELIPE BULK TERMINAL MEASURING HOUSE
Data referred to PM10 2023

- Average year 2023: 34.67 μg/m^3
- Days of exceeding the daily μg/m3 limit: 43
- Total days of Saharan dust intrusion: 77
- Days in which the intrusion coincided with exceeding the daily limit (50 μg/m^3) : 10
- Computable days of exceeding the daily limit: : 33

- Average of the year discounting the days of intrusion: 33.22 μg/m^3

MULTIFUNCTION EXPANSION BULK TERMINAL MEASURING POINT REPORT OF RESULTS
Data referred to PM10 and PM 2.5 2023

- Average year PM 10 2023: 31.63 μg/m^3
- Days of exceeding the daily μg/m3 limit: 14
- Total days of Saharan dust intrusion: 77
- Days in which the intrusion coincided with exceeding the daily limit (50 μg/m^3) : 8
- Computable days of exceeding the daily limit: : 6

- Average of the year discounting the days of intrusion: 30.10 μg/m^3
- Average year PM 2.5: 12.44 μg/m^3

Immission *: Concentration of a certain pollutant in the air. For dust particles up to 10μ (PM10) the unit of measurement is μg/m^3

PM$_{10}$: Dust particles up to 10μ , A μg equals 1/1.000.000 g.

Saharan intrusion *: Natural phenomenon consisting of contribution of dust and particles to the atmosphere, coming from African areas, which is later deposited in other places, mainly in Europe.

Multipurpose Terminal Expansion of the Dumps, semi-ecological hoppers

These data represent a change in the average annual PM10 concentration at the Príncipe Felipe Terminal of -14.96% and -14.84%, after discounting the Saharan dust intrusion.
At the Multipurpose Terminal station, the PM10 data decreased by -51.66% and -52.32%, respectively, after discounting the intrusion.

The number of days of Saharan dust intrusion that coincided with exceeding the daily limit was 10 for the Príncipe Felipe data and 8 for the Expansion. The total number of days of intrusion decreased from 115 to 77.

The average value of particles obtained in this bulk terminal continues to maintain the average of the last 12 years at $40.64 \mu g/m^3$.
The average since it began operating (2020) for the Expansion Terminal is 42.96 μg/m3. The average value for both booths over the last four years has been 38.77 μg/m.

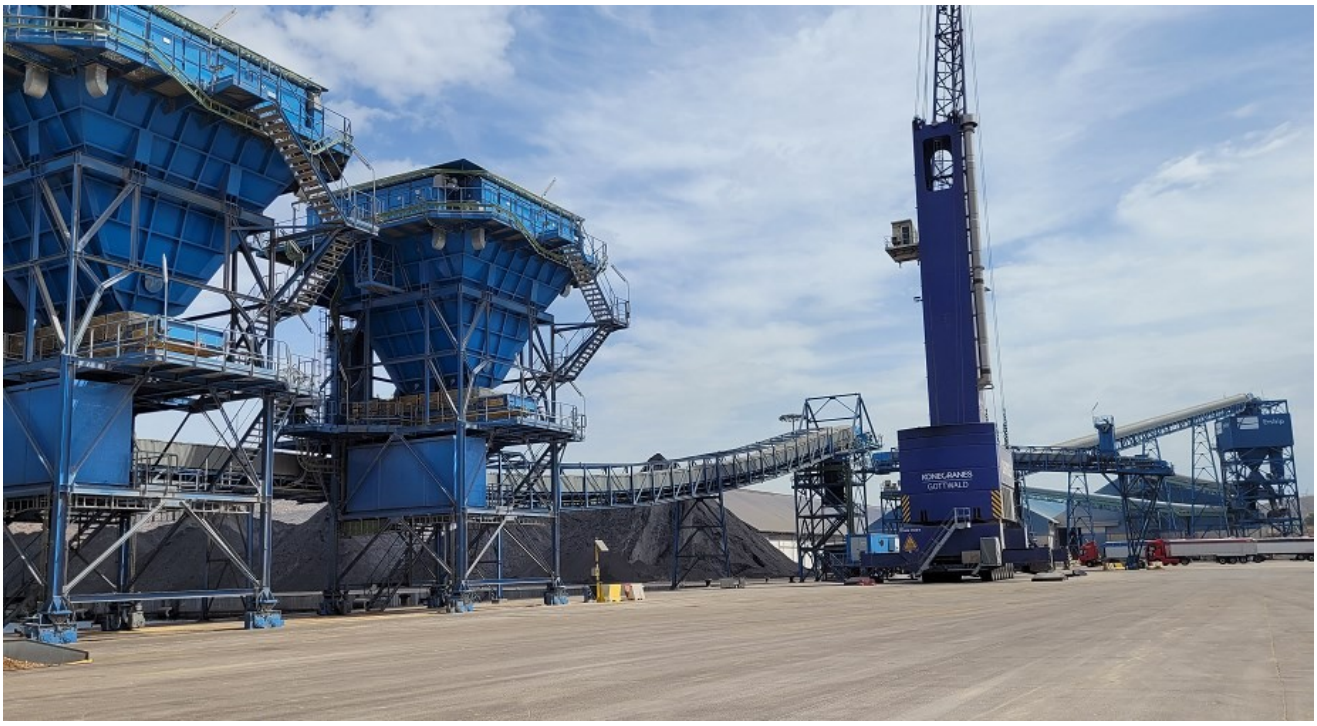
As part of the monitoring and control efforts on particle levels at the bulk terminal, a monitoring campaign was carried out during October 2017 to assess the percentage of sulphur contained in the dust moving through the Escombreras Expansion bulk terminal. This campaign was contracted to SGS Tecnos.
In order to do so, two collectors were placed in the surroundings of the sulphur storage area and the Ership scale.
The result obtained has been that the percentage of sulphur is less than 5% of the total particles analysed in each sample.

Apart from that, Ership has carried out a study of the immission of particles from hoppers with fairing and without fairing, with the result that the fairing hoppers reduce the emission of particles by 50%, which is why it has proceeded to careen all its hoppers.

In order to assess the possible incidence of dust and particles from the port in the urban areas closest to the port, the data from the port have been compared with those recorded at the stations of the Regional Network for the Monitoring of Atmospheric Pollution of Valle de Escombreras, Alumbres Valle de Escombreras, Mompeán Cartagena and two points far from the port such as La Aljorra (Cartagena) and Lorca.

The data registered in all the stations of the Regional Network for Atmospheric Pollution Surveillance can be consulted on the website https://sinqlair.carm.es/calidadaire/

Study on the sulphur particles present in the dust of the bulk terminal of Escombreras expansion, installation of collectors October 2017



New conveyor belts and eco-friendly hoppers to minimize particle emissions installed by Ership, S.A.

New metering booths

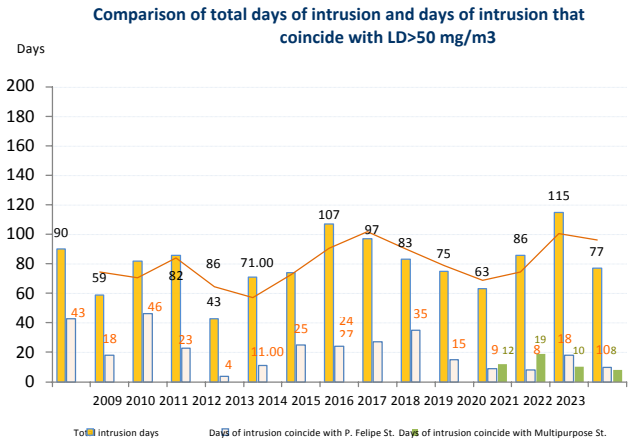
Metering station at Príncipe Felipe-Isaac Peral docks

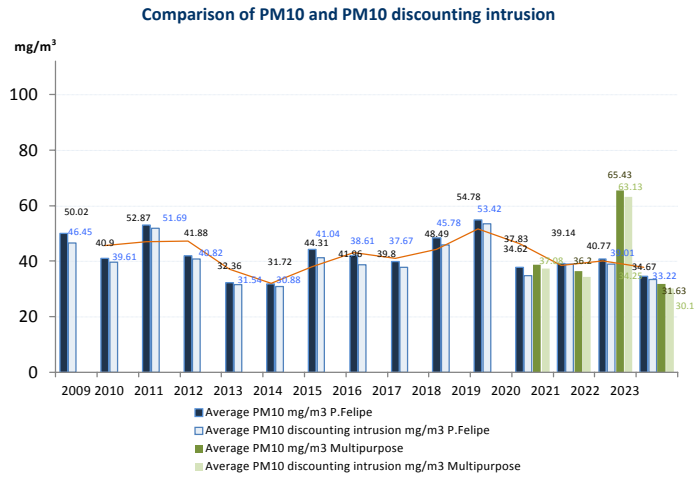
The Saharan intrusion data, which is monitored daily, is obtained from information provided by the collaboration agreement for the study and assessment of air pollution by suspended particulate matter in Spain, between the Ministry of the Environment and the Spanish National Research Council. The Agreement is financed by the General Directorate of Environmental Quality and Evaluation of the Ministry of Environment and the research is carried out by CSIC (through "Jaume Almera" Institute of Earth Sciences), the INM (through the Atmospheric Observatory of Izaña), CIEMAT (through the Institute of the Environment), Carlos III Health Institute, the University of Extremadura, the Polytechnic University of Cartagena and the University of Huelva.

To develop the intrusion forecasts, data provided by three mathematical models are taken into account:

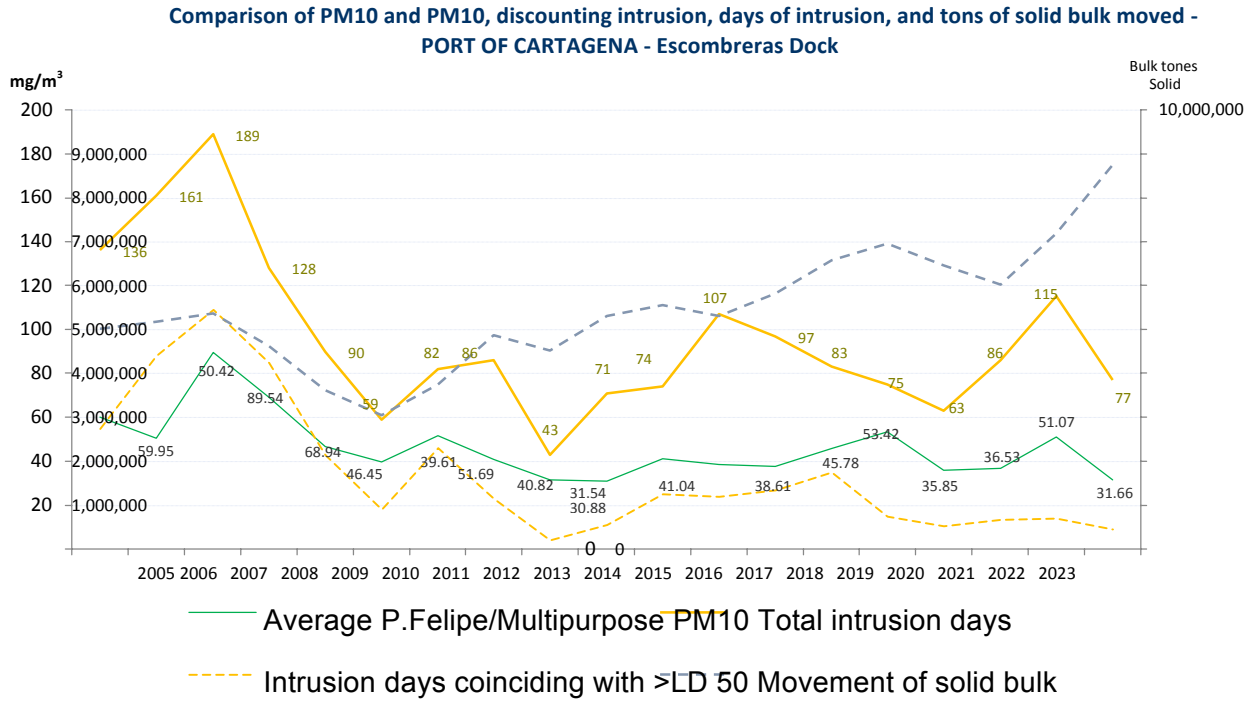
- NAAPS model by the Naval Research Laboratory (NRL) in Monterey, Canada.
- BSC/DREAM model by the Barcelona Supercomputing Centre.
- Skiron model by the University of Athens.

This information can be found on the website: http://www.calima.ws/ y https://dust.aemet.es/products/daily-dust-products



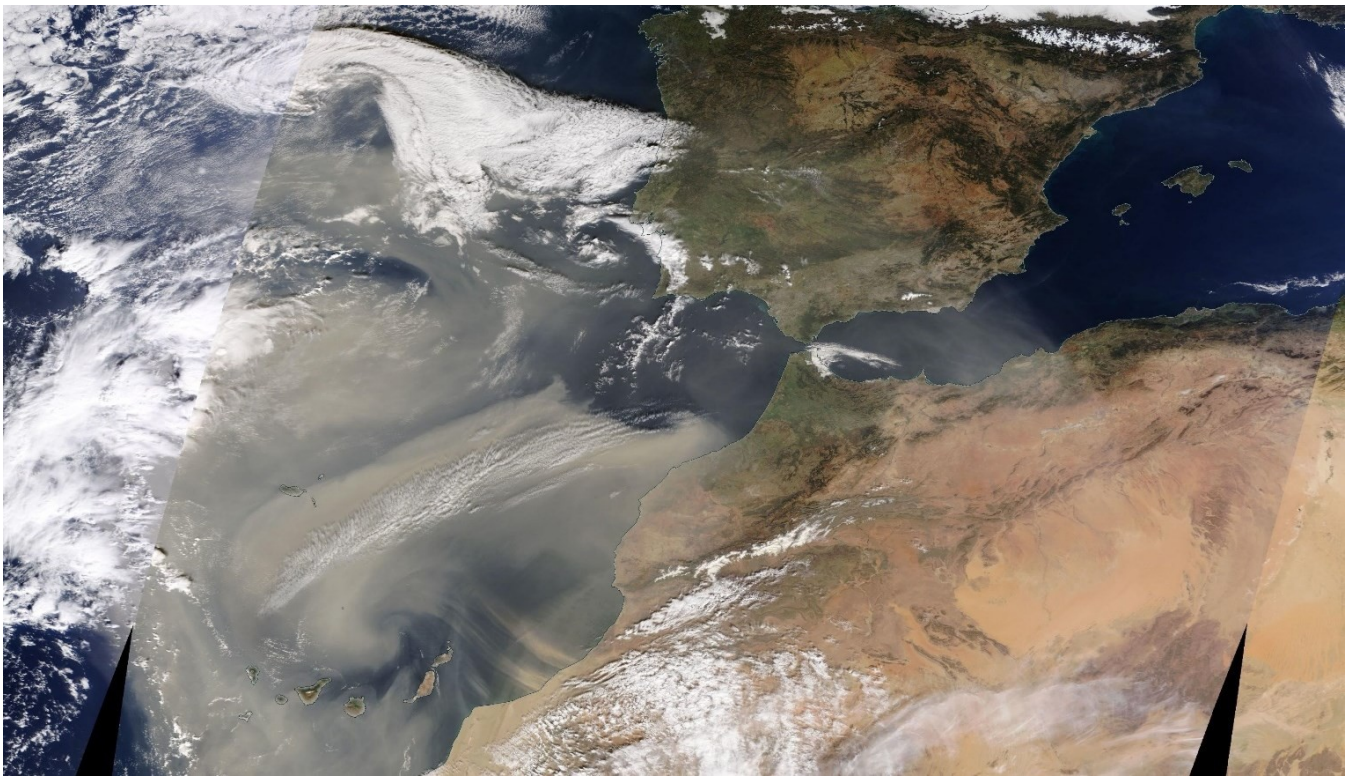


Escombreras Multipurpose Terminal



As can be seen in the graph, there is a direct relationship between the number of days of intrusion and the average annual emission levels. The greater the number of days of intrusion, the higher the average annual concentration of PM10 particles.

There is no direct relationship between intrusion levels and bulk traffic, although in the last two years the trend has been for PM10 levels to increase very slightly. Solid bulk traffic has increased 2.5-fold over the last 10 years, while PM10 levels have remained almost constant. This demonstrates that the measures implemented to control emissions associated with bulk traffic are adequate.



Satellite photo of an episode of Saharan intrusion on 01/30/2022 over the Canary Islands and the Atlantic. Source: Eath observatoty – NASA.

http:\\earthobservatory.nasa.gov
https://lance.modaps.eosdis.nasa.gov/subsets/?subset=Europe_3_01
https://worldview.earthdata.nasa.gov/?v=-33.36978318118845,22.658203125000014,24.836660080188448,48.884765625000014&l=Reference_Labels_15m(hidden),Reference_Features_15m(hidden),Coastlines_15m,VIIRS_SNPP_CorrectedReflectance_TrueColor(hidden),MODIS_Aqua_CorrectedReflectance_TrueColor(hidden),MODIS_Terra_CorrectedReflectance_TrueColor&lg=false&t=2021-05-02-T12%3A13%3A06Z

Severe Saharan intrusion episode on the port of Cartagena

Study of the impact of atmospheric emissions from cruise ship traffic in the Cartagena basin – Polytechnic University of Cartagena

In 2019, an ambitious pilot study was conducted to measure the potential impact of cruise ship traffic on air pollution levels in the city.

This study was carried out by the Environmental Chemical Research Group of the Department of Environmental Chemical Engineering at the Polytechnic University of Cartagena, led by José María Moreno Grau.

The objectives of this study were:

Specific objectives

Specific objectives that allow for the achievement of the primary objective.

1. To compare the concentrations of particulate matter pollution in the Cartagena dock when there is cruise ship traffic and when there is not.
2. To compare the concentrations of the main gaseous pollutants present in the Cartagena dock when there is cruise ship traffic and when there is not.

Secondary Objectives

Objectives that can be addressed preliminarily with the knowledge generated in this project.

1. To analyse the contribution of other polluting sources to the levels of air quality in Cartagena dock.
2. To get to know the need and, where appropriate, to define the location of a possible fixed measurement station in Cartagena dock that complements the existing one in Escombreras dock.

To carry it out, the data from the Mompeán Station of the air quality monitoring network of the Autonomous Community of the Region of Murcia was analyzed and the data from the Mobile Unit of the air quality monitoring network of the Autonomous Community of the Region of Murcia, which was located in the Cartagena dock in some periods of 2019, was analyzed, together with the data of the entries and exits of cruise ships in the Cartagena dock, their docking times and the rest of the port traffic together with the meteorological information provided by the three towers located in the port.

The conclusions of the study expressly indicated: "Regarding the emissions produced by cruise ships, it should be noted that the pollutants are consistent with emissions produced by other combustion sources, both city traffic and industrial emissions. Not forgetting other types of ships that enter the port of Cartagena, i.e.: merchant ones, in Cartagena dock, or in Escombreras and the ships of the Spanish Navy, Maritime Rescue, fishing boats, tugboats, leisure boats, etc. The analysis carried out on the air quality data in Cartagena shows that the presence of cruise ships produces increases in the hourly average values of PM10 particles that do not reach statistical significance in most cases. For SO2, depending on the year and time, there are increases or decreases in the average hourly values, reaching statistical significance at 99% for 12 noon in 2018. Saxe and Larsen (2004) point out that emissions from ships do not contribute to the levels of this pollutant in populated areas.
For nitrogen oxides a different behaviour is observed in 2018 and in 2019, while in 2018 there are decreases in the hourly average values for the first hours of the morning and increases in the afternoon hours, these differences do not reach statistical significance . However, in 2019 these decreases are not observed, but increases in the hourly average values in the presence of a cruise ship, with statistical significance at 99
% between 1:00 and 5:00 p.m. for NO and NO2. Ozone shows the reverse behaviour, the differences in 2018 not reaching statistical significance and in 2019 only at 3:00 p.m., the lowest average value with cruise reaches statistical significance at 99%.

8 Other aspects

8.1 Soil contamination

On January 30, 2007, the preliminary soil report established by Royal Decree 9/2005 of January 14, which establishes the list of potentially soil-polluting activities and the standard criteria for declaring contaminated soil, was submitted to the Ministry of Industry and Environment of the Region of Murcia. On 14/03/2019 a new report on contaminated soils was submitted to the Environmental Body of the Autonomous Community of the Region of Murcia as a continuation and update of the previous one. In this new report, carried out by SGS Tecnos, no incident or new area that could be considered contaminated was detected.

The port area with the highest rate of contaminated soil has historically been the "El Fangal" zone in the Escombreras Dock, contaminated with hydrocarbons due to leaks from pipes at nearby facilities. This area was decontaminated prior to its use as port industrial land, being declared as decontaminated land by the Ministry of the Environment on June 2, 1999.

During 2007, the study and characterization of the soils of state public ownership were carried out, among which the service area of the Port of Cartagena, by the company Emgrisa is included.
The objective of this study was to confirm or rule out the presence of contaminants above the generic reference levels established under the R.D. 9/2005

The work consisted of sample collection and subsequent analysis, including samples of soil, groundwater, and gases present in the ground. Soundings are being carried out at 10 points in the service area, 2 in the Cartagena dock and 8 in the Escombreras dock, with depths of up to 9 meters.

The conclusions of the study expressly indicate:

The generalized concentrations of potentially polluting substances (TPH* heavy metals,) that have been observed in almost the entire port and associated, either with the landfills, or by the dispersion and homogenization caused by the tidal influence of the affectation of different foci, are not considered to pose an unacceptable risk to human health.

TPH* : Total petroleum hydrocarbons

Automatic wheel washers installed at the bulk terminal to minimize dust emissions from transport

BIOREMEDIATION PLANT OF CONTAMINATED SOILS IN ESCOMBRERAS

As a result of the railway access works for the port expansion in Escombreras, the presence of soil contaminated with hydrocarbons was detected, originating from excavations for the foundation of a new bridge. In order to properly manage this contaminated material, the environmental body of the Autonomous Community of the Region of Murcia was asked for an Integrated Environmental Authorization to carry out a bioremediation treatment of soils exsitu, minimizing the transfers and movements of this contaminated material.
On 31/07/2017, the Environmental Management and Discipline Service of the Autonomous Community of the Region of Murcia issued a Sectoral Environmental Authorization for a soil bioremediation plant, processed by the Cartagena Port Authority as developer of the works, and executed by the contracted company "U.T.E. Ferrocarril Dársena Escombreras".
On a 4,337 m² surface previously concreted with a 40 cm thick base and equipped with a drainage collection system, three biopiles of material are located. Through controlled biological degradation processes, the TPHs are degraded by reducing their constituent chemical compounds to simpler ones with lower molecular weight.

This plant has the capacity to treat 3,500 tons / year and is classified as a potentially soil-polluting activity. During 2018, the biological processes of degradation of the contaminated material stocks continued.
Today, the decontaminated land serves as a logistics area for grain storage.

Soil bioremediation plant in Escombreras

Work is currently underway on a project to remediate the soil and demolish the former Peñarroya Foundry facilities, located across from the S. Lucía Container Terminal. The land has been acquired by the Cartagena Port Authority for development as logistics land.
Work began in 2020 with the demolition and removal of existing buildings, and the removal of asbestos and contaminated sludge from the facilities. The decontamination phase of the land is still pending.

Old image Foundry of Peñarroya Photo: La Verdad

8.2 Dredgings

Latest dredging operations undertaken:
During 2015 and 2016, work was carried out on the Cruise Terminal expansion to increase the berthing line by more than 100 m, allowing for the simultaneous berthing of two cruise ships larger than 300 m. This work required dredging, with the corresponding prior characterization of the dredged material, which revealed the presence of some heavy metals in the sediment (this situation was already known from water and sediment quality controls,

and was caused by mining activity in the city and surrounding areas for more than 4,000 years, according to studies by the Polytechnic University of Cartagena).

Therefore, approximately 6,572 m3 of dredged material was extracted and deposited in a secure area of the Escombreras expansion for a more thorough analysis and to verify its ecotoxicity and hazard levels. This ecotoxicity study was carried out by the company Labaqua, S.A., identifying all the metals present and their concentrations in relation to the toxicity thresholds for the environment and human health.

The results of this study conclude that the dredged material, in accordance with the established criteria intended to protect human health and the environment in the legislation in force at that time (Annex III of Law 22/2011 on waste and contaminated soil (now repealed by Law 7/2022), EC Regulation 1272/2008 (CLP), Order MAM/304/2002, or the Order of 13/10/1989 on the characterization of hazardous waste), does not present any hazardous characteristics for the environment or human health. Therefore, it is classified as non-hazardous waste, with LER code 17 05 06 "drainage sludge other than those specified in code 17 05 05*", within the chapter Earth, stone, and drainage sludge (including those excavated from contaminated areas).
In this way, the waste could be managed as uncontaminated material without being dumped back into the sea.

In 2020, as part of the expansion and improvement works for LNG loading and livestock loading at the Escombreras basin, which will create a new 245 m long quay line, approximately 10,000 m3 of material were dredged.
“Guidelines for the characterization of dredged material and its relocation in waters of the maritime-terrestrial public domain” 2015, approved by the Interministerial Commission for Marine Strategies, have been taken into account, carrying out a chemical and biological characterization of the previous samples of material to be dredged. The result of this characterization concludes that the sediment to be dredged is considered hazardous waste due to the presence of some metals, which is already known and caused by the historical mining activity in the mountains adjacent to the port.
The total volume of dredged material amounts to 9,864 m_3, which has been removed and deposited on land so that once it has been dried, it is re-characterized and managed according to its nature.

Anti-turbidity barrier during the LNG loading dock expansion works in Escombreras

No dredging has been carried out in 2021, 2022 and 2023.

8.3 Legionella control and drinking water

There are no cooling towers or evaporative condensers at the Cartagena Port Authority that could be a source of aerosol emissions contaminated with Legionella pneumophila.
If you have your own water supply, fire protection system, and garden irrigation system, it is mandatory to comply with the provisions of Royal Decree 487/2022, of June 21, which establishes hygiene and health criteria for the

prevention and control of legionellosis. In this regard, periodic checks and annual analyses are carried out at 14 points in the Service Area (7 cold and 7 hot), and a disinfection certificate is available for the facilities.

On July 11, 2023, CAES, S.L. (registration number 1091-MUR-L-10 in the Official Registry of Pesticide Establishments and Services of Murcia) cleaned and disinfected the toilets, showers, and sinks at the Social Club and the changing rooms at Tthe Workshops. On June 28, 2022, water samples were taken at 14 terminal points in the network for subsequent analysis. No legionella was found in any of the samples.

Continuing with the commitment to guarantee compliance with all legal obligations that are applicable when having its own water distribution network, on 07/10/2023, samples were taken and subsequently analyzed of the drinking water supplied to the Border Inspection Posts (P.C.F.) of the General Merchandise Terminal, in the Cruise Terminal, Solid Bulk Terminal, Oil Terminal and Multipurpose Terminal of the Escombreras expansion. These analyses, contracted to **Laboratorios Munuera, S.L.U.** (a company registered with EMAS), were performed in accordance with the provisions of Royal Decree 3/2023 of January 10, which establishes the health criteria for the quality of water for human consumption. The results showed that all the parameters analyzed were within the legally established limits. Each of these comprehensive analyses includes 120 different parameters, including pesticides, microbiological tests, and water quality tests.

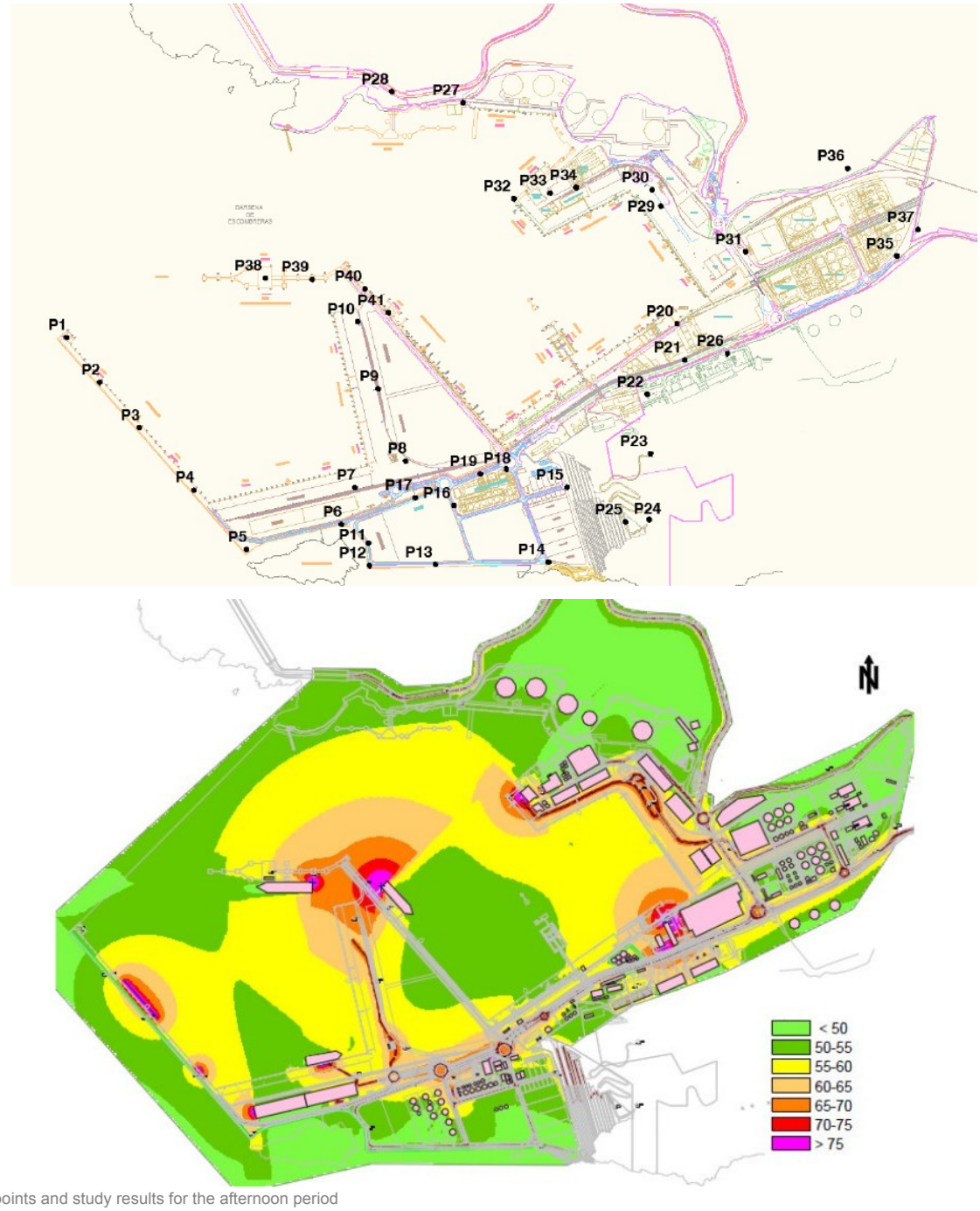
The results of these analyses on the quality control of drinking water supplied to vessels are one of the most common requests that shipping agents make to Customer Service.

Sampling for Legionella control and drinking water quality

8.4 Noise

In 2017, the company SGS Tecnos, S.A. was contracted to carry out the noise map of the Escombreras Dock. This noise map completes the entire port, as the one corresponding to the Cartagena dock was completed in 2012.
The study complies with Royal Decree 1367/2007, of October 19, which fully implements Law 37/2003 on Noise, with regard to acoustic zoning, quality objectives, and acoustic emissions.
The study consisted of a characterization and modelling of noise sources in all areas of the basin, access roads, and adjacent natural areas. To this end data were collected during the day, evening, and night at 41 locations. These data, along with vehicle capacity data at the various terminals, were used to input the sound power of machinery, facilities, and industrial processes into a CADNA-A model, comparing actual values with those calculated by the model.
Analysis of the maps obtained shows that the activity produced by the Escombreras basin does not exceed the maximum permitted levels in the surrounding area during the day, evening, and night. Finding values well below 75 dB for the day and evening period, and 65 dB for the night period (industrial area to which the surrounding belongs). This action completes the noise map of the entire port.

In 2019, underwater noise was included as a new environmental impact, and work began on a strategy to manage underwater noise from construction and maritime traffic.



Sampling points and study results for the afternoon period

CETACUSTIC PROYECT

Within the strategy that the Port Authority has initiated to incorporate underwater noise as one of the significant environmental impacts on which it is intended to advance in its knowledge and mitigation of impacts, an informative conference on the "**Cetacustic Project**" was developed on 11/07/2019. This project, carried out in collaboration with CROEM, aims to study the interaction between cruise tourism and the cetaceans present in the surroundings of the Port of Cartagena and offer proposals for actions to minimize the possible effects of this traffic on cetaceans.

The event was attended by national and international experts, such as Mr. José Antonio Esteban Simón, Researcher at the Research Institute for Integrated Coastal Zone Management (IGIC), the Polytechnic School of Gandía, the Polytechnic University of Valencia, and professors from the Polytechnic University of Cartagena, Mr. Javier Gilabert Cervera and Mr. José Luis Sancho Gómez, experts in noise measurement technology and data processing and telecommunications engineering.
https://croem.es/proyecto-cetacustic/

This pioneering project, which falls squarely within SDG 14 "Life Below Water," contributes to improving governance by promoting cooperation between the administration and economic stakeholders operating in the same territory—in this case, the marine environment, including protected areas such as ZEC ES6200048. In addition, it will improve the involvement of economic sectors in protecting the environment thanks to the visibility that CROEM will give to the project and its results among its affiliates, practically all the companies in the Region and also through its national association.
The project consisted of carrying out a study, prepared by Javier Gilabert and José Luis Sancho professors at the Polytechnic University of Cartagena, to determine the interaction between cruise tourism and cetaceans in the protected environment of the ZEC ES6200048 of the Port of Cartagena-Valles Submarines of the Escarpe de Mazarrón within the Natura 2000 Network. With the results obtained, guidelines for the management of cruise tourism have been proposed to minimize the acoustic effect on cetaceans.

To carry out the study, the noise from four passenger ships representative of the different cruise ships that made a stopover in the Port of Cartagena during the months of May to September 2018 was recorded. The ships were grouped according to the number of passengers in two categories. The first with capacity for more than 3,000 passengers, Britannia and Celebrity Reflection and the second, for less than 500 passengers, Wind Surf and Seadream I.
The project has been developed by measuring through a hydrophone located at a sampling point closest to the ships' route, specifically to the southwest of Cala Cortina beach. More than 2,000 recording minutes were obtained. The work has been divided into several phases, the initial phase has been financed and developed by Cartagena Port Authority, and the subsequent ones, within the grant from the Biodiversity Foundation.

Subsequently, the data was processed, which allowed:

- The characterization and evaluation of the underwater noise produced by the four selected cruise ships during the approach and departure maneuvers from the Port of Cartagena.
- The evaluation of the possible impacts that cruise tourism may have on cetaceans based on the data provided by the scientific community.

The following results emerge from this characterization and evaluation:

- The sound source due to the cruises considered does not exceed, in any case, the limits found in the literature regarding TTS impacts (temporary hearing loss), PTS (permanent hearing loss) and behavioral changes (flight) of cetaceans.
- Only a certain impact of auditory masking is certified, because the sound frequencies of the cruise ship overlap with some of the frequencies used by cetaceans to perform communication, location and navigation tasks, mainly in low and medium frequencies (LF and MF cetaceans), which can make some of these activities difficult. This type of impact is considered by scientists as the least harmful to cetaceans.

LIFE PORT SOUNDS PROJECT

The Port Authority of Cartagena is coordinating a European LIFE project to reduce the impact of underwater noise on the Port of Cartagena, which aims to become a benchmark in underwater noise measurement in the Mediterranean and Europe.

With a budget of €2,135,577, funded by the European Union's LIFE PortSounds Program (Funded by the European Union), through the Ministry for Ecological Transition, the Port Authority and its partners, the Naval Technology Centre, the Polytechnic University of Cartagena, and the Polytechnic University of Valencia, have established a roadmap with objectives and actions to be developed that will allow progress to be made on the challenges set and provide solutions to balance maritime traffic and the marine ecosystem, combining innovation and sustainability.

Seventy percent of the world's maritime traffic passes through the Port of Cartagena. Local professional fishing boats also sail through the port, and Cartagena receives part of the maritime traffic connecting the Peninsula with the Balearic Islands. These factors have increased exponentially in recent years, becoming the main source of continuous noise in the local marine environment.

To this end, underwater noise levels will be characterized, monitored, and evaluated in the Port of Cartagena area to reduce underwater noise pollution generated by maritime traffic. This project will allow mapping of underwater noise levels and the presence of cetaceans. The development of an underwater noise management tool and the implementation of mitigation measures are innovative factors that will help the Port of Cartagena move toward its strategy of becoming the most sustainable port in Europe.

The Port of Cartagena will transfer this knowledge and replicate it in other ports, leading the Noise Strategy in Europe.

It should be noted that the Port of Cartagena has been working on underwater noise studies for years with universities through the Mare Nostrum Chair of the Environment, and in collaboration with the Naval and Maritime Technology Center, but these studies have been conducted in more localized areas.

https://webgate.ec.europa.eu/life/publicWebsite/project/LIFE20-ENV-ES-000387/reducing-the-impact-of-underwater-noise-on-the-marine-environment-of-the-port-of-cartagena

9 Natural environment

- ✓ Biodiversity monitoring and conservation on Escombreras Island and the Mazarrón Lighthouse area
- ✓ Study of the ecology and conservation of seabirds in the area surrounding the port of Cartagena, University of Murcia
- ✓ Monitoring of wintering gull populations in the dock and on Escombreras Island, census of shearwater nests on Las Palomas Island
- ✓ Genetic study of the ocellated lizard population (Timon lepidus nevadensis) on Escombreras Island
- ✓ Monitoring the yellow-legged gull population in the area surrounding the Mazarrón Lighthouse
- ✓ Escombreras chamomile, updated geopositioned inventory
- ✓ Reforestation in the Sierra de la Fausilla - Aguilones Trail
- ✓ Study of on the seabed off Calacortina and Escombreras Island
- ✓ Control of opportunistic species on Escombreras Island
- ✓ Pilot project for reforestation with Posidonia Oceanica

Biodiversity monitoring and conservation on Escombreras Island and the Mazarrón Lighthouse area

The yellow-legged gull (Larus michaellis) has traditionally been a bird present in port environments, but in recent years it has experienced a population growth that is generating a serious problem, both for port facilities and people, as well as for other birds present in the port. This population growth has also become a problem in urban areas, where yellow-legged gulls are increasingly common in parks, buildings, schools, and rooftops.

Among the problems caused by the increase in yellow-legged gull populations are competition with other birds for food and nesting areas, predation on eggs and chicks, kleptoparasitism (food theft), vegetation deterioration, deterioration of facilities, health problems, colonization of buildings, attacks on workers, etc. For all these reasons and because of its abundance, in the Community of Murcia it is considered a non-threatened species (Law 7/1995) and huntable (Law 7/2003).

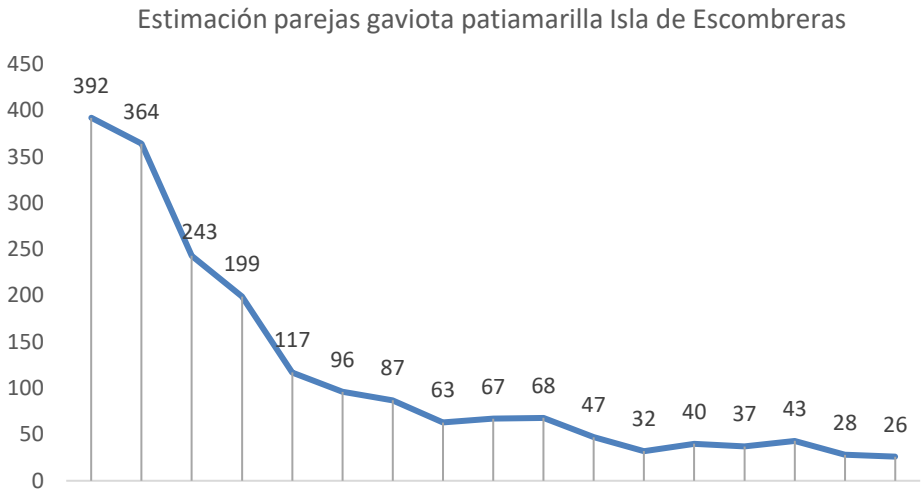
One of the birds that is being affected by the demographic expansion of the yellow-legged gull is the Audouin's gull (Ichthyaetus audouinii), present in the port, which in the Region of Murcia, only nested on Grosa Island and from where it had been displaced by the pressure of the excessive population of yellow-legged gulls on that island. Strong pressure has also been detected on juvenile lizards on the island.

To control the population density of the yellow-legged gull and reduce its population on Escombreras Island to ecologically sustainable levels, the Port Authority of Cartagena monitored and controlled the population during the months of March, April, May, and June in 2023, coinciding with the breeding season. **In the period 2007-2023, a total of 2,422 nests were acted upon, with the result of 1,153 dead birds.**

2007	392
2008	364
2009	243
2010	199
2011	117
2012	96
2013	87
2014	63
2015	67
2016	68
2017	47
2018	32
2019	40
2020	37
2021	43
2022	28
2023	26

The work carried out has consisted of the elimination of chickens and eggs, destruction of nests, placement of poisoned baits in the nests, removal of carcasses and their subsequent elimination. The placement of baits and destruction of nests has been carried out in three successive phases, since the gulls carry out new spawning successively before the destruction of the nest. A total of 48 nests have been acted upon (counting the three phases), with the total result of 22 deceased adult specimens.

All nests are georeferenced to have exact information on the areas preferred by the seagulls and the repetition of the nests in the same place.



Escombreras Island

Controls conclusions:

The breeding population has not only not grown since controls began in 2007, but has actually decreased by almost 93% since the start of control work.

The initial objective was to reduce the breeding population on Escombreras Island to 100-140 pairs, having far exceeded this and bearing in mind that the total elimination of the species from the island was never contemplated.

All work has required the required authorization from the Environmental Authority of the Autonomous Community of the Region of Murcia and has been carried out in compliance with the protocol for workers and persons exposed to birds or animals that may be infected with the avian influenza virus (Protocol of the Ministry of Health and Consumer Affairs).

The decline in the yellow-legged gull population on the island creates a constant drain on the more than 10,000 pairs counted along the coast of the Region of Murcia.

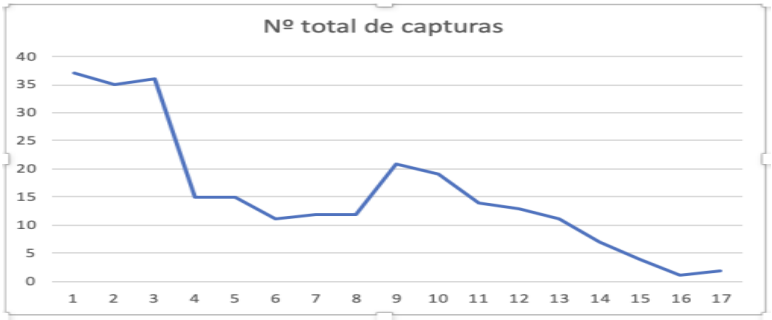
Yellow-legged Gull

Control of the common rat population on Escombreras Island

Historically, Escombreras Island has had a population of common rats, which have easily adapted to the environment, presenting a population volume that threatens the fragile balance of the island ecosystem, posing a risk to the population of Escombreras chamomile, lizards, and any prospecting attempt by European storm petrels from the nearby Palomas Island.
For all of the above reasons, in 2023, authorization was requested from the Directorate General of the Natural Environment of the Autonomous Community of the Region of Murcia to conduct a monitoring of this rat population.

Previous sampling resulted in a high density of common or brown rats. It was estimated that there could be between 200 and 400 rats on the island, a very high abundance for its small area (the resulting density is 50-100 individuals per hectare). A network of live-capture traps was designed to cover the entire island. The traps were baited with seeds and covered with vegetation and stones to prevent the entry of non-target species.

The monitoring resulted in the capture of 265 specimens, although the population has not been completely eliminated, which requires continued attention to this problem.



Evolution of captures during the 17 weeks of work

Monitoring biodiversity on Escombreras Island and its surroundings

For several years, a small population of Audouin's gulls (Ichthyaetus audouinii) of between 25 and 50 individuals has been present in the port of Cartagena. Despite suffering strong pressure from yellow-legged gulls, they have remained stable in the port. In 2018, no breeding pairs of Audouin's gulls were observed, although in 2016, six nests of this bird were identified on Escombreras Island, where no eggs were laid.
In 2020 and 2021, another nesting attempt by this gull was observed on the island.
Their increasing presence encourages us to think that if control of the population of yellow-legged gulls is maintained, the reproduction of Audouin's Gulls in the surroundings of the port of Cartagena may occur again as it did in 2010 and 2011.

At the end of March 2021, a mating pair of Audouin's gulls was located on Escombreras Island. During the first week of April, they built a nest in exactly the same location where another pair of Audouin's gulls had settled a few years earlier. On this occasion, the gulls did not lay

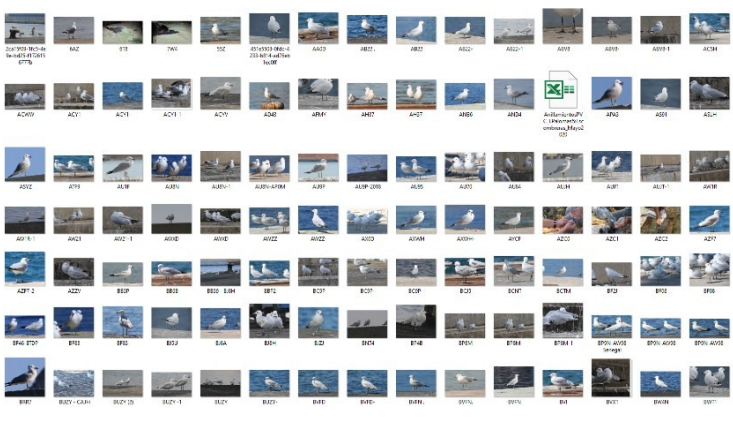
a single egg (we do not know the reason for this failure, but considering that it was a single pair, it could be due to their inexperience).

Audouin's gull is a species endemic to the Mediterranean that was on the verge of extinction in the 1980s, prompting numerous conservation programs that have helped maintain stable populations in certain locations, primarily in Spain, the Ebro Delta, Alboran Island, and the Torrevieja Salt Flats. Currently, this rare gull is considered "vulnerable" and therefore must be protected.

One of the unique features of the Audouin's gull is that it is a pelagic (open-ocean) fishing bird that does not feed on garbage or landfills like the yellow-legged gull does, and it never nests on rooftops or in urban environments. Therefore, it can be considered a good natural indicator of the state of the marine ecosystem, since the presence of this bird is linked to unpolluted and healthy waters. The Port Authority of Cartagena collaborates with the Doñana Biological Station in monitoring ringed birds sighted in the port. All sightings of ringed birds are reported to the Doñana Biological Station for inclusion in the bird monitoring database.

Audouin's gulls (*Ichthyaetus audouinii*), on Escombreras.

All the seagulls sighted with identification are entered into their own database and registered in the ringing office of Doñana Biological Station, which allows to keep records of all the sightings of each bird, its ringing and its migratory movements.



In order to study the evolution of seabirds in the port environment and to gain a deeper understanding of their feeding and breeding habits, an initial study of the birdlife present in the area was commissioned in 2015. This study is repeated periodically, obtaining invaluable information on biodiversity, population parameters of the species that comprise it (abundance, number of breeding individuals, birth rate, pre-adult survival, mortality, etc.), the selection of breeding, feeding, and resting areas, and other aspects such as migratory processes, interspecific relationships, competition, and threats.

Audouin's gulls (Ichthyaetus audouinii), on Escombreras.

Audouin's gulls (Ichthyaetus audouinii), Photo by Jacinto Martínez.

Audouin's Gull (FAPZ) ringed in 2016, Corsica - France

In 2021, the presence of an Audouin's Gull (FAPZ) ringed in the French colony on the island of Corsica (Aspretto) was verified in the Port of Cartagena on June 20, 2016, demonstrating the ability of well-preserved ecosystems to accommodate individuals from other colonies on their movements.

Audouin's Gull AB22 (ESIAB22AUD) ringed on Grosa Island (Murcia) on June 16, 2001, last seen in La Unión (Murcia) in 2021, making it one of the longest-lived Audouin's Gulls on record.

Juvenile Audouin's gulls. CD3V

Study of the ecology and conservation of seabirds in the area surrounding the port of Cartagena, University of Murcia.

Continuing this line of work, from 2017 to 2019, the Mediterranean Ecosystems Research Group of the University of Murcia was contracted for technical assistance to delve deeper into the ecology and conservation of seabirds in the area surrounding the port of Cartagena, Las Palomas Island, and the areas surrounding the port.

This group of researchers is also participating in studies being conducted to determine the feasibility and effectiveness of the Natura 2000 Network's compensatory measures for birds under Directive 2009/147 EC and other species of fauna of interest, within the Infrastructure Master Plan for the New Cartagena Basin in Gorguel.
The University of Murcia team was led by Francisco Robledano Aymerich (PhD from the Department of Ecology and Hydrology, Department of Ecology and Coordinator of the Master's Degree in Protected Areas, Natural Resources, and Biodiversity), along with Jacinto Martínez Ródenas, who was in charge of the fieldwork (a biologist with a Master's degree in Mediterranean Environment Management and bird ringer with over 10 years of experience in fieldwork with fauna and flora).

In 2020, a study has been contracted on "Development of a system of indicators of the natural environment integrated into the strategy of the port of Cartagena: terrestrial and coastal fauna" - Main researcher: José Francisco Calvo Sendin – University of Murcia.

http://www.um.es/ecologia/
http://www.um.es/web/biologia/contenido/estudios/masteres/biodiversidad

http://www.um.es/ecologia/

The most important and novel aspects of this study have been the following ones:

- ✓ Tagging of European Shag (Phalacrocorax aristotelis) chicks at the colony on Escombreras Island and Las Palomas Island
- ✓ Tagging of Yellow-legged Gulls (Larus michahellis) with CPS/GSM transmitters at the same colony
- ✓ Evaluation of the prospecting of new nesting sites for the European Storm Petrel (Hydrobates pelagicus melitensis)
- ✓ Study of the population of Mediterranean Scopoli's shearwater (Calonectris diomedea diomedea) around the port

The results have been the following ones:

- ✓ Ring marking of 22 European shag chicks, over three years, from nests on the south side of Escombreras Island (the second breeding colony in the Region of Murcia after Grosa Island) and nests on Las Palomas Island. (A total of 28 chicks have been tagged until 2021)
- ✓ Tagging of 10 adult yellow-legged gulls with rings and GPS/GSM devices
- ✓ Evaluation of the ocellated lizard population *(Timon lepidus)* present on the Island This study on the presence of lizards on the island, the only island population in the Region of Murcia) will be complemented with a genetic and molecular analysis in 2018 to be able to know the differences with the lizard population present in the surrounding (Sierra de la Fausilla).
- ✓ Assessment of the impact of the brown rat (Rattus norvegicus) population on birds on the island, confirming that it primarily affects the nest development of species other than the yellow-legged gull.
- ✓ List of non-marine birds with the greatest presence on Escombreras Island:
    - House Sparrow (Passer domesticus)
    - Sardinian warbler (*Sylvia melanocephala*)
    - Starlings (Sturnus sp.)
    - Eurasian Collared Dove (Streptopelia decaocto)
    - Willow warbler (*Phylloscopus troquillus*)
    - Carrasquean warbler (Sylvia cantillans)
    - Eurasian hoopoe (*Upupa epops*)
    - Blue rock thrush (*Monticola solitarius*)
    - White Wagtail (*Motacilla alba*)
    - Common Kestrel (*Falco tinnunculus*)

- Common Kingfisher (Alcedo atthis)
- Grey Wagtail (*Motacilla cinerea*)
- Wagtail wagtail (Motacilla flava)
- African stonechat (*Saxicola torquata*)
- Meadow Pipit (*Anthus pratensis)*
- Eurasian crag martin (*Ptyonoprogne rupestris*)
- Common chiffchaff (*Phylloscopus collybita*)
- European robin (*Erithacus rubecula*)
- Peregrine Falcon (*Falco peregrinus*)
- Eurasian sparrowhawk (*Accipiter nisus*)
- European serin (*Serinus serinus*)
- Common chaffinch (*Fringilla coelebs*)
- European goldfinch (*Carduelis carduelis*)
- Black redstart (*Phoenicurus ochruros*)
- Common linnet (*Linaria cannabia*)
- Song thrush (*Turdus philomelos*)
- Dartford warbler (*Sylvia undata*)
- European greenfinch (*Carduelis chloris*)

Given its accessibility and the facilities for scientific work on it, the island is configured as a strategic point for the research on island ecology. The continuity of the censuses, marking and monitoring of sea and land birds, the implementation of network programs with other islands and coastal enclaves, and the monitoring of other relevant local processes, are only part of the possibilities that Escombreras Island has.

As part of these efforts, passerine ringing campaigns were carried out on Escombreras Island in the fall of 2019 and spring of 2020, resulting in the capture and ringing of more than 150 birds of 15 different species.
These campaigns involve the participation of biology students and students from the Master's Degree in Protected Areas, Natural Resources, and Biodiversity at the University of Murcia, providing an environmental education and academic training component that enhances the value of this work.
In the Autumn 2020 campaign, a total of 51 birds of 9 species were captured in a 24-hour constant banding session, the species are divided from highest to lowest into:

1. House Sparrow (Passer domesticus) 23
2. Sardinian warbler (Sylvia melanocephala) 13
3. European serin (Serinus serinus): 5
4. Common chiffchaff (Phylloscopus collybita): 3
5. European robin (Erithacus rubecula) 2 2
6. Song thrush (Turdus philomelos): 2
7. Eurasian blackcap (Sylvia atricapilla): 1
8. Black redstart (Phoenicurus ochruros) 1 1
9. European goldfinch (Carduelis carduelis): 1

A ringed warbler (P300649) that was captured in the post-nuptial campaign on 29/10/2019 on Escombreras Island was recaptured in perfect condition on 14/10/2020 almost a year later.
Except for the Sardinian warbler and the house sparrow, the remaining captured species are so-called "passing" species that use the island for a few hours, or sometimes even days, to feed before continuing their migration south.

Likewise, since November 2019, Escombreras Island has been included in the Trektellen World Bird and Cetacean Observation Network (WAR). This network is made up of strategic points where the passage of birds and cetaceans is controlled one day a month for 3 hours. **More than 11,781 birds and 189 cetaceans were counted between 2019 and 2023.**

https://www.trektellen.nl/site/yeartotals/2594/2023/0

In December 2023, the University of Murcia signed an ambitious contract to maintain research staff in the port area for four years and scientifically establish the status and evolution of biodiversity, especially in relation to the monitoring of vertebrate fauna. This contract will cover the port and its entire area of influence, from the Sierra de la Fausilla to the Cabo Tiñoso-La Muela Regional Park.

This contract will enable the Mediterranean Ecosystems Research Group (GI ECOMED) at the University of Murcia to assess and monitor the species present as a basis for establishing management and conservation indicators and guidelines. This contract will also be important for the academic development of students and faculty, as it will allow them to conduct scientific field studies in a timely manner.

Cory's Shearwaters (Calonectris diomedea) off Escombreras Island

Audouin's gulls (Ichthyaetus audouinii)

Black-headed gulls (Chroicocephalus ridibundus), sandwich terns (Thalasseus sandvicensis) and Audouin's gulls (Ichthyaetus audouinii)

Passerine ringing campaigns on Escombreras Island

Sardinian warbler *(Sylvia melanocephala)*


Willow warbler (Phylloscopus troquillus)


Redstart (Phoenicurus phoenicurus)


Pied Flycatcher (Ficedula hypoleuca)

Ringing campaigns are carried out on Escombreras Island in spring and autumn, which reveal the importance of the island in the migration of many passerine species.


Capture nets

During studies of the Bay of Cartagena's European Shag population, it was discovered that some of its pairs were the most premature on the peninsula. The total number of nests built in the 2019/20 season at the breeding colonies in Cartagena Bay was 18 on Escombreras Island and 13 on Las Palomas Island. On January 14, 2020, the first Zodiac outing was made to survey breeding pairs at both colonies, recording a total of 4 pairs on Escombreras Island and 4 on Palomas Island. In 2021, there were 9 pairs, and in 2022, the presence of 8-9 nests was confirmed between the two islands.

In 2023, monitoring of this important colony continued. Although no chicks were ringed, the presence of several nests on Las Palomas Island and another one on Escombreras Island was verified.

The first recoveries and sightings of tagged European shags have been recorded in Cartagena Bay. The first recovery was a juvenile D22, ringed on the island of Las Palomas on 18/05/2020 and found dead on the beach of Puerto de Mazarrón on 30/10/2020.

On December 24th 2020, the first reading of a ringed shag was had in the bay of Cartagena, in this case it was ringed on Las Palomas Island on 18/05/2020, it was seen and even recorded on Burriana beach. (Castellón). This is D25, the last specimen marked with remote reading PVC rings from last season.

This sighting and reading is the first after four years of effort monitoring the species in Cartagena Bay. Hence the importance of continuing to monitor the European shag and other bird species and the commitment of the relevant authorities to develop wildlife monitoring plans that meet the necessary requirements.

Eurasian shag (Phalacrocorax aristotelis) nest on Escombreras Island with two chicks. Photograph by Jacinto Martínez

Eurasian shag (Phalacrocorax aristotelis) nest on Escombreras Island with three chicks. Photograph by Jacinto Martínez

Monitoring of wintering seagull populations on Escombreras Island and in its dock.

Flocks of different gull species perched on Escombreras Island and in the harbor and breakwater are being monitored, with the aim of detecting the majority of individuals tagged with PVC distance-reading rings.

As a result of these observations, individuals of Audouin's Gull (Ichthyaetus audouinii), Black-headed Gull (Chroicocephalus ridibundus), Yellow-legged Gull (Larus michahellis), a Slender-billed Gull (Chroicocephalus genei), and a Sandwich Tern (Thalasseus sandvicensis) were monitored, all with PVC or distance-reading rings.

All the data obtained has been uploaded to the various national platforms: (http://anillamiento.ebd.csic.es/IrInsertarObservacionAction.do) of the Doñana Biological Station (EBD) and (https://www.cr-birding.org/) European colour-ring Birding are sponsored by The Norwegian Bird Ringing Centre and AVES
, EURING and SOVON.

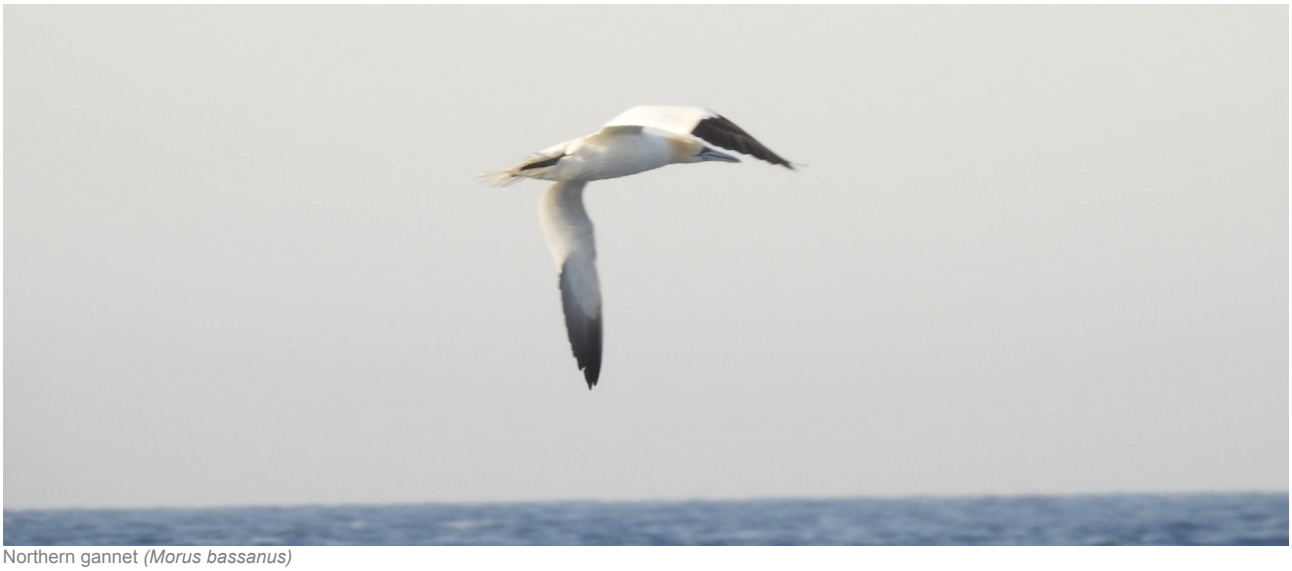
The readings from foreign countries were:

A Sandwich Tern with PVC: VEL of white colour and black letters, ringed in Holland on 09/06/2020 and observed in Escombreras dock on 14/09/2020 in its short history of observations we can see that on 04/09/2020 it was still in the Netherlands, although no longer in the breeding area.

Black-headed Gull (Chroicocephalus ridibundus)

Scopoli's shearwater *(Calonectris diomedea)*. Photograph by Jacinto Martínez

The presence of Scopoli's shearwater and Balearic shearwater is common in the waters of the port.



Northern gannet *(Morus bassanus)*

Sandwich Terns (Thalasseus sandvicensis)

Black-headed Gull (Chroicocephalus ridibundus)

Peregrine falcon (*Falco peregrinus*) Photograph by Sergio Eguía

Escombreras Island Falcon. Photograph by Jacinto Martínez

During the month of August 2015, a Port Police patrol recorded a Euroasian Eagle Owl (*Bubo bubo*) hunting yellow-legged gulls in Escombreras dock, which confirms the presence of this nocturnal raptor in the surroundings of the port and Sierra de la Fausilla .

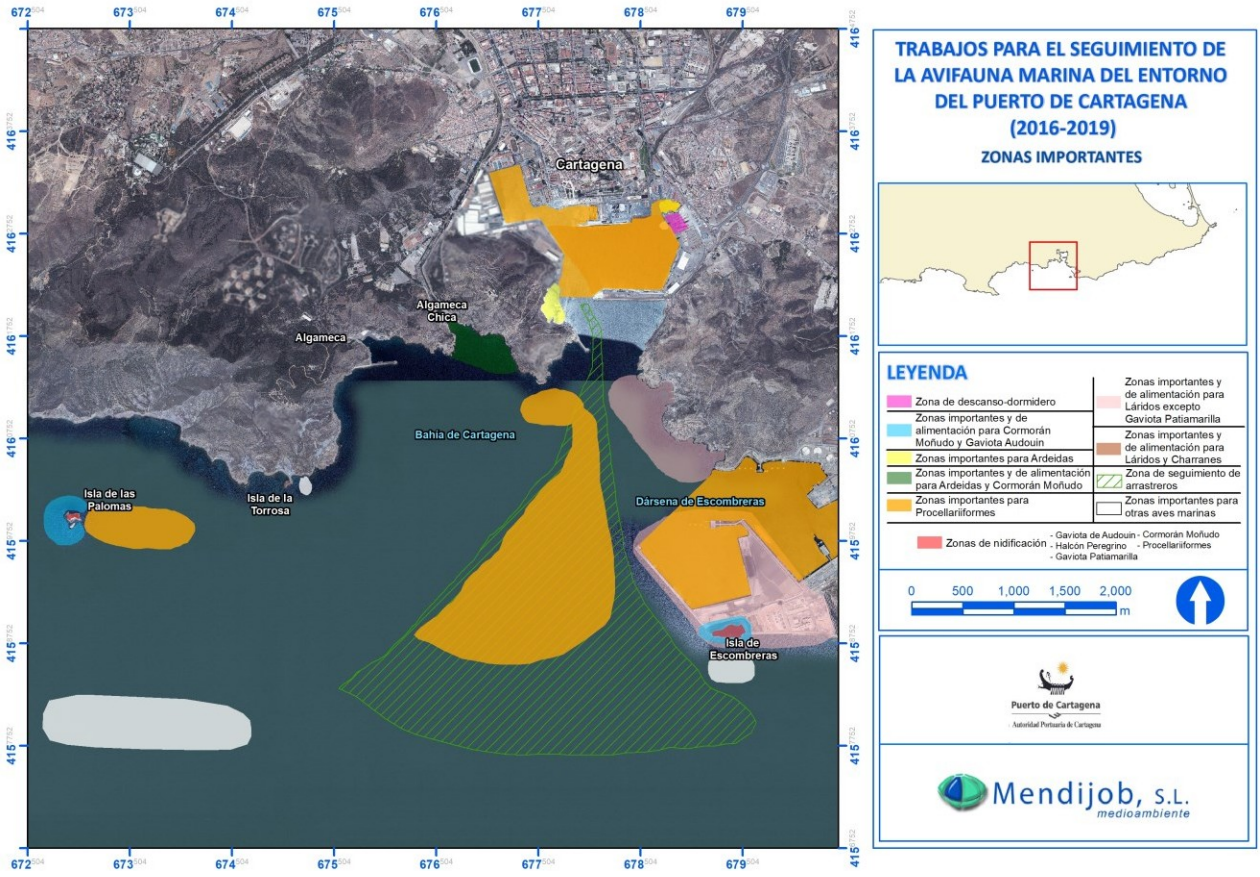
Image recorded on 08/08/15. Video by Miguel Ángel Rodríguez Bastida, Port Police No. 13

Lesser black-backed gull (Larus fuscus) and yellow-legged ones in the background

Common razorbill (Alca torda), increasingly common in the Mediterranean. Cartagena dock 2023

A young Cory's shearwater found disoriented off Escombreras Island has been handed over to the El Valle Regional Wildlife Recovery Center. It was released a month after recovering.

Black-headed gulls (Ichthyaetus melanocephalus) in the port of Escombreras



Observation transect plan

Without a doubt, one of the most positive conclusions of these studies was the capture and ringing of three European Storm Petrels (Hydrobates pelagicus melitensis) captured on Escombreras Island on 16/05/2018, the first time that the presence of this important bird on the island has been recorded. Hence, 58 m. japanese nets were placed during several days at sunset upon early morning.

European storm petrel (Hydrobates pelagicus melitensis) Photograph by Jacinto Martínez

First European storm petrel ringed on Escombreras Island. Its importance lays on the exploration of the island by these birds as a breeding and mating point, a fact that could occur in the future and that encourages continuing studies of avifauna on the island.

European storm petrel (Hydrobates pelagicus melitensis) Photographs by Jacinto Martínez

Autumn bird censuses and nest mapping of Cory's shearwaters (Calonectris dianedea) on Las Palomas Island.

In 2022, a study was commissioned to develop a 2D and 3D map of the Cory's shearwater nest location on Pigeon Island and, secondly, to increase the available knowledge about the birdlife of Escombreras Island, in this case, birds that are present in autumn.
Palomas Island is a rocky, conical islet measuring just 1.2 hectares. It is almost cut off on its south face and very steep on its east and west sides. It is located in the center of the anchorage and is a SCI and SPA, included in the Natura 2000 Network.

https://murcianatural.carm.es/web/guest/islas-e-islotes-del-litoral-mediterraneo2/-/journal_content/56_INSTANCE_3dNc/14/113091

The northern slope supports almost all of its vegetation. Yellow-legged Gull (Larus michahellis), Shag (Phalacrocorax aristotelis), Scopoli's shearwater (Calonectris diomedea), European storm petrel (Hydrobates pelagicus), Peregrine Falcon (Falco peregrinus), Sardinian warbler (Sylvia melanocephala), pale swift (Apus pallidus) and some wild pigeons (Columba livia), are the birds that nest in it.

Fixed observation points and foot transects were conducted for the study over a period of two months. All bird sightings, both from the census at the fixed station and during the foot transect, were recorded (species, number, island area, and time) using the recorder and then included in a pre-designed census matrix in an Excel spreadsheet.

The foot survey of Las Palomas Island was conducted in a single workday and after the breeding season was over, to avoid disturbing nestlings that might remain in their nests.
The island was divided into six zones, and all nests, caves, and crevices with nest remains were identified using GPS positioning.

Using the matrix generated with the coordinates, 2D mapping was created by converting the information from the Excel spreadsheet with QGIS. QGIS2threejs was used to create the 3D mapping. This is a plugin for the open-source geographic information system (GIS) software called QGIS. It allows users to create 3D maps and visualizations using spatial data.

Las Palomas Island, Google Earth Pro image

Results of the autumn census on Escombreras Island:

A total of 19 species were present, with the majority being the great cormorant (P. carbo in the graph), the yellow-legged gull (Patiamarilla), and the rock pigeon (Paloma), which together accounted for almost 62% of the total number of birds surveyed.

Results for transects on the island:

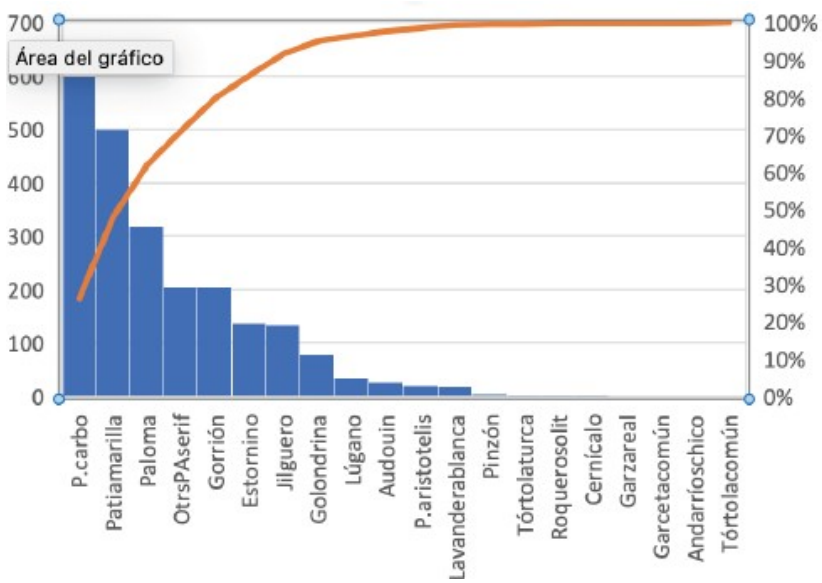
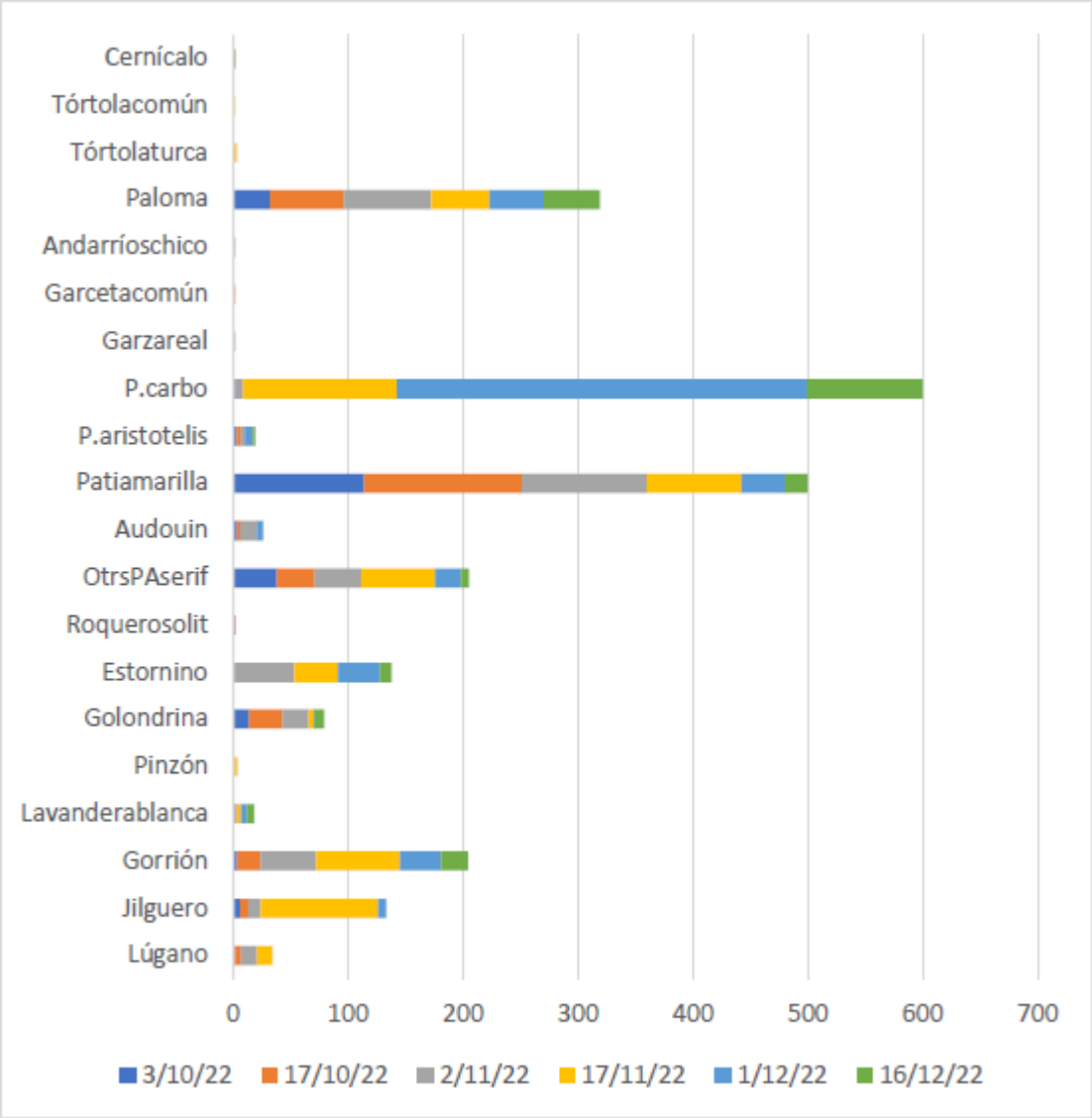
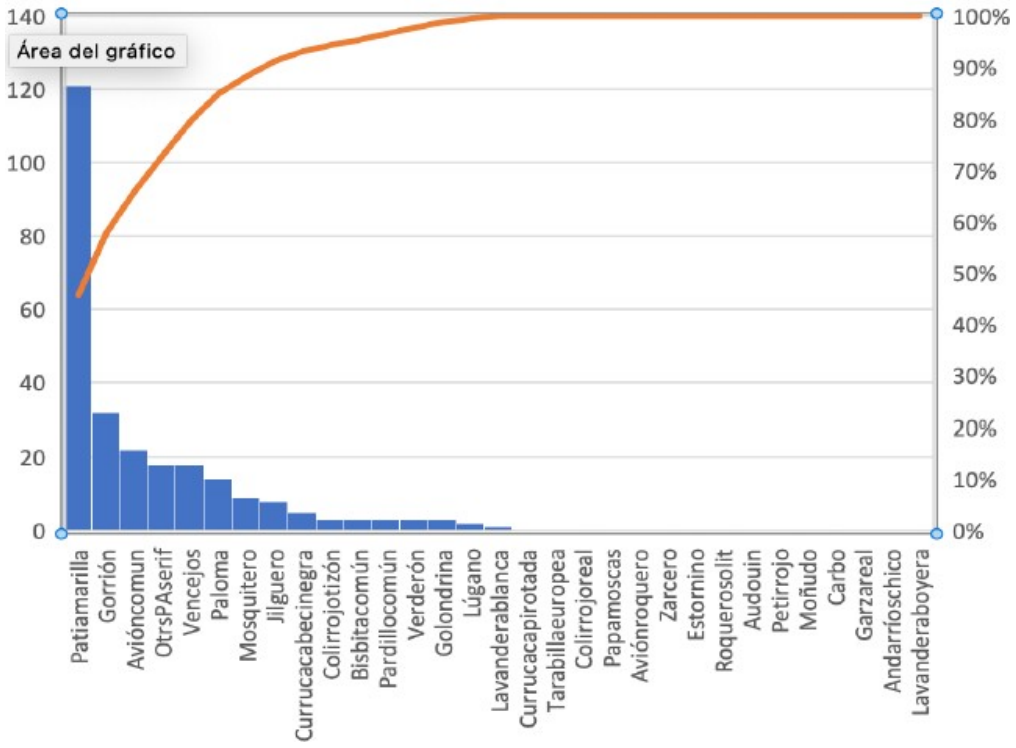


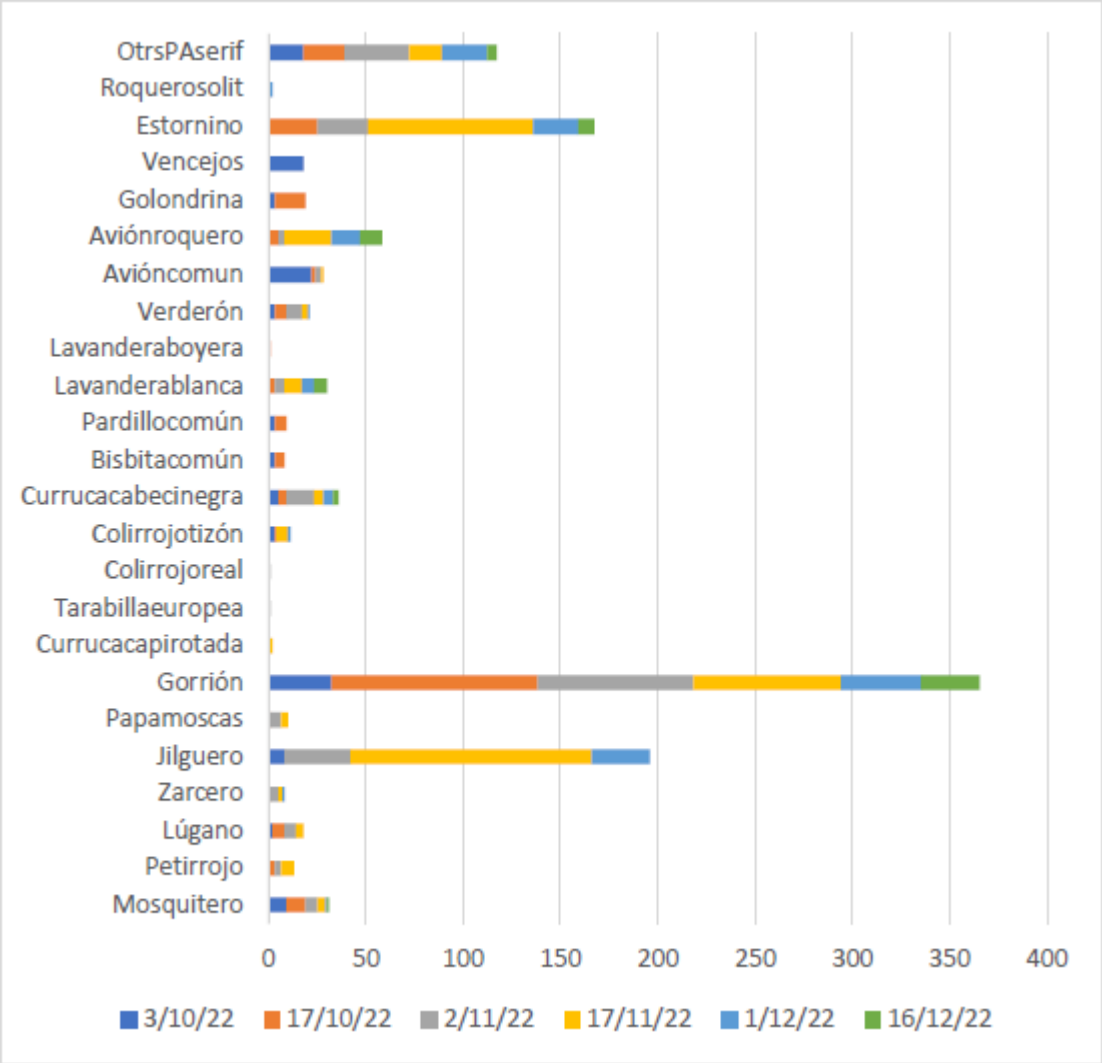
Gráfico 2. Diagrama de Pareto (avistamientos totales para cada especie)

Este gráfico nos muestra todos los avistamientos (los de los seis censos acumulados) de todas las especies, en orden descendente, para entender mejor el peso en abundancia de cada una de ellas en el total.

Results for fixed observations:

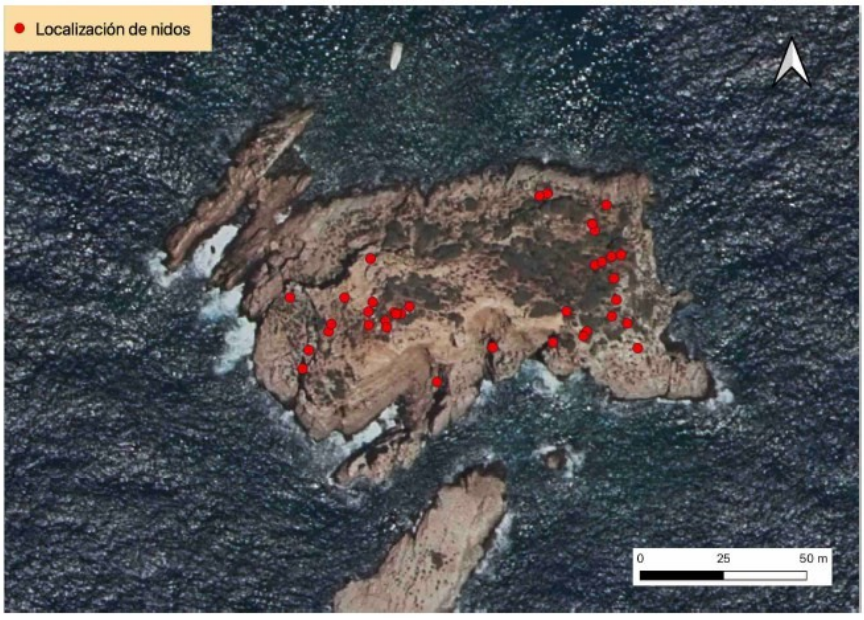






This study confirms the importance of Escombreras Island not only for seabirds, but also for a variety of other migratory and migratory species. **A total of 4,018 bird sightings were recorded during the two-month study period.**

Results of the census and mapping of shearwater nests on Las Palomas Island:



Mapa 3. Localización de los nidos de pardela/paíño encontrados en la Isla de Las Palomas

Many of the identified areas show evidence of nesting by both shearwater and storm petrels.

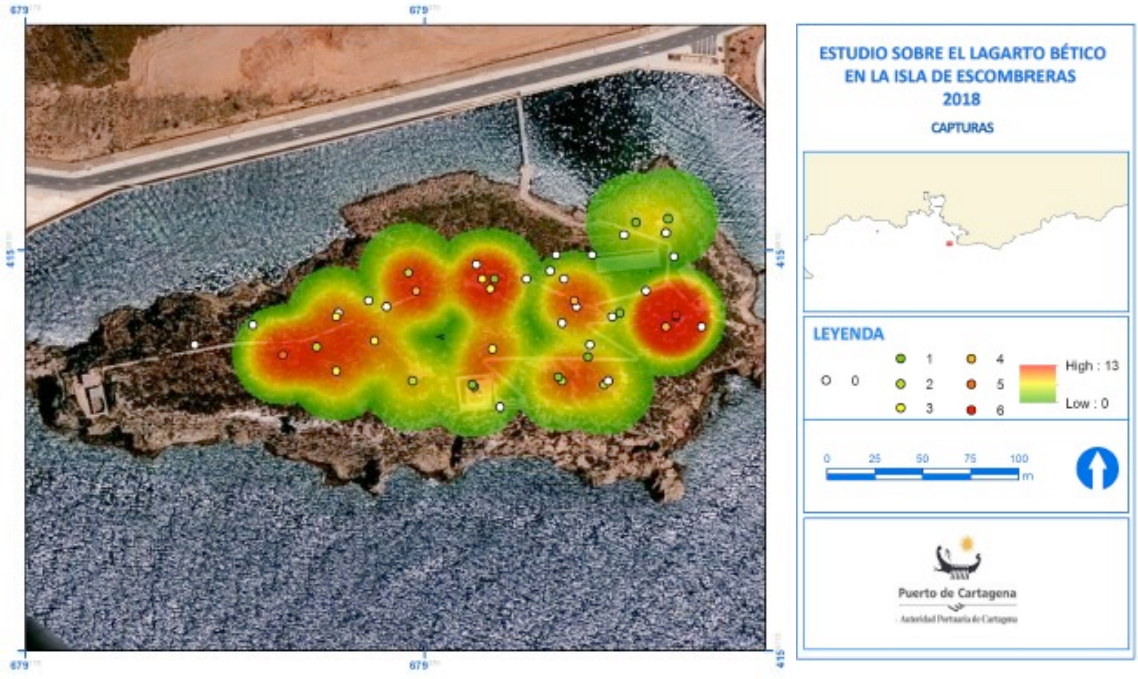
Imagen 18. Cara noroeste de la Isla de Las Palomas

The study has provided accurate information on the caves and crevices occupied by shearwaters and storm petrels for breeding. This information will allow future monitoring of the colony's reproductive progress, as well as the use or abandonment of these areas.

Genetic study of the ocellated lizard population (Timon lepidus nevadensis) on Escombreras Island

Recent genetic studies have proposed the differentiation between Lacerta and Ocellated lizards. The populations that populate the southeast of Spain correspond to Timon lepidus nevadensis, a subspecies of which there is very little bibliographic information and whose conservation status according to the IUCN is, both globally and at the level of the Spanish State, "almost threatened", and may become threatened in the next reassessment due to its restricted range.
The abundance of this reptile on Escombreras Island (the only island on the Murcian coast with the presence of lizards), its morphology and the apparent lack of resources on the island to maintain such a large population encouraged Cartagena Port Authority to commission a genetics study of this population in order to know its origin, its kinship, its diet and the long-term viability of this species on the island.

The companies in charge of the study were Mendijob, S.L., Arenariasur, and the University of Porto and had the mandatory authorization of the General Directorate of the Natural Environment of the Region of Murcia.
During the study, a total of 62 specimens were captured, of which 38 were distinct (21 females and 19 males).



Heat map, location of catches.

The genetics report prepared by the University of Porto indicates that the species is a genetic uniqueness with differences from those found on the Iberian Peninsula, all sharing kinship, making them a unique population at the regional and national level.

Photograph by: Jacinto Martínez

The conclusions of this study indicate that the island's population descends from the same pair, dating the population back approximately 7,000-8,000 years. This suggests colonization of the island by this species after the last Ice Age, when the waters receded and the mound became accessible from land.

This genetic uniqueness is especially important from the perspective of the survival and adaptation of a species in a very confined environment with a high degree of inbreeding.

Specimen captured for measurement and analysis. Handling time is always less than 180 seconds.

Ocellated lizard on Escombreras Island (Timon lepidus) Photo by Jacinto Martínez

During the summer of 2023, several water points were installed on Escombreras Island to help mitigate the summer drought, creating a climate island at several points where juvenile lizards can feed and hydrate, obtaining essential reserves for the coming winter.

Lizards cease or reduce their activity with the drop in temperatures, so it is essential that they arrive at this period with as many reserves as possible.

Monitoring the yellow-legged gull population and monitoring seabirds in the area surrounding the Mazarrón Lighthouse 2023

The maintenance and management of maritime signals is defined in legislation as the exclusive responsibility of the port authorities. Among these maritime signals is the Mazarrón Lighthouse, located on a rocky mound next to the fishing port.

The Port Authority proposed to the Autonomous Community of the Region of Murcia that they carry out population control of the yellow-legged gull, which has an increasingly large colony in the area surrounding the lighthouse, and that they also conduct a study on the presence of other marine species in the area, such as Audouin's gulls, shearwaters, storm petrels, cormorants, etc.

Sampling to monitor birds in the area around the lighthouse confirmed the presence of a population of yellow-legged gulls there.
After conducting an exhaustive census (through walking the entire area and locating nests), it was decided to initiate a control program consisting of the removal of nests.

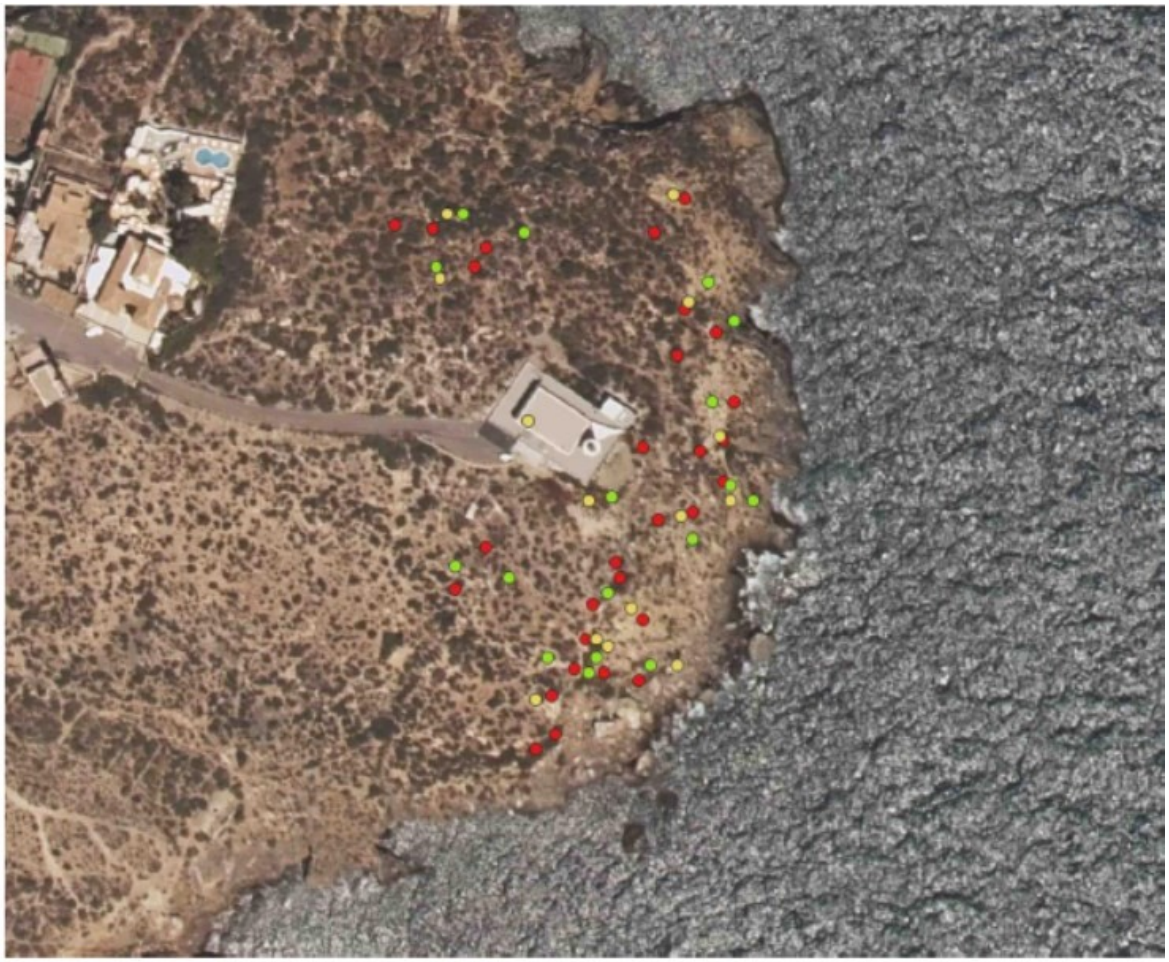
The results of the work on nesting pairs of yellow-legged gulls around the Mazarrón Lighthouse have shown a significant reduction in the colony, although the vacant space is rapidly being colonized by new gulls from nearby Mazarrón Island and Isla Plana. In 2020, many nests were empty of eggs, suggesting a problem in obtaining food, possibly caused by the lockdown and the halt in many activities that generated garbage and food scraps used by the gulls.

In the current 2023 campaign, the total number of managed nests (60) was practically half that of 2021 (108). Reproduction parameters have increased slightly, but remain much lower than in the years prior to 2020. For example, the average number of eggs per nest located in the 2015-2019 period was 2.2

eggs/nest, while in the current campaign, it ranged from 2.13 at the first check to 1.27 at the third check.

Mazarrón Lighthouse

During the working days it has been possible to verify the presence in the Bay of Mazarrón of various protected birds, of special value such as the European petrels, Audouin's Gull, European shags and Cinderella Shearwater.



Mapa 9. Localización de los nidos accesibles de gaviota patiamarilla en el entorno del faro de Mazarrón en los **tres controles de 2023** (rojo = primer control; verde = segundo control y amarillo = tercer control)

Nests location during controls 2023

Escombreras Chamomile

On Escombreras Island there is the presence of an endemic plant species with the only localized presence in Europe on the coast of Cartagena, **Escombreras Chamomile *(Anthemis chrysantha)***. This small, seasonal plant, which emerges with the first rains of autumn and remains active until summer, maintains its presence on Escombreras Island despite strong competition from other vegetation and the pressure it faces from the large colony of yellow-legged gulls.

This species is listed as "critically endangered" (CR) in the Atlas y Libro Rojo de la Flora Vascular de España (Bañares et al., 2003) book and as "endangered" in the Regional Catalogue of Protected Wild Flora of the Region of Murcia (Decree 20/2003 Regional Official Gazette 131). The Polytechnic University of Cartagena conducts periodic studies on the distribution and conservation status of the population of this plant on the island, which together with controls on the population of yellow-legged gulls and other species on the island, the restricted access and permanent surveillance made by the Port Authority, this natural space is made one of the places with the best state of conservation on the coast of the Region of Murcia.

The Escombreras Chamomile was declared Plant of the Year 2017 by the scientific dissemination website 'Los porqués de la naturaleza'.

Cartagena Port Authority actively participates in the conservation of this plant, which maintains its only island population in the world on Escombreras Island, collaborating economically with the conservation project promoted by the Polytechnic University of Cartagena and MAGRAMA.

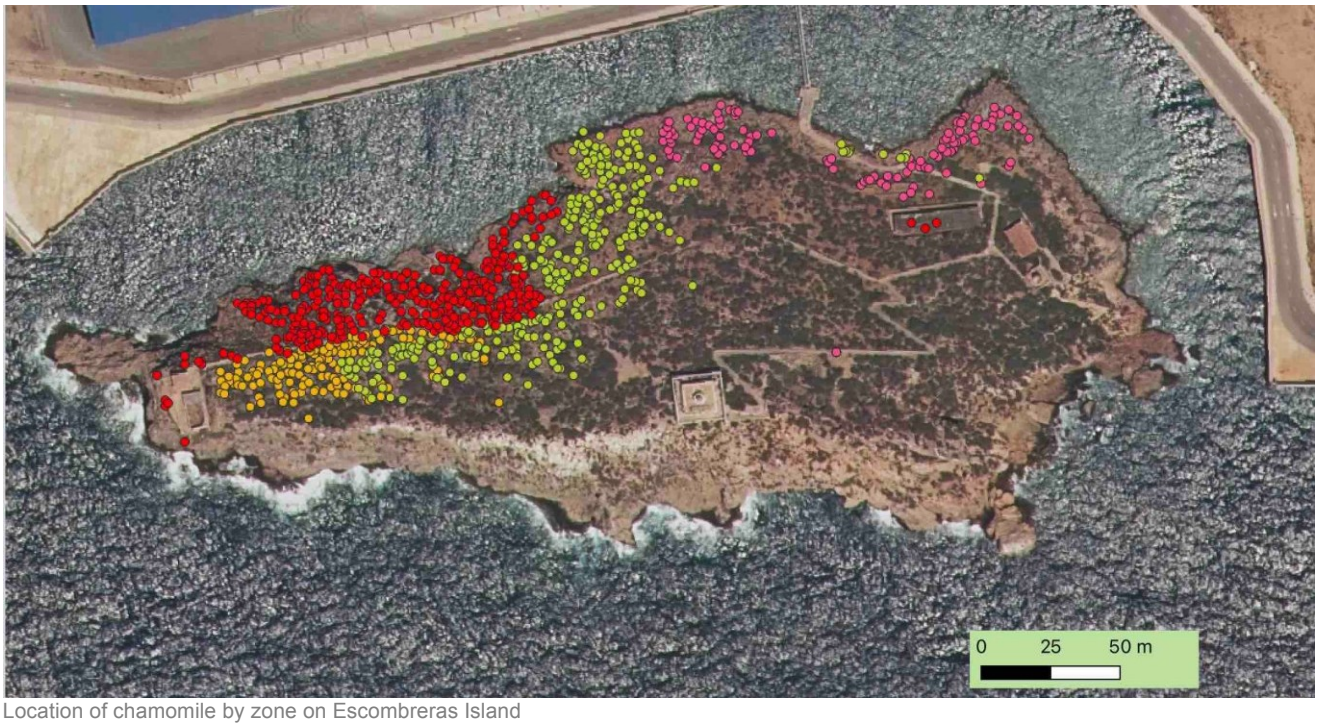
In the spring of 2020, three chamomile micro-reserves were created on the island, protecting and geopositioning a total of 152 feet.
In 2021, 14 new fences were built, with 394 protected plants.
In this way, the survival of the species is guaranteed against any possible opportunistic species that could prey on it.

In 2021, 58 plants that were left unprotected were marked and georeferenced near the fences, but outside them. In 2022, 107 plants were selected and their development was monitored from February to June to compare their performance and success with those found within the fences. Of the 107 plants located that were not protected by fences, 98.13% (a total of 105) managed to develop and flower.

According to the Atlas and Red Book of Threatened Vascular Flora of Spain, the oldest known locations were on Escombreras Island and Azohía; It was subsequently detected in the continental area of Escombreras and in the Muela de Cartagena. The Escombreras population disappeared after the expansion works; the last time it was observed in this population was in 1998. The Muela population dates back to 1996 and has not been detected since its discovery. The populations of Azohía and Isla de Escombreras, although presenting large numbers of individuals, are very limited in size, as their area of presence at that time was only 0.01 and 0.002 km2, respectively. The detected populations had an average density of 5.1 individuals per square metre.
(https://web.archive.org/web/20120413024313/http://www.magrama.gob.es/es/biodiversidad/temas/inventarios-nacionales/244_tcm7-149343.pdf)
The population was estimated at approximately 12,200 individuals on the island.

In 2022, the population remained in impeccable condition, with a good year of rainfall, resulting in spectacular flowering. Taking advantage of this situation and to obtain accurate information on the number of chamomile plants on the island and to gain more precise information on their development, a geolocated inventory of all chamomile plants was conducted in 2022. Likewise, a cleanup and waste removal process was carried out across the island.

The results confirmed the presence of 6,802 chamomile plants, although there must be more, as there are cliff areas where counting them is impossible.
A significant presence of the white henbane plant (Hyosciamus albus) has been detected, an annual plant that seeks out hypernitrified soils like some areas of the island. This is affecting the area available for chamomile, as it is an allelopathic species, preventing the growth of other species around it by secreting potent water-soluble alkaloids that persist in the soil and inhibit the germination of other seeds.



Location of chamomile by zone on Escombreras Island

Escomberas chamomile flowering on Escombreras Island (Anthemis chrysantha)

In 2023, flowering has been lower than in other years, which will lead, if it doesn't rain, to lower germination in 2024.

This plant's survival strategy allows it to generate two types of seeds: some that germinate the following year and others that remain in the soil as a reservoir to germinate in future years, when annual seeds are unavailable due to drought.

Distribution of protective micro reserve fences for chamomile

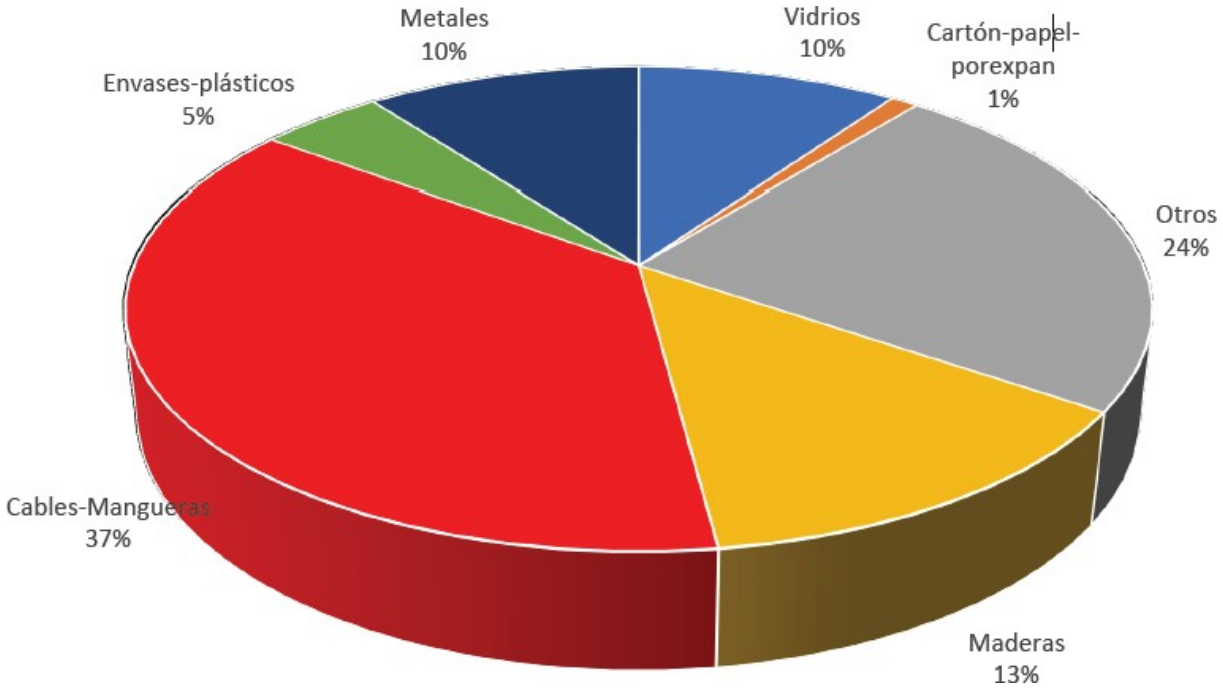
More information on the conservation of Manzanilla de Escombreras at:

http://www.abc.es/natural/ventana-biodiversidad/abci-estratega-manzanilla-escombreras-planta-2017-201612191247_noticia.html
http://www.regmurcia.com/servlet/s.SI?sit=c,365,m,1050&r=ReP-30486-DETALLE_REPORTAJESABUELO

Waste cleanup on Escombreras Island:

Waste used by yellow-legged gulls for nest building

The cleanup and removal of waste on Escombreras Island totaled 194 kg.



Percentage of waste segregation removed from Escombreras Island

Control of opportunistic species on Escombreras Island

The important population of Escombreras chamomile (Anthemis chrysantha) on Escombreras Island is threatened by herbivorous pressure, primarily from wild rabbits (Oryctolagus caniculus) and, to a lesser extent, from rats (Rattus norvegicus). Controlling rabbit and rat populations through live capture and subsequent translocation will help reduce pressure on the vegetation cover and promote the flowering and spread of Escombreras chamomile on the island of the same name. This will ensure the emergence of new plants in the following season. Sampling conducted in January and February showed very high herbivorous pressure (primarily from rabbits but also from rats) on this and other flowering plant species on Escombreras Island. If this continues, flowering and seed production in 2021 would have been practically zero (at least for the species under study). At the same time, and as a desired side effect, herbivore control will allow the growth and development of a greater number of plants of other plant species that provide food, moisture, and shelter for the important and unique population of the Betic lizard (Timon nevadensis) on Escombreras Island.

38 locations were selected, where live-capture traps were placed (35 floor traps and 3 tube traps with entrance hatches). After 12 days, 19 of these traps were moved to a different location (a few meters apart) to try to increase their effectiveness.

After four campaigns during the spring and fall of 2021 and 2022, a total of 89
+ 12 rabbits, 49 + 134 rats, and 9 + 2 lizards were captured. The rabbits were taken to a shelter for quarantine and then reintroduced into the countryside where they would not pose problems.
The rats were eliminated, and the lizards were released on the same island.
In 2023, this rabbit monitoring continued, but only 2 adult rabbits and 35 rats were captured. The goal of eliminating rabbits from the island is very close to being achieved.

These controls on opportunistic species are carried out with the corresponding authorization from the General Directorate of the Natural Environment of the Autonomous Community of the Region of Murcia.

Rabbits prepared for transfer to a quarantine centre.

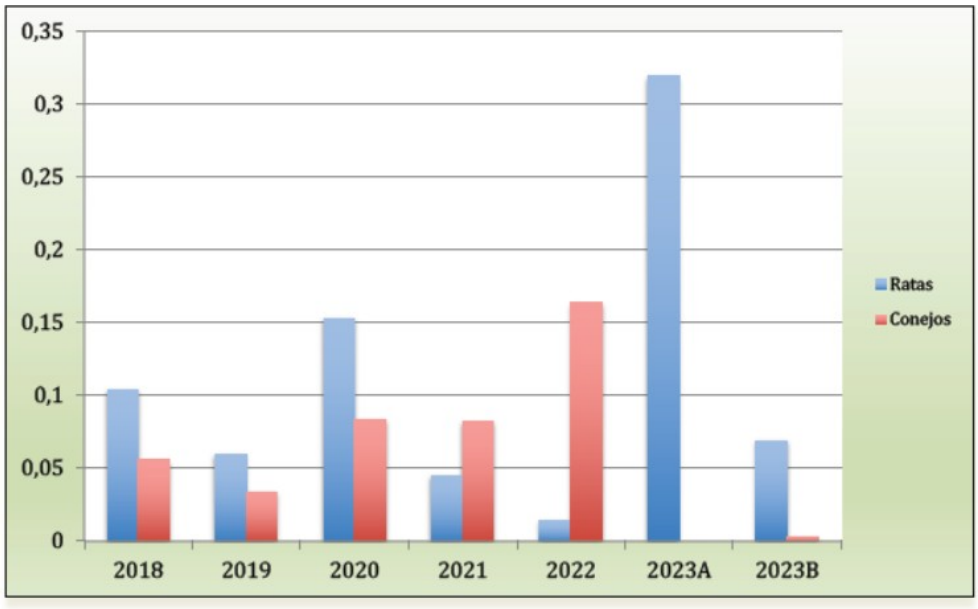
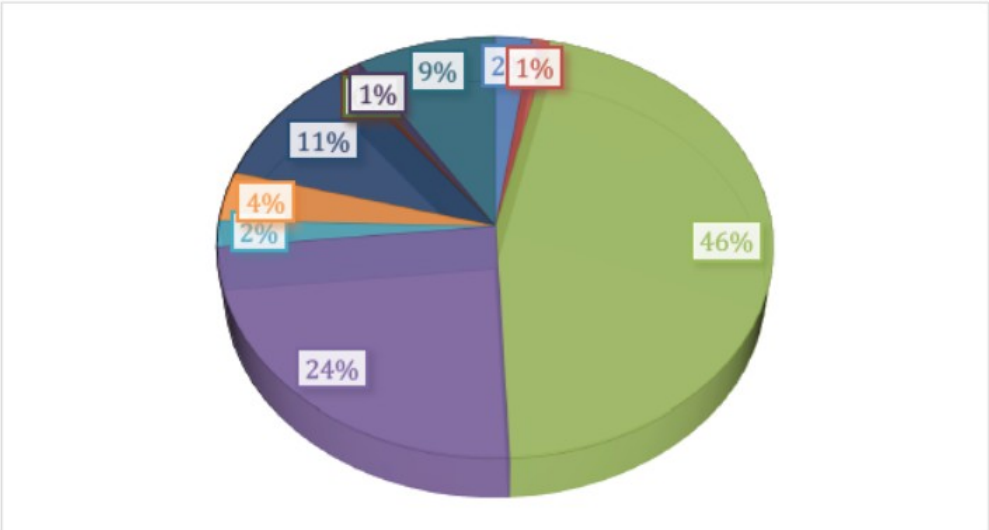


Gráfico de Tasas de captura (captura/días-trampa) para las siete campañas de control de conejos en la Isla de Escombreras (fuentes: Mendijob, S.L. y Biocyma, S.L.).

The results of the monitoring with photo-trapping cameras at the water points installed on Escombreras Island during the summer of 2023 were as follows:

Durante los días que han estado operativas las cámaras, han realizado fotografías de las siguientes especies:

Especie	**Nº total de imágenes**	**Comportamiento predominante**
Rata parda (*Rattus norvegicus*)	6853	Alimentándose
Lagarto bético de Escombreras (*Timon nevadensis*)	443	Hidratándose
Gorrión común (*Passer domesticus*)	397	Alimentándose
Estornino negro (*Sturnus unicolor*)	103	Alimentándose
Curruca cabecinegra (*Sylvia melanocephala*)	56	Hidratándose
Conejo de monte (*Oryctolagus cuniculus*)	11	Alimentándose
Lavandera blanca (*Motacilla alba*)	6	Hidratándose
Curruca carrasqueña (*Sylvia cantillans*)	2	Hidratándose
Total de imágenes de todas las especies	**7871**	



Aportación de cada cámara al total de imágenes de las diferentes especies

As we saw in the table on the previous page, only 11 images were obtained, 7 of one of these rabbits and 4 of the other. They were only photographed on August 6 and 18, respectively.

As for the lizards, 11 individuals of different sexes and ages were identified.

Male lizard returning from the water trough, August 2023

Reforestation of the Sierra de la Fausilla, a quarry used for the expansion of Escombreras

The quarry used to extract aggregates and stone for the landfill works for the Escombreras expansion was reforested in 2007 following the guidelines established by the Polytechnic University of Cartagena, covering a total area of 7.48 hectares.

The planted species have been selected from among those native to the area to promote rapid integration into the surrounding environment. The planted species include Aleppo pines, dwarf fan palms, and Cartagena cypress (Tetraclinis articulata), along with other smaller species such as fennel, arto, cornical, starfish, and tapenade.
A specialized company is contracted for the maintenance of the area, including forest improvement work, phytosanitary treatments, training pruning, clearing, tree hedges, and preventive phytosanitary treatments against the processionary caterpillar.

Reforestation situation 2011 Summer situation 2013

2020 Situation

2023 Situation

In 2019, the adaptation, consolidation, and reforestation works were completed in various areas of Punta de Aguilones that were experiencing landslides and risk of rockfall. To this end, a contract was issued for a project that, in addition to consolidating the mountain's geological structures, includes the planting of more than 8,000 species of native shrubs such as Tetraclinis articulata (Cartagena cypress), access adaptations, signage, security fencing, and irrigation systems, with an investment of nearly €2,000,000.

Adjustment and signage of the Aguilones Trail

In relation to the reforestation and treatment of this area of Sierra de la Fausilla (LIC ES6200025 and ZEPA ES0000193), in 2017 the adaptation, signing and enhancement of the path that, passing through the reforested area, climbs into the old Aguilones Battery and Conejos Battery, both declared ACI and within an area with high natural values.

Aguilones Battery, built between 1929 and 1933, located in Sierra de la Fausilla SPA, has been declared an Asset of Cultural Interest since 1997, being one of the 24 military constructions that formed the defense line of Cartagena Naval Base, currently unused and freely accessible, it is an excellent viewpoint of the port and the natural spaces that surround it.

A new action has also been developed to adapt spaces for public use and new tree planting in the same area in order to facilitate the use of these spaces by society and meet the needs of groups and associations demanding us being able to enjoy better of the port environment.

With the adaptation, reforestation and signalling of the area, a new space for leisure and enjoyment of nature opens for all citizens, who can safely walk and learn about the natural values of Sierra de la Fausilla and the surroundings of the port in Escombreras dock.

The old Carabineros Trail starts from this area, between Escombreras and El Gorguel, which was part of the GR-92 until a few years ago and which is intended to be rehabilitated and marked in the future to adapt one of the most spectacular trails on the Mediterranean coast.

Panels in the parking lot at the start of the Aguilones Trail

Study of biological communities on the seabed off Calacortina

The purpose of this study, commissioned by the environmental consultancy C&C Medio Ambiente and the University of Murcia, was to understand marine biodiversity and identify species and areas of the seabed suitable for potential pilot environmental restoration experiments, as well as to verify the presence of species of interest as carbon sinks.

6 bionomic transects (2017) were made from 5m. up to 15 m. with the following result:

- Location of a live individual of the mollusk Pinna rudis (Nacra), distinct from the common nacra.
- Location of the invasive species Asparagopsis taxiformis, widespread throughout the coast.
- Abundance of dead Posidonia oceanica plants.
- Areas with good conservation status make planting species such as Posidonia oceanica or Cymodocea nodosa viable as carbon sinks.
- Benthic communities with high biodiversity suitable for a port environment.

Immersion biologist conducting the study

Invasive *Asparagopsis taxiformis* alga

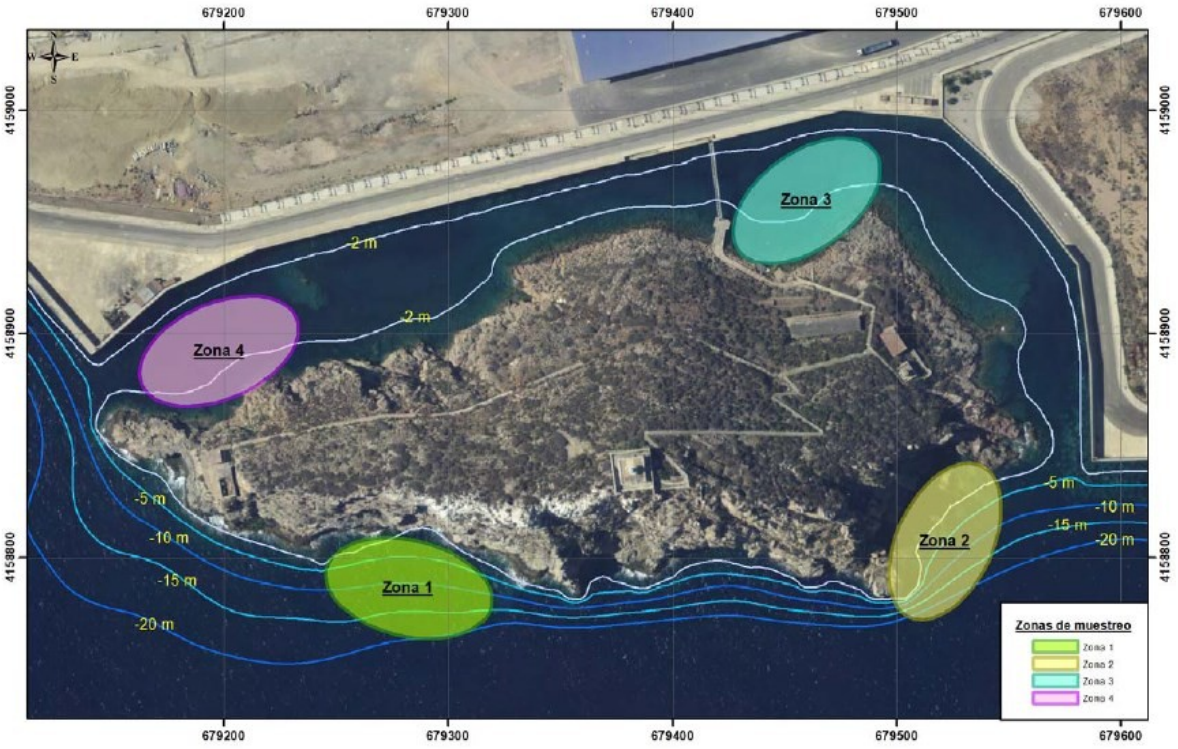

Live specimen of *Pinna rudis*, facing Calacortina, depth 10m.


Patagonian Oculina coral among Ellisolandia elongata algae, depth 4 m.


Red starfish Echimaster sepositus and star coral Astroides calcycularis

Study of biological communities on the seabed of Escombreras Island

This study was carried out in 2019 by the company C&C Medio Ambiente in collaboration with the University of Murcia and has had as its main objective to get to know the marine biodiversity, the presence of interesting species of high ecological value such as carbon sinks, the presence of invasive species and in short, to get to know the degree of conservation of the marine ecosystem associated with that area adjacent to the port.
This study is in direct line with SDG targets no. 13 and 14 aimed at combating climate change and its impacts, while conserving and sustainably using oceans, seas and marine resources.



Delimitation of study areas

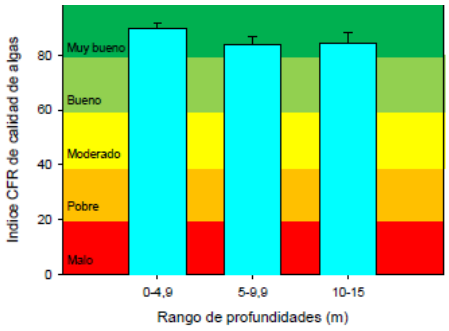


Figura 5. Índice CFR de calidad de las comunidades algales en la zona de estudio 2. Las barras muestran el valor medio ± la desviación estándar.

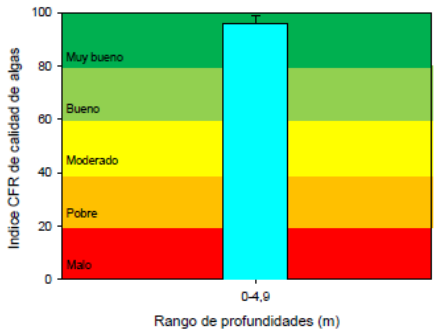


Figura 6. Índice CFR de calidad de las comunidades algales en la zona de estudio 3. Las barras muestran el valor medio ± la desviación estándar.

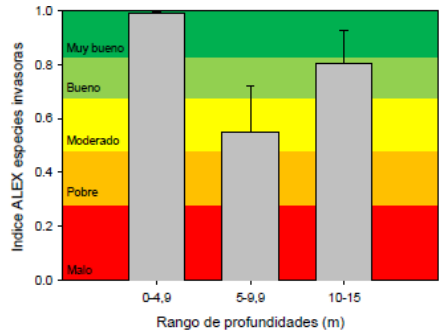


Figura 8. Índice de especies invasoras $ALEX_{EQR}$ en la zona de estudio 1. Las barras muestran el valor medio ± la desviación estándar.

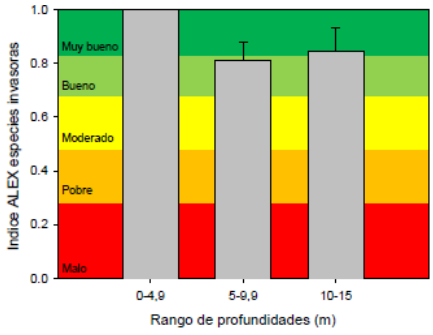


Figura 10. Índice de especies invasoras $ALEX_{EQR}$ en la zona de estudio 2. Las barras muestran el valor medio ± la desviación estándar.

Examples of results from calculations of the CFR indices for algal community quality and the ALEX index for invasive species.

Foto 7. Estrella roja *Echinaster sepositus* en la franja batimétrica de 5-9,9 m del área de estudio 1.

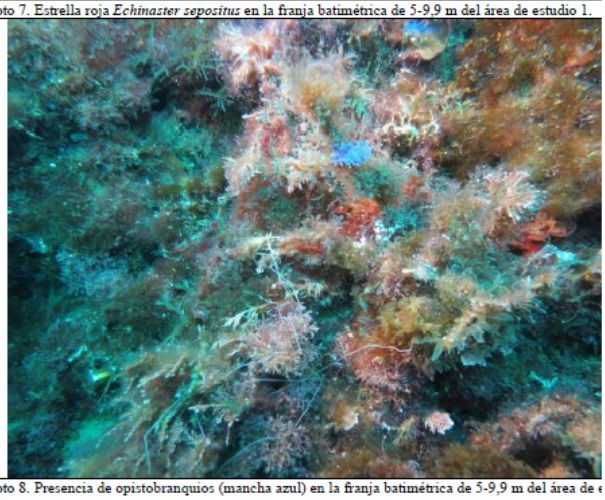


Foto 8. Presencia de opistobranquios (mancha azul) en la franja batimétrica de 5-9,9 m del área de e
1.

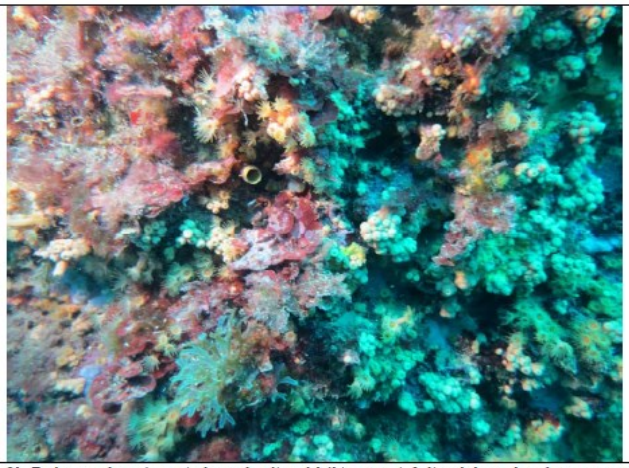


Foto 21. En las paredes más verticales se localiza el hábitat roca infralitoral de modo calmo, escasamente iluminada, dominada por invertebrados (Estación 2; Rango profundidad 10-15 m).

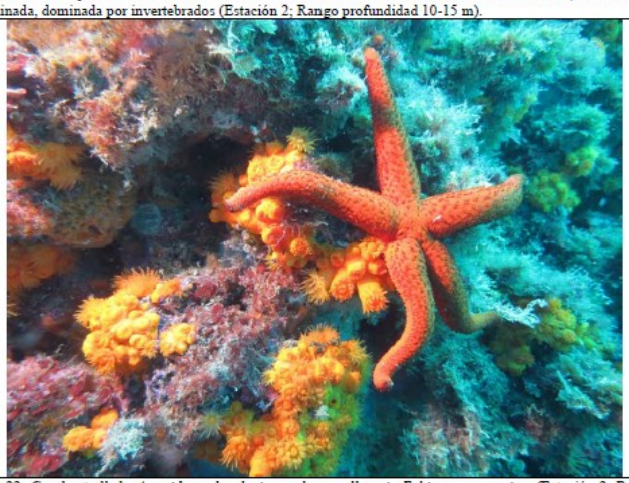


Foto 22. Coral estrellado *Astroides calycularis con la estrella roja Echinaster sepositus* (Estación 2; Rango profundidad 10-15 m).

The conclusions of the study indicate that the area has a high biodiversity to be so close to the port, which suggests that the continuous port traffic does not have significant effects on this ecosystem.

The level of quality of the algal communities is good or very good in all areas, the level of invasive species is considered good or very good with the exception of areas 1 and 4 where the invasive *Asparagospsis taxiformis* alga is present.

Zones 1 and 2 have the highest coverage of carbon receptor species, which helps to improve the port's carbon footprint.

Gorgonians in port waters

Pilot project for of reforestation with Posidonia oceanica in port waters

The excellent quality of the port waters and the evidence of the abundant biological diversity present in the harbor seabed has encouraged us to undertake a pilot project to reforest port waters with Posidonia oceanica. Posidonia is a marine plant from the phanerogam family, meaning it has roots, stems, leaves, and fruits.
This marine plant, endemic to the Mediterranean Sea, requires light to carry out photosynthesis, so it is not found at depths greater than 30 metres. It is considered a bioindicator of marine environmental quality.
It has been proven that the CO2 retention capacity of a Posidonia meadow is 4 or 5 times greater than that of a boreal or Mediterranean forest, and can do so up to 35 times faster.

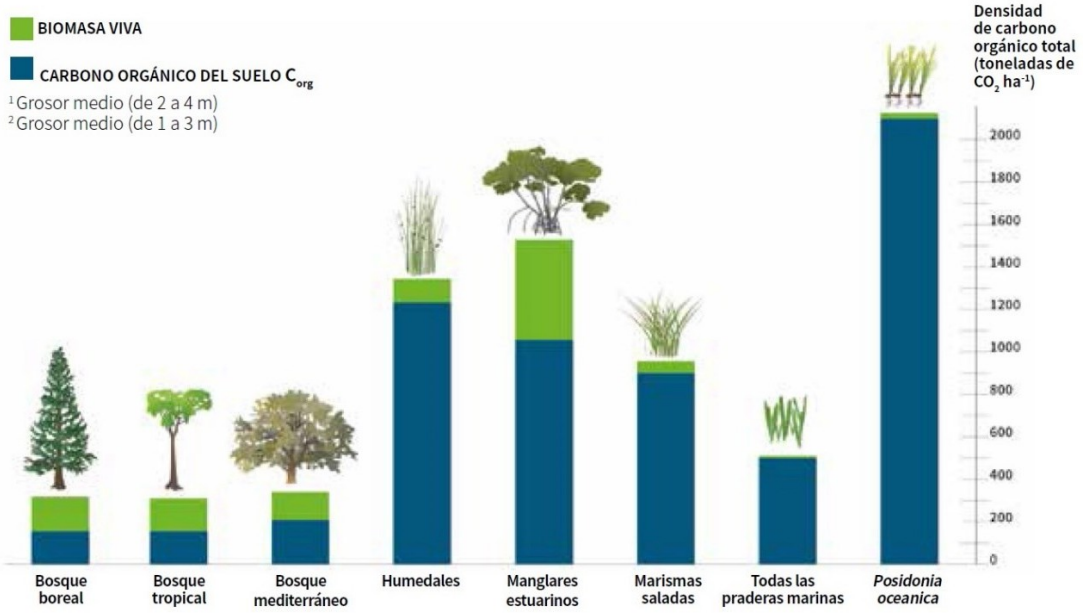


Figura 5: Comparación del almacenamiento de C_{org} en el metro superior del suelo con el almacenamiento de C_{org} total en los principales tipos de ecosistemas. En este caso, las praderas de *Posidonia oceanica* constituyen una pradera marina única en términos de cantidad de carbono orgánico que puede almacenarse en sus sedimentos y su mata.

Blue Carbon Project Manual - © 2021 IUCN, International Union for Conservation of Nature and Natural Resources

Other characteristics of this plant include its ability to bind sediment, which improves water clarity. Along with providing habitat for countless species, this plant's meadows become a reservoir for underwater wildlife.
Likewise, its ability to mitigate the force of waves, thus protecting the coastline, prevents marine erosion. A destroyed Posidonia meadow would take about 100 years to regenerate naturally, so it is necessary to protect and regenerate the remaining ones.

It is the longest-lived species in the biosphere, and 100,000-year-old specimens have been found on Formentera.

This project represents a challenge never before successfully undertaken worldwide in port waters. It has been made possible thanks to the collaboration of Laboratorios Munuera, S.L.U., which has experience carrying out Posidonia reforestation in the Balearic Islands as part of the Red Eléctrica marine forest project, developed as a compensatory measure for the impact on Posidonia meadows caused by the route of a submarine cable.
https://www.ree.es/es/sostenibilidad/proyectos-destacados/proyectos-ambientales/posidonia-oceanica
https://www.youtube.com/watch?v=aGF3_5YLv4s

The Port of Cartagena intends to assess the viability of planting Posidonia in port areas. To this end, a planting plot has been selected near the LNG tanker dock within the Escombreras dock. This plot is located at a depth of approximately 10 meters and features ballast soil with dead Posidonia plants underneath, which is considered the most ideal substrate for this type of project.

During the winter of 2021, dives were carried out by the professional scientific diving team from Laboratorios Munuera, S.L.U. to find the ideal location. They marked three plots with different substrates and awaited winter storms that would allow them to collect cuttings uprooted by marine dynamics in the nearby meadow west of Las Palomas Island, within the Cabo Tiñoso Marine Reserve.

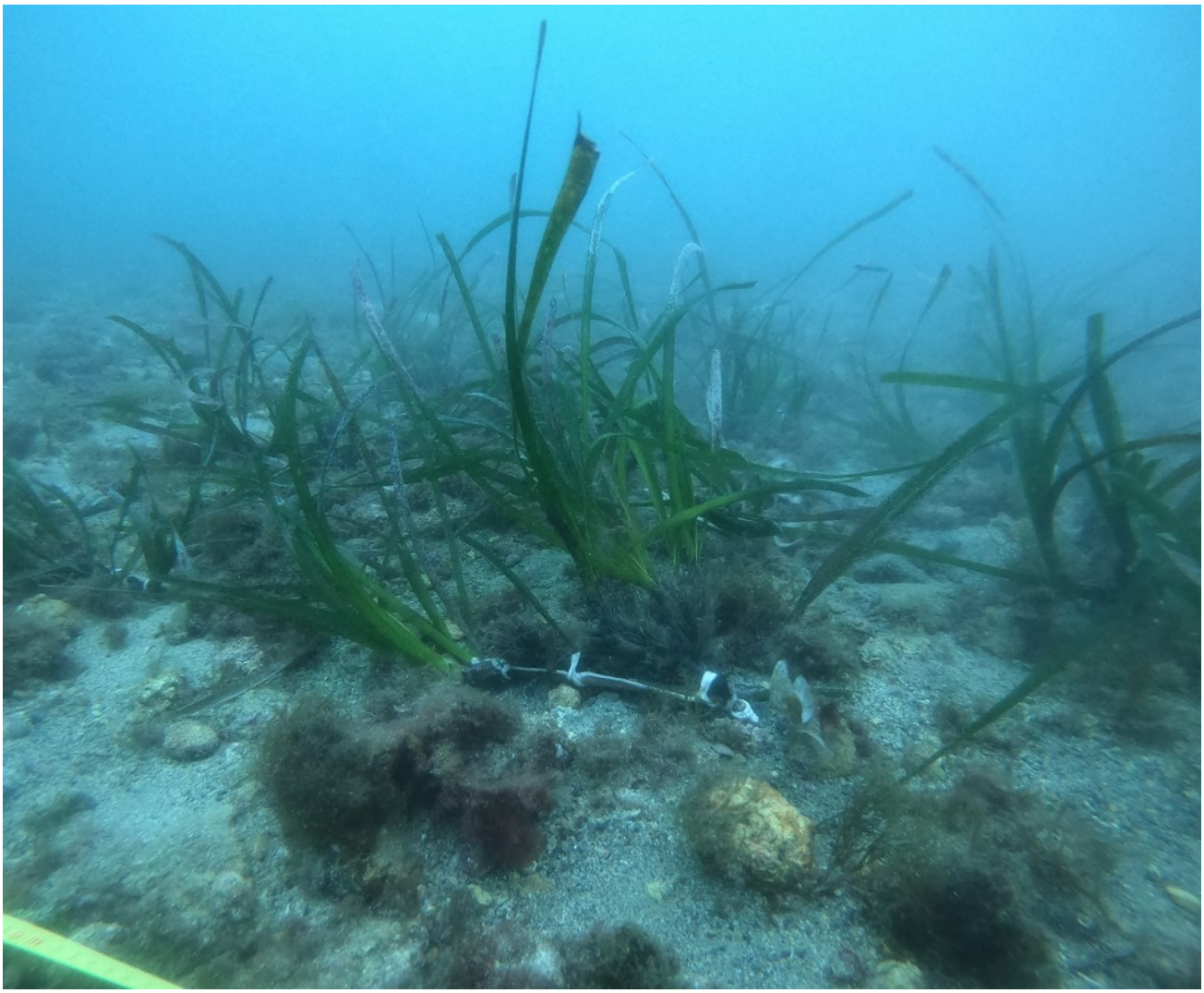
Finally, in May 2022, more than 60 fragments were planted using the system approved by the CSIC in its "Guide for Planting Posidonia Oceanica," using anchors to prevent their uprooting.

It should be noted that Posidonia is a highly protected plant, and its destruction or habitat alteration is strictly prohibited. Therefore, the removal of fragments that have washed ashore on beaches or uprooting them from the meadow is prohibited.
In this project, the fragments were collected from those suspended in the meadow as a result of marine dynamics altered by storms.

Subsequently, another 100 new plants were planted in another area near a depth of 11.50 m. Nearly 200 Posidonia cuttings were planted inside the port, with a survival rate close to 80%. This encourages us to continue with this project, unique in the world, with the aim of reforesting 2 more hectares.

Selection of cuttings

Trincabotijas Area



Planted cuttings

Professional scientific diving team from Laboratorios Munuera, S.L.U. is carrying out the work.

To carry out this project, authorization from the Ministry of Ecological Transition and Demographic Challenge GBTM/BDM/AUTSPP/55/2023 is available.
A tender for the planting of 6,400 new cuttings over the next four years is planned for 2024.
All videos of the successive stages of harvesting, selection, planting and supervision are available on YouTube:
https://www.youtube.com/@BosqueMarinoEurofinsMunuera

10 Response to emergency situations

The complexity of the port and the wide variety of companies operating there make it necessary to assess the potential risks that could arise from any incidental situation and the procedures to follow in each case. To this end, there is an Internal Emergency Plan with its corresponding Safety Study and an Internal Maritime Plan (PIM) that replaces the Accidental Marine Pollution Contingency Plan (PICCMA), which was finalized and

approved in 2016. The PICCMAs were renamed PIMs with the entry into force of Royal Decree 1695/2012, of December 21, which approves the National Marine Pollution Response System. The Interior Emergency Plan (PEI) is coordinated with the Exterior Emergency Plan of Escombreras Valley Chemical Sector.

To ensure a rapid and effective response to any incident, an agreement was signed in 2000 with the Fire and Rescue Service of the Cartagena City Council (SEIS). Through this Agreement, with a temporary duration of 10 years, SEIS is integrated into the Intervention Group within PEI, collaborating with the Port Authority in the preparation of reports related to fire safety, and in carrying out inspections of installations and fire protection systems, when required.

Through this agreement, the Port Authority acquired two special fire trucks and a fire trailer, and service personnel have completed several training courses on extinguishing fires on ships at the Jovellanos Centre (Gijón).

In 2010, the agreement was renewed, allowing the Port Authority to maintain close technical collaboration with the SEIS, which raises the safety level of the Port Service Area while ensuring a permanent firefighting service specialized in port risks.

Within the framework of this Agreement, on June 27, 2010, a new urban fire engine vehicle was delivered to SEIS, the third to be delivered. It was notable for its versatility and operability. It was constructed from a novel plastic material called "ecopolyfire," which offers advantages such as lightness, resistance to impacts and deformations, corrosion resistance, ease of repair, flexibility in compartment layout, and 100% recyclability.

In 2016, a Toyota all-terrain vehicle adapted to the needs of firefighters was delivered, and in 2017, a new light fire engine was delivered.

Last vehicle delivered to Cartagena Firefighters as first response equipment for the port

Response capacity is assessed annually through periodic drills and exercises.
In 2023, the MARSEC 2023 Maritime Security exercise was conducted, in which the Spanish Navy participated alongside numerous agencies from the State, Regional, and Local Administrations, as well as private entities. The incident necessitated the activation of the PIM and PEI. Drills were also conducted by Ership, Repsol, and Ecolmare.
https://www.la7tv.es/video/actualidad/marsec-23-armada-pone-prueba-aguas-cartagena-ciberseguridad-7/20230516165751017536.html

The two regular exercises for deploying and installing the anti-pollution barrier at Calacortina Beach were also carried out during 2023. The barrier was deployed in June and removed at the end of September. This deployment involved personnel from this APC, Maritime Rescue with the Salvamar Mimosa vessel, and an external contractor.

Command and control room for MARSEC exercise 2023

To coordinate emergency response, a Control Centre is available, sharing facilities with the Local Maritime Rescue Centre, operating 24 hours a day, 365 days a year. This Control Centre is equipped with:

- ✓ Fixed telephone and mobile communication systems, as well as land and sea radio stations
- ✓ Closed-circuit surveillance systems with 103 cameras and simultaneous recording of all cameras
- ✓ Automatic presence, fire, and gas detection systems in certain areas
- ✓ Computerized access control system with automatic license plate and access card readers
- ✓ In-house fiber optic network for transferring information and data between all areas of the two docks
- ✓ Real-time measurement system for atmospheric pollutants and meteorological data
- ✓ Public Address System at the Solid Bulk Terminal
- ✓ Traffic Light Control for the Service Road Tunnels

This Control Centre was recently completely renovated, with equipment upgrades, a change in surveillance and communication systems, a transition from analog to digital systems, and the modernization of all systems.

Improvement works have been carried out on the service road tunnels connecting the Cartagena and Escombreras basins to improve their safety and adapt them to the requirements of Royal Decree 635/2006, on minimum safety requirements for State road tunnels.

The perimeter fence section that runs along the access road to the Liquid Bulk Terminals, the Multipurpose Dock, and the rail access at the Escombreras Dock has been completed.

CCTV cameras have been added, including: One that enables license plate reading in the tunnels, another in the "Podadera," and several more (including infrared cameras) along the aforementioned perimeter fence.

Emergency situations during 2023

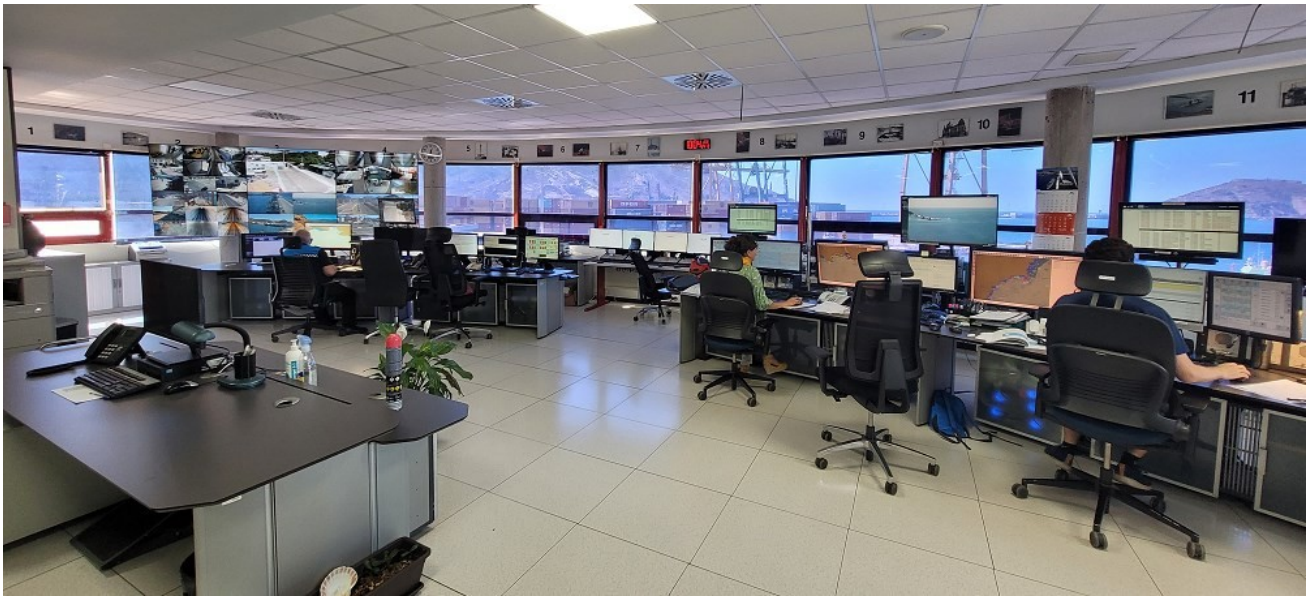
There have been 9 activations of the PIM (Maritime Interior Plan):

- ✓ 8 oily stains on the water surface
- ✓ 1 sulfur spill into the sea

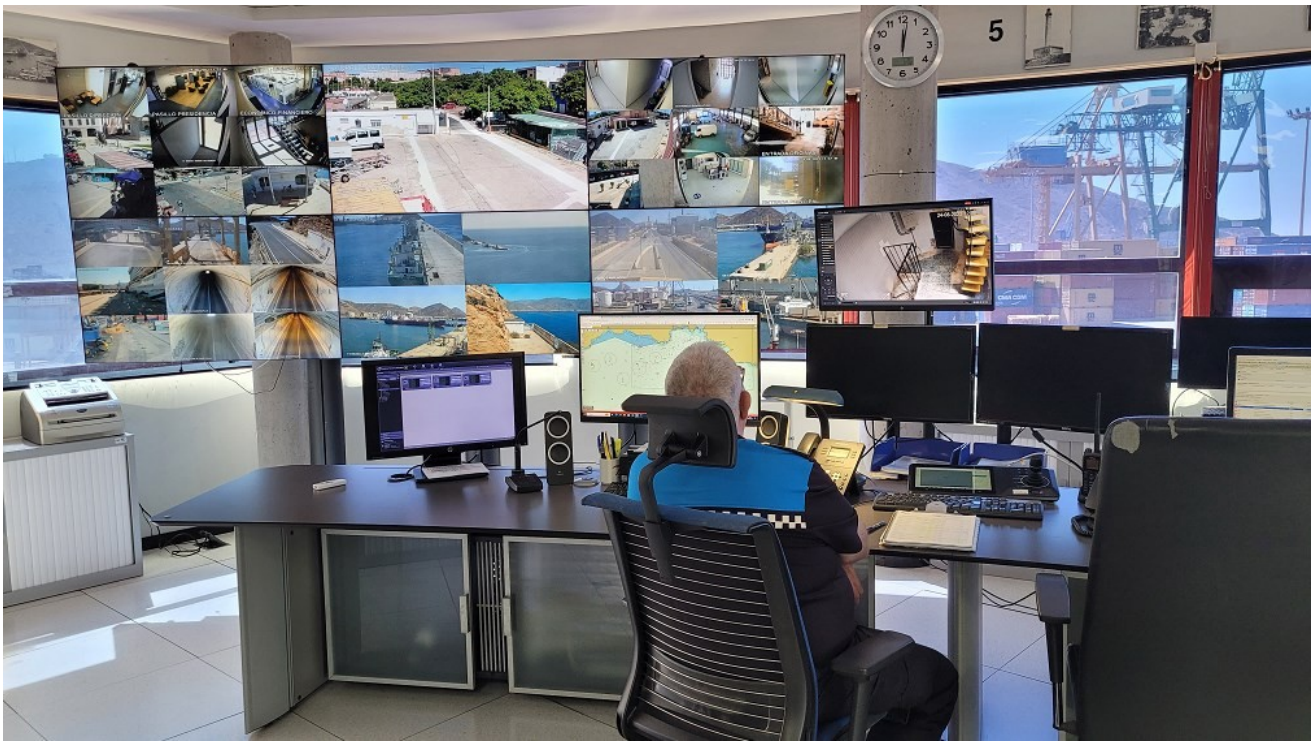
And There have been 18 activations of the PEI (Maritime Interior Plan):

- ✓ 1 ship fire.
- ✓ 3 traffic accidents.
- ✓ 1 fishing boat sinking.
- ✓ 1 scrap metal fire.
- ✓ 1 crane fire.

- ✓ 1 floating body.
- ✓ 1 fire outbreak in the sulfur mine.
- ✓ 1 diesel tank rupture in a truck.
- ✓ 1 vehicle rollover.
- ✓ 1 fire at a shipbreaking yard.
- ✓ 9 medical assistance.



Monitoring Centre



Monitoring Centre

Bonuses to ships for good environmental practices 2023

During 2023, 494 applications for vessel tax discounts were received to encourage good environmental practices and proper waste management.

No exemption certificates were granted during 2023 by the Cartagena Maritime Authority for the non-delivery of waste by vessels, in accordance with Article 21 of Royal Decree 128/2022, on port facilities for the reception of waste and residues from vessels.

Safety and Occupational Risk Prevention

The Risk Map of the Liquid Bulk Terminal of Escombreras dock has been drawn up, the objective of which is to describe the operations carried out by each of the concession companies in the Liquid Bulk Terminal, as well as the identification of the dangerous substances present and its risk characteristics, as well as the compilation of

representative accidental scenarios for each company. This Map includes the Plan with the layout and content of the different pipes in the Liquid Bulk Terminal and the loading arms. In this way, all the information related to the risks present in the area under study derived from the presence of dangerous substances is compiled in a single document.

- **A total of 819 special work permits have been processed**
- New management modules are being implemented in the "6conecta" software for the integration and digitalization of preventive management (PPE, training, safety inspections, etc.), as well as for the coordination of business activities. The integration of the remaining corporate systems (Epsilon, Dido Port, Victoria, etc.) is continuing.
- Technical staff from the Sustainability Department are accompanying the Port Patrol to instruct them on occupational risk prevention and industrial safety at the docks.
- The Occupational Risk Assessment is being updated, and the corresponding "general risk and job information sheets" are being distributed to all staff.
- 10 host talks have been given to scholarship holders.
- During the year, nine companies have been approved to perform work tendered by the Port Authority. The total number of companies that remain approved by the Port Authority is 261. This approval guarantees that the contracted companies comply with all occupational health and safety requirements.
- The company's accident severity index was 0.27 (this index represents the number of days lost due to accidents occurring during the workday, per thousand hours worked).
- **1,440 applications for the admission of dangerous goods on ships have been authorized.**
- A psychosocial risk assessment has been conducted.
- The LNG Bunkering Operations Safety Manual has been prepared at the Juan Sebastián El Cano dock in the port of Cartagena.
- A list of people with family conciliation measures has been drawn up for them to perform their functions in a remote mode if its work makes it possible.
- A Protocol has been drawn up for the use of Workshop facilities for Maritime Rescue personnel, which specifies that they shall comply with the preventive measures implemented in Cartagena Port Authority.

Occupational Health Improvement Plan

The Occupational Health Improvement Plan has been developed and approved. This Plan emerges as an integral part of our commitment reflected in our 2022/2025 Sustainability Plan. In particular, it falls within one of its key areas, the social scale, and more specifically its tenth axis of work focused on the personal health and quality of life of workers, with the aim of promoting a higher-quality, better-communicated, and more equitable work environment.

It also arises from the results of the psychosocial risk assessment conducted by our External Prevention Service, to address, among others, the nine psychosocial factors evaluated:

- Working time
- Autonomy
- Workload
- Psychological demands
- Variety/content
- Participation/Supervision
- Interest in the worker/Compensation
- Role performance
- Relationships and social support

The implementation of this Plan has not only sought to go a step beyond standards, but also to advance toward a model of excellence in the care of our work environment.

11 Training and communication

During 2023, the permanent training line has been maintained, which includes courses related to safety, prevention and the environment.

Within the Training Plan, 7 internal training actions have been carried out for the development of management by competencies in which 301 workers have participated, with a total of 5,338 hours.

LIST OF TRAINING COURSES 2023	HOURS	NUMBER OF WORKERS	TOTAL HOURS
PORT POLICE REFRESHING COURSE	30	53	1590
TRAINING REGULATIONS COURSE	20	3	60
ONE DRIVE COURSE	2	121	242
MASTER'S DEGREE IN PORT MANAGEMENT AND PLANNING AND INTERMODALITY	1,500	2	3000
PUBLIC DOMAIN COURSE LEVEL III	60	1	60
LOGISTICS AND INTERMODALITY COURSE LEVEL III	60	2	120
TEAMS Course	2	118	236
TOTAL	**1,674**	**301**	**5338**

Port Police in training

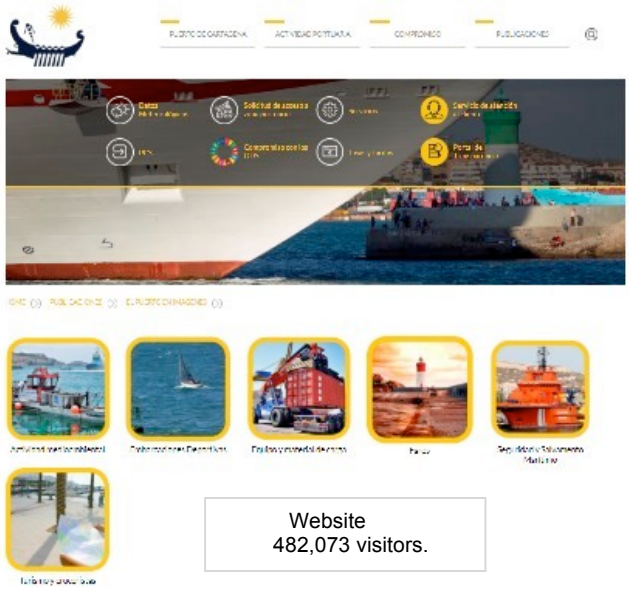
Office staff training

Information related to environmental issues is available, along with other public information on general port issues, on our website: www.apc.es .

There are other publications such as the Annual Report and the Service Guide (biannual) or different promotional publications for terminals or specific traffic, which complete the public information on the activity of the port of Cartagena.

12,575 views

6,393 followers



Website
482,073 visitors.

8,695 followers

19,000 followers

To address all information requests, complaints, and suggestions, there is a Customer Service Department (CSD), which channels all such matters. This department serves as a direct means of communication between the Port of Cartagena and its customers, coordinating the necessary efforts to effectively respond to requests for information, complaints, claims, and suggestions, which are centralized through this channel.

During the last year 2023, a total of 499 inquiries were received, out of which 380 were requests for information, followed by 41 complaints, 17 claims, 7 requests for data sets, 6 suggestions and 48 face-to-face visits.

Regarding "Inquiries by Means of Reception," the most widely used medium during 2023 continues to be email, accounting for 78% of inquiries, followed by 21% via the web.

During 2023, only two complaints related to environmental issues caused by noise from vessels were recorded, which were reported to the competent authority (Marine Captain's Office) and to the vessels' consignees.

On the other hand, the Port Authority's website received 482,073 visits throughout the year with a daily average of 1,321 visitors.

Customer Service is available at:

On the website:
www.apc.es Via e-mail:
sac@apc.es

Telephone: 900 777 200 and 968 325800
Fax: 968 325815
We are also on Facebook, Twitter, Instagram and our own You tube channel

In person at:

Autoridad Portuaria de Cartagena,
Plaza Héroes de Cavite s/n, 30201
Cartagena - Murcia .

Representation building of the Port Authority, Military Arsenal, Naval Museum, UPCT and Héroes de Cavite Port Authority main building in the background,.

During 2023, a total of 207 public activities have been authorized, with 462 simultaneous days of occupation of port spaces, both in the water and on port land.

Student Visits in 2023

Student Visits in 2023 – Get to Know Your Port Program

In 2023, a total of **58 schools** visited the port, **with 2,214 visitors**, including students and teachers, as part of the "Get to Know Your Port" program.
Visits to the various markets set up in the port area during 2023 exceeded 30,000.

12 EMAS Region Region of Murcia

On December 9, 2009, the founding ceremony of the EMAS Club of the Region of Murcia took place in the auditorium of the Ministry of Universities, Business, and Innovation of the Autonomous Community of the Region of Murcia, chaired by Mr. Francisco José Puche Forte, Director General of Industry, Energy, and Mines of the Autonomous Community of Murcia.

The main purpose of this new non-profit new association is to contribute to the continuous improvement of the environmental behaviour of organizations and society in general, to promote EMAS dissemination (Community System for Ecomanagement and Environmental Auditing, EU Regulations 2017/1505 and UE 2017-1505 and EC 1221/2009), collaborate with the administrations for the development of initiatives and contribute positively to the regional economy.

Industrial companies, SMEs, administrations and organizations of all kinds may join this association, with the only requirement that they be recognized by EMAS, recognition that distinguishes leading and excellent organizations in their environmental management. The official headquarters of the association are located in the renovated building of the Old Cartagena Regatta Club. The members unanimously elected the Port Authority of Cartagena to serve as President of the Club.

One of the EMAS CLUB's main activities is to disseminate the Community Environmental Audit Management Scheme (EMAS) and share the experiences and best practices implemented over the years by EMAS-accredited companies, as companies that take excellence to its highest levels. It leverages these synergies and accumulated experience.
To this end, it has active social media profiles and a website that collects the most important news of interest. It has also published a catalogue of the companies associated with the CLUB available on https://www.clubemas-rm.org . In the same way, within this web space, a specific section has been enabled for companies that wish to do so

The following organizations are members of this CLUB: Autoridad Portuaria de Cartagena, Fruca Marketing, Laboratorios Munuera, Cartago Marpol, Ership, Agencia Marítima Blázquez. Amarradores del Puerto de Cartagena, Tecopsa and Terminal Marítima de Cartagena.

During 2023, the EMAS Club of the Region of Murcia carried out activities to promote eco-responsibility, showcasing the experiences and best practices implemented over the years by EMAS-accredited companies. Specifically, the following actions have been carried out:

- ✓ Development and analysis of proposals for revitalizing the EMAs Club

- ✓ Response to inquiries regarding the EMAs registry
- ✓ Communications and contacts with the regional government and the Port Authority of Cartagena
- ✓ Ongoing communication with the regional administration proposing amendments to new regulations or adapting legislation to promote the use of the EMAS Register

17 ALIANZAS PARA LOGRAR LOS OBJETIVOS

TMC Terminal Marítima de Cartagena

Address: Club EMAS Región de Murcia
Plaza Héroes de Cavite, s/n
30201 Cartagena
Website: www.clubemas-rm.org E-mail: presidente@clubemas-rm.org

Puerto de Cartagena

Laboratorios Munuera

CARTAGO MARPOL, S.L.
EMPRESA MARPOL AUTORIZADA
GESTOR DE RESIDUOS PELIGROSOS Y NO PELIGROSOS

TECOPSA
CONSTRUCCIÓN & SERVICIOS

Ership

Fruca marketing

BLÁZQUEZ
AGENCIA MARÍTIMA

AMARRADORES CARTAGENA

Passenger services at the Cruise Terminal provided by A.M. Blazquez Cruises, an EMAS company

Blázquez Cruises Maritime Agency and Ership are two good examples of how Cartagena Port Community is taking the path of improving its competitiveness, environmental management and image through voluntary adherence to EMAS Registry, promoted by Cartagena Port Authority.

13 CSR - Chairs with universities - Recognitions

Regarding the environment, the main communication and participation element open to the entire port community is the Environment Committee, which includes representatives from concessionaire companies, stevedores, organizations, and port workers.

In 2023, a meeting of the Environment Committee was held on December 20, with the following agenda:

1- Reading and approval of the previous minutes
2.- Sustainability Report and EMAS APC Environmental Declaration 2022

3.- Report and status of objectives and goals for 2023/2024
4.- Environmental actions in progress, future projects 5.-
Requests, questions, miscellaneous

The Environment Committee remains as an effective element of communication and consultation between users and organizations that make up the port Community.

Main actions in CSR:

- ✓ Within the framework of the "Interuniversity Chair of the Environment Port Authority of Cartagena-Campus Mare Nostrum", with the Univeristy of Murcia (UMU) and the Polytechnic University of Cartagena (UPCT), scholarships for End-of-Degree and End-of-Master projects are announced, ass well as two awards for the best End of Degree and End of Master projects. This Environmental Chair aims to establish a permanent collaborative structure between these institutions and the Port Authority in the areas of research and development of projects related to environmental improvement.

- ✓ Continuation of the "Biodiversity Lighthouse" project, consisting of the environmental restoration of the Cabo de Palos Lighthouse area, in collaboration with the Association for the Recovery of the Native Forest of Cartagena – La Unión (ARBA).

- ✓ Renewal of the APC's adherence to the United Nations Global Compact.

- ✓ Promotion of internal sustainability education:

- Within this section, the Port's Notebooks Nos. 2-3-4 have been edited and published, as well as the SDG bulletins we publish every four months. These actions have been disseminated both internally and externally.
- Fourteen information notes related to notable sustainability events have been prepared and distributed.
- A second educational module on Posidonia Oceanica has been developed and disseminated, adapted to the requirements of the new Education Law, with the aim of introducing students to knowledge about Posidonia Oceanica and the vital functions it performs in maintaining marine biodiversity. This module also includes a teaching guide for teachers and has been adapted to the first, second, third, and fourth years of secondary school.

✓ A study was conducted on the calculated emotional and induced value for third parties. It was also disseminated at an informational event held in December.

✓ Renewal of the Cartagena Port Blue Trail certification. The Blue Trails are routes that link Blue Flag beaches or ports and contribute positively to the sustainable use of the coastline.

✓ Development of a guide on criteria for Green Public Procurement. This year, three green procurement guidelines were developed for application in the following contract categories: vehicle purchase/rental, textiles, and office furniture. These guidelines are in addition to the seven existing categories on which work has been ongoing.

✓ Dissemination of the updated APC Environmental Profile.

✓ The Sustainability Observatory, a web portal whose objective is to disseminate and publicize the APC's work in the field of sustainability, has been developed, created, and resources have been created.

✓ In terms of volunteering, several activities have been carried out throughout the year, including the "Biodiversity Lighthouse" project, aimed at the environmental restoration of the Cabo de Palos Lighthouse, and the Christmas toy campaign "Bring a toy and we'll buy another for you."

✓ Sustainability promotion has continued during port visits. As a result, an informative brochure has been designed and distributed via QR code, highlighting the main points of interest from the APC's sustainability perspective (through links to images, web publications, and observatories), ensuring that the learning experience extends beyond the visit.

✓ The 8th Port of Cartagena Charity Race Held. In this eighth edition, **all proceeds will go to the Cartagena Multiple Sclerosis Association**, which does so much to help its users and their families. The amount raised from race numbers and T-shirt sales, plus the Port Authority's charitable contribution, reached €6,200 in donations.

✓ A firm commitment to introducing the SDGs, working to identify and prioritize the goals on which port activity has the greatest impact, in order to focus its actions on achieving a positive impact on society and achieving these global goals by 2030.

✓ Launch of the "Port of Cartagena Green Tour" initiative

Hiking march as part of the 10K Port of Cartagena 21/10/2023

Official album 10K 2023
https://photos.google.com/share/AF1QipPqZarw8bsC42eujjjl1dUUFFsU0RoNs_8mvHps2yZ3oIpMajLJMz7SARv7JY6IZA?key=VVqxR1RIREhnRjJCNFFMOHBQMUgyWXVQOUZzV2lR

"PROYECTO FARO DE BIODIVERSIDAD"
Restauración ambiental del entorno del faro de Cabo de Palos

PROGRAMA TRINCHERA VERDE

Faro de Biodiversidad

ORGANIZA:

Puerto de Cartagena
Autoridad Portuaria de Cartagena

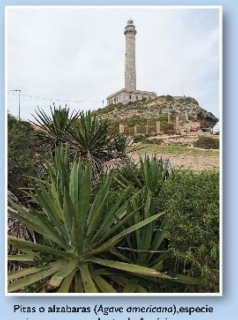
ÁRBA CARTAGENA LA UNIÓN

COLABORA:

Ayuntamiento Cartagena

La Autoridad Portuaria de Cartagena y la Asociación para la Recuperación del Bosque Autóctono de Cartagena–La Unión, con la colaboración del Ayuntamiento de Cartagena, llevan a cabo la restauración medioambiental del entorno del faro de Cabo de Palos, con el objetivo principal de recuperar los hábitats de especies de flora autóctona propias de la zona.

El principal objetivo de este proyecto consiste en la erradicación de las numerosas especies de flora exótica invasora, tales como piteras, acacias, crespinillos o chumberas, y su sustitución por especies de matorrales autóctonos propios de los acantilados y entornos costeros del sureste peninsular.



Pitas o alzabaras (*Agave americana*), especie invasora procedente de América muy extendida en zonas áridas del sur peninsular.

LAS SIERRAS DE CARTAGENA: UN PUNTO CALIENTE DE LA BIODIVERSIDAD EN EUROPA

Las sierras litorales de Cartagena son sede de una extraordinaria biodiversidad, al confluir especies de flora de orígenes muy diversos: especies paleotropicales, especies de origen norteafricano, mediterráneas, incluso iraníes, así como numerosos endemismos, algunos en peligro de extinción como el garbancillo de Tallante (*Astragalus nitidiflorus*), la esparraguera del Mar Menor (*Asparagus macrorrhizus*) o la jara de Cartagena (*Cistus heterophyllus* subsp. *carthaginensis*).

LA VEGETACIÓN AUTÓCTONA DE LOS ENTORNOS LITORALES DEL CAMPO DE CARTAGENA

La actuación prevista en el entorno del faro contempla la sustitución de las numerosas especies de flora invasora presentes en la zona por las especies autóctonas propias de entornos costeros que existirían en esta zona antes de su transformación por la actividad humana.

El objetivo concreto de este proyecto de restauración ambiental es el de la recuperación de los matorrales denominados halonitrófilos propios de ambientes litorales. Se trata de un hábitat relevante por la presencia de especies de flora endémica iberoafricana –exclusivas del sureste peninsular y norte de África– muy singulares en el contexto europeo y adaptadas a la existencia de sal en el suelo, producto de la cercanía al mar, así como una elevada nitrificación del mismo, consecuencia de las deyecciones de las aves marinas.

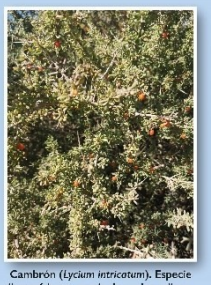
Conjunto de cactus y pitas (*Cylindropuntia spp.* y *Agave spp.*), especies muy invasoras procedentes del continente americano.

Entre las especies que se van a implantar destacan las siguientes:

- **Cambrón** (*Lycium intricatum*). Se trata de un arbusto espinoso y muy intrincado que pierde la hoja durante el verano. Crece en ambientes salinos y térmicos de las costas mediterráneas del levante y sur peninsular, el norte de África y las islas Canarias.
- **Oroval** (*Withania frutescens*). Al igual que el anterior es un arbusto iberoafricano que pierde las hojas durante los meses de sequía. También es propio de laderas pedregosas y soleadas del sureste peninsular.
- **Boja barrillera** (*Salsola oppositifolia*). Arbusto halonitrófilo usado antiguamente para la fabricación de jabones y espejos.

Junto a estas especies principales se implantarán otros arbustos mediterráneos tales como lentiscos (*Pistacia lentiscus*), cornicales (*Periploca angustifolia*) o palmitos (*Chamaerops humilis*).

El resultado final sería una arbusteda compleja, de alto valor ecológico, generadora de alimento y refugio para la fauna local y resistente al cambio climático. Además, este matorral actuaría en el futuro como un núcleo generador de semillas, ayudando a la recuperación natural de otras áreas cercanas.



Cambrón (*Lycium intricatum*). Especie iberoafricana propia de suelos salinos.

LA TRINCHERA VERDE, UNA BARRERA CONTRA LA DESERTIFICACIÓN Y POR LA PRESERVACIÓN DE LA BIODIVERSIDAD

El Proyecto 'Faro de Biodiversidad' se enmarca dentro del programa 'Trinchera Verde', una iniciativa de ARBA Cartagena-La Unión para fomentar la creación de una barrera forestal en las sierras litorales –desde Cabo Tiñoso hasta Cabo de Palos– para la conservación de nuestra biodiversidad y para hacer frente a la amenaza del cambio climático y la desertización.

Se pretende crear esta "trinchera" mediante el establecimiento progresivo de masas arbóreas o de matorral biodiversos, núcleos de dispersión de semillas y cuerpos de agua en localizaciones específicas del litoral de la comarca de Cartagena, cada vez más próximos, que fomenten la generación natural de una barrera forestal conformada por especies adaptadas a los distintos hábitats de la zona y resistente a los incendios, las plagas y la sequía.

Boja barrillera (*Salsola oppositifolia*). Especie propia de suelos muy nitrificados.

Oroval (*Withania frutescens*). Especie iberoafricana.

24 octubre Día Internacional contra el Cambio Climático

13 ACCIÓN POR EL CLIMA

OBJETIVOS DE DESARROLLO SOSTENIBLE

Puerto de Cartagena
Autoridad Portuaria de Cartagena

¿Sabías que...?

La Autoridad Portuaria de Cartagena organiza su primera ruta senderista para las organizaciones de la comunidad, con el objetivo de potenciar la sensibilización y concienciación ambiental en la lucha contra el cambio climático.

Se destacará el conocimiento sobre los valores ambientales y la riqueza de la biodiversidad del entorno portuario, fomentando la conexión con la naturaleza.

La Autoridad Portuaria de Cartagena se une al Día Internacional contra el cambio climático como muestra de su compromiso con el Desarrollo Sostenible

www.apc.es

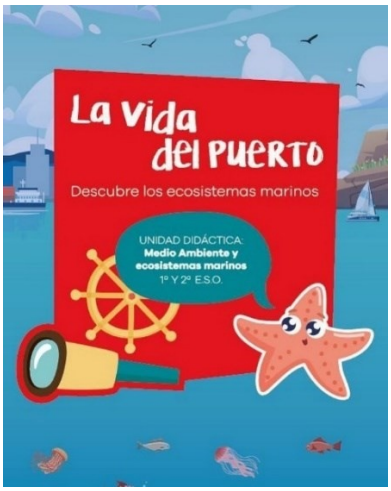
ISO 9001:2015 · ISO 14001:2015 · ISO 45001 · EMAS · club emas región de murcia · ECOPORTS

1st Green Tour with the Port Community and Workers 2023 – International Day Against Climate Change

The APC 2023 Futsal Team, winner of the 26th Interport Futsal Tournament in Villagarcía de Arousa, was honored by the local Jimbee Futsal team, champion of the 2023-24 National League.

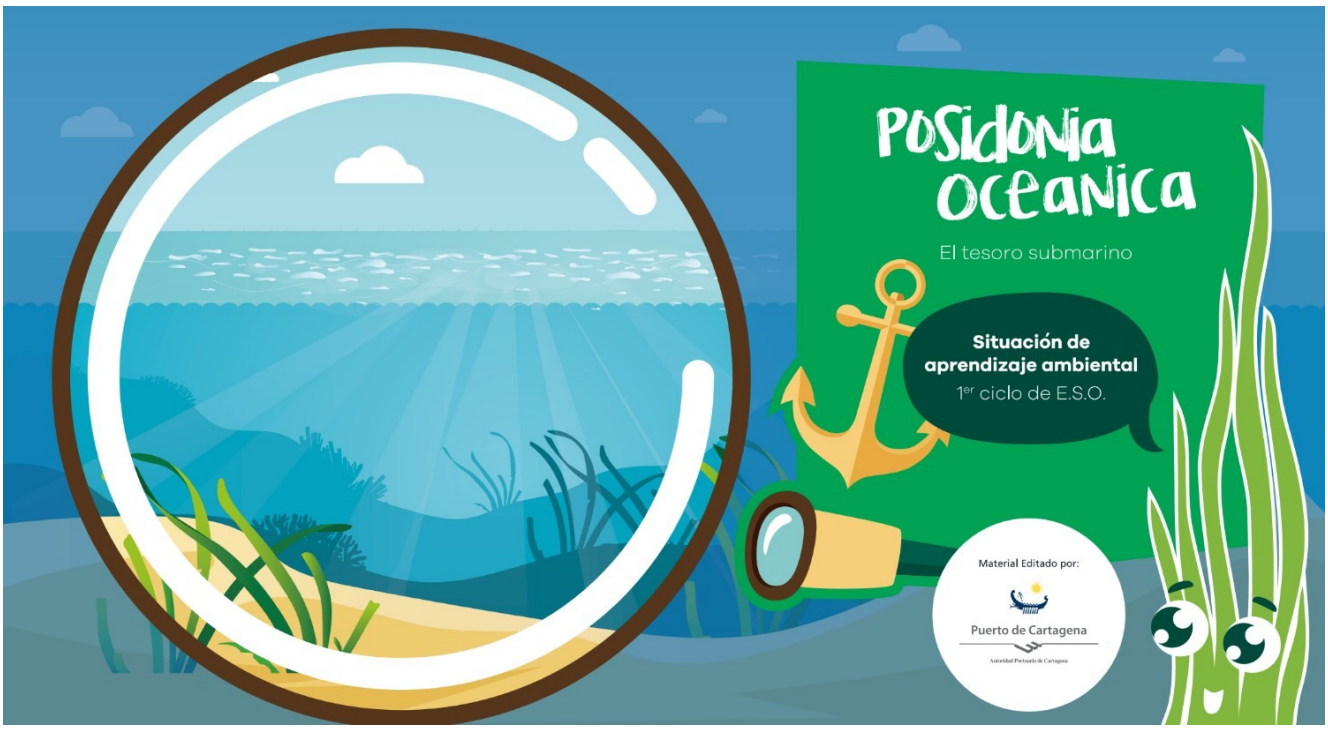
Informative module for primary education "Port Life"

In 2021, an outreach project was launched among primary school students at all schools in the Region of Murcia. An interactive educational module was created for digital distribution, enabling students to explore the biodiversity of the port ecosystem in an educational and fun way.



Educational module for primary education "Posidonia oceanica"

In 2023, a new educational module on Posidonia oceanica was developed and distributed to disseminate and increase awareness among schoolchildren about this environmental treasure.

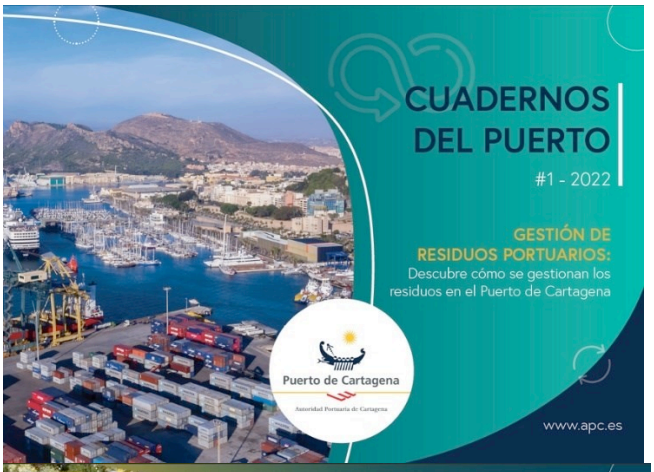


Educational publications for world days and port notebooks

Various posters have been created for world days to emphasize the need to raise awareness about preserving natural resources and protecting the planet from climate change.
"Port Notebooks" are also being produced, specific publications related to unique or particularly interesting environmental issues such as the Escombreras chamomile, the Escombreras lizard, and waste management.


17 mayo Día Mundial del Reciclaje
OBJETIVOS
¿Sabías que...?
- La Autoridad Portuaria de Cartagena tiene un sistema de recogida selectiva de residuos con más de 370 contenedores y espacios de recogida.
- Todas las empresas que operan en la Zona de Servicio del Puerto aplican medidas de gestión ambiental, lo que incluye la gestión y reciclado de residuos.
Todos los buques que atracan en el Puerto de Cartagena entregan sus residuos Marpol para su adecuada gestión conforme a los más altos estándares ambientales.
Puerto de Cartagena
www.apc.es
ISO
EMAS


8 junio Día Mundial de los Océanos
WORLD OCEANS DAY 2022
OBJETIVOS
¿Sabías que...?
La Autoridad Portuaria de Cartagena impulsa la recuperación de los fondos marinos con la primera plantación experimental de Posidonia oceanica en el interior de aguas portuarias.
La parcela de plantación se encuentra ubicada frente al Tajo de Los Cuervos, en el interior de la dársena de Escombreras, a una profundidad media de 10 metros y con el mejor sustrato para la Posidonia.
La Posidonia oceanica está considerada como la mejor planta para fijar CO2, llegando a multiplicar por 4 la capacidad de absorción de los bosques terrestres.
Puerto de Cartagena
www.apc.es
ISO
EMAS


CUADERNOS DEL PUERTO
#1 - 2022
GESTIÓN DE RESIDUOS PORTUARIOS:
Descubre cómo se gestionan los residuos en el Puerto de Cartagena
Puerto de Cartagena
www.apc.es


CUADERNOS DEL PUERTO
#2 - 2023
EL LAGARTO BÉTICO DE LA ISLA DE ESCOMBRERAS:
Descubre los secretos de esta especie única
Puerto de Cartagena
www.apc.es


CUADERNOS DEL PUERTO
#3 - 2023
LA MANZANILLA DE ESCOMBRERAS:
una planta especial en una isla única
Puerto de Cartagena
www.apc.es


CUADERNOS DEL PUERTO
#4 - 2023
LA POSIDONIA OCEANICA:
TESORO SUBMARINO DE CARTAGENA
Puerto de Cartagena
www.apc.es


CUADERNOS DEL PUERTO
#5 - 2024
El valor social del Puerto de Cartagena:
creando riqueza sostenible
Puerto de Cartagena
www.apc.es

Chair of the Environment with the Polytechnic University of Cartagena and the University of Murcia

The Port Authority of Cartagena, aware of the ongoing work that must be done on the environment, launched the Chair of the Environment in July 2015 with the Polytechnic University of Cartagena and the University of Murcia, through the "Mare Nostrum 37/38" International Campus of Excellence, by signing a Collaboration Agreement with both universities.

The creation of this Chair has been configured as a permanent structure of collaboration between the Port Authority, the Polytechnic University of Cartagena and the University of Murcia, aimed at channeling R & D & I actions, technological and scientific, training and informative assistance, in the environmental field.
Its Permanent Committee, composed of representatives from the Port Authority of Cartagena and both universities, is responsible, among other things, for defining and approving the specific objectives of the Chair. and all matters necessary to achieve them, including the activities and projects to be developed, the annual report, and the appointment of associate members of the Chair, institutional collaborators, or external collaborators for the development of specific study, advisory, or research activities.

Since its inception, the Port Authority's activities have been carried out through significant collaboration and involvement in various training, academic, and outreach activities, as well as in research activities of interest to the Port Authority related to the protection, conservation, or improvement of the environment. In particular, the various calls for research projects and professional initiation scholarships, the presentation of awards for Final Degree Projects (FDPs) and Master's Thesis (TFMs), and participation in activities aimed at disseminating and reflecting on all aspects related to the Chair's objectives stand out, primarily in the areas of biodiversity and the responsible management of species and habitats, environmental stewardship of the territory, natural resource management, and the design of measures aimed at the conservation, sustainable use, or improvement and restoration of natural heritage and biodiversity.

Three research projects have been funded in 2023: "Monitorización de la colonización de arrecifes artificiales sostenibles" (Monitoring the Colonization of Sustainable Artificial Reefs) conducted by Carlos J. Parra Costa – Polytechnic University of Cartagena, and "Estudio de impacto paisajístico de la Terminal Portuaria Barlomar" (Landscape Impact Study of the Barlomar Port Terminal.) "Un análisis mediante indicadores de impacto visual basado en los valores intrínsecos de los espacios protegidos de la Red Natura 2000" (An analysis using visual impact indicators based on the intrinsic values of protected areas in the Natura 2000 Network), carried out by Salvador García Ayllón-Veintimilla – Polytechnic University of Cartagena and "Tecnología basada en Inteligencia artificial para difusión y comunicación de actuaciones ambientales" (Technology based on artificial intelligence for the dissemination and communication of environmental actions), carried out by Rodrigo Martínez Bejar – University of Murcia.

Within the framework of this same Chair, the prizes for the best Final Degree projects were awarded to Jesús Cabezos Olmedo, from the Polytechnic University of Cartagena, for his "Simulación de una terminal de contenedores mediante herramienta computacional" (Simulation of a container terminal using a computational tool) and the prize for the best Final Master's project to Antonio Ortolano Muñoz, from the University of Murcia, for his work on "Comparación de métodos de vídeo-censo de peces para su futura aplicación en estudios de poblamiento del mesofótico mediterráneo" (Comparison of video census methods of fish for their future application in studies of population in the Mediterranean mesophotic).

Chair of the Environment Awards Ceremony 16/06/2023

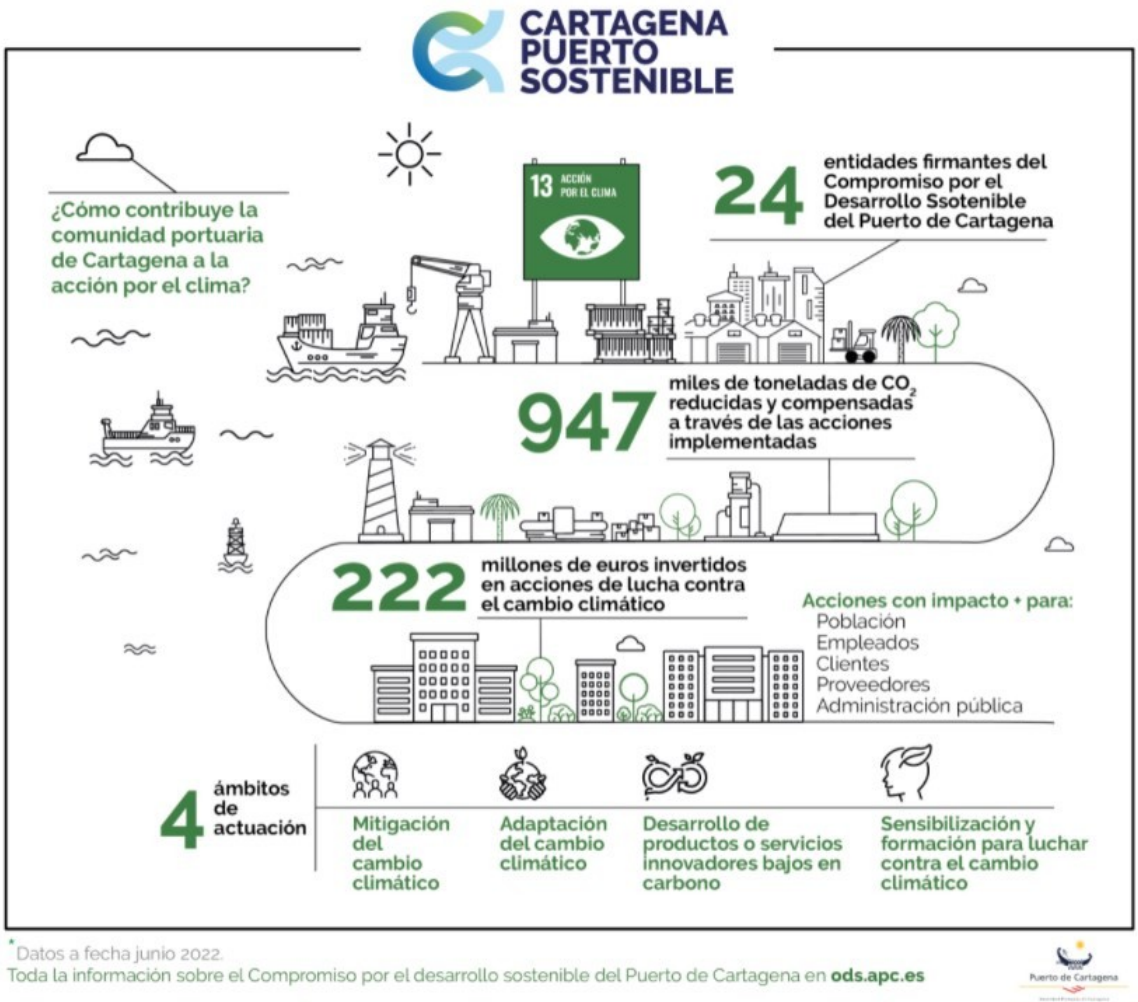
With these projects we continue to promote research by public universities in the Region of Murcia on issues related to the improvement of the port environment, the best techniques available for the development of port activity, while creating a link between students and the partnership with the port that helps us to continue advancing towards sustainability.

More info about SCR on http://www.apc.es/webapc/compromiso/rsc/gestionandors

SDG Portal

In 2020, a web platform called the "Platform for the Sustainable Development of the Port of Cartagena" was created where Port Community companies can exchange experiences and join forces in their commitments to the United Nations Sustainable Development Goals.

This platform represents a further step toward integrating a culture of sustainability into the dynamics of the Port Community and society.



Platform for the Sustainable Development of the Port of Cartagena, 2023 actions:

- Work has been done to promote this initiative; the result has been the creation of three working groups (Circular Economy, Green Purchasing, and Environmental Footprint), the promotion of joint activities among participating companies (the first edition of the Port of Cartagena Green Tour, the preparation of the guidelines for a photography contest), and the holding of an annual conference.
- In turn, an internal platform called "Wallaport" has been created and developed to be used by the companies participating in the platform to contribute to the circular economy.
- "The Value of Sustainability" Conference was held. At the conference held in November, the work carried out by the APC as the first. Spanish port to calculate its integrated social value was highlighted.

  The methodology, results, and future steps were explained. Furthermore, in response to the interest of the platform companies in learning about the financing alternatives available for sustainability projects, various profiles from the public administration were invited to participate to explain the mechanisms for accessing these funds.
- Creation and dissemination of a quarterly information newsletter, which includes, among other things, news, sector-specific publications on sustainability, an agenda with notable events, and information on best practices.

https://ods.apc.es/
https://observatorio.apc.es/wp-content/uploads/2023/09/Guia_ComPortuaria_ODS13_Ed2022_v0_baja-002.pdf

Blue Trail to Calacortina

Renovation of the Blue Trail to the Port of Cartagena.
The Blue Trails are routes that link Blue Flag beaches or ports and contribute positively to the sustainable use of the coastline. For the awarded municipalities it is a recognition of their work in the improvement and restoration of their coastal natural and ethnological heritage. In addition, the Blue Paths play an important social function, as they constitute excellent places for the enjoyment of nature and, also, as backbones for the development, health and well-being of society as a whole. This trail, which connects the Blue Flag marina of the Royal Regatta Club of Cartagena and Calacortina Beach, also Blue Flag, has been awarded a new Blue Flag through an initiative launched by the Port Authority.
In 2023, a contract has been issued to build a new trail parallel to the current one, which will run along the interior of the Santa Ana and Santa Florentina coastal batteries and will be completed in 2024.

Blue Trail to Calacortina

Blue flag award 2023

Acknowledments

Murcia Region Sustainable Development Awards for companies in the years 2007, 2008, 2013, 2017 y 2020.

2007

2008

2017

2020

In 2014, the European Business Awards for the Environment, organized biennially by the Directorate-General for the Environment of the European Commission, were held and developed in Spain by the Biodiversity Foundation, which is part of the Ministry of Agriculture, Food and the Environment.

The Port of Cartagena has obtained second prize in the special category Companies and Biodiversity for the environmental policy applied for years, for being a pioneer among the port system in the areas of sustainability and environmental conservation, and for being the Port Community and its area of influence the ones leading the development of business activity with criteria of respect for the environment and social responsibility.

Awards Ceremony, June 5, 2014

In 2015, nomination for the European EMAS Awards in the Small Organizations category, presented in Barcelona on May 20, 2015.

EMAS
www.emas.eu

Further information on : http://ec.europa.eu/environment/emas/emas_for_you/news/news_en.htm

Recognition by the Government of Spain as an example of good environmental management within the framework of public administration, to the Port Authority of Cartagena, specifically in the **II General Report on the status of Green Public Procurement in the General State Administration, its Public Agencies and Social Security Management Entities, June 2015.**
Report available at:
https://www.miteco.gob.es/es/ministerio/planes-estrategias/plan-de-contratacion-publica-ecologica/segundoinformegeneralsobreelestadodelacontratacionpublicaverdeenlaage_tcm30-88970.pdf

In 2016, it was a finalist in the ESPO (European Sea Ports Organisation) Awards, which in its 2016 edition focused on environmental management in European ports. The five finalist ports were Bremen, Cartagena, Riga, Dunkirk and Guadeloupe.

Cartagena was the only finalist port in the Mediterranean for this edition, where the German port of Bremen finally won. In order to participate in this award, you must belong to ESPO and have ECOPORTS seal of environmental management.

http://www.espo.be/news/espo-award-2016-shortlisted-projects-port-of-carta
http://www.espo.be/news/bremenports-wins-espo-award-2016

And in 2019, in recognition of our commitment to the environment and society over the past 10 years, we were awarded the European Union EMAS Awards for Micro and Small Public Organizations. The award ceremony was held on November 25, at Guggenheim Museum in Bilbao.

https://ec.europa.eu/environment/emas/emas_for_you/emas_awards/emas_awards_2019_en.htm

Emas Awards 2019 - 25/11/2019

Ecoports Certificate Renewal, October 2021

IAPH Awards 2021 Finalists

ESPO AWARD 2023 Finalists

https://portusonline.org/espo-award-2023-nature-restoration-projects-in-europes-ports-brussels-belgium-november-2023

Winner of the 2023 Corresponsables Awards in the Public Administrations and Companies category

https://www.corresponsables.com/int/organizaciones/corresponsables/mas-de-135900-personas-se-conectan-gala-de-los-xiv-premios-corresponsables

IAPH 2023 Sustainability Awards Candidates

14 Verification and validation

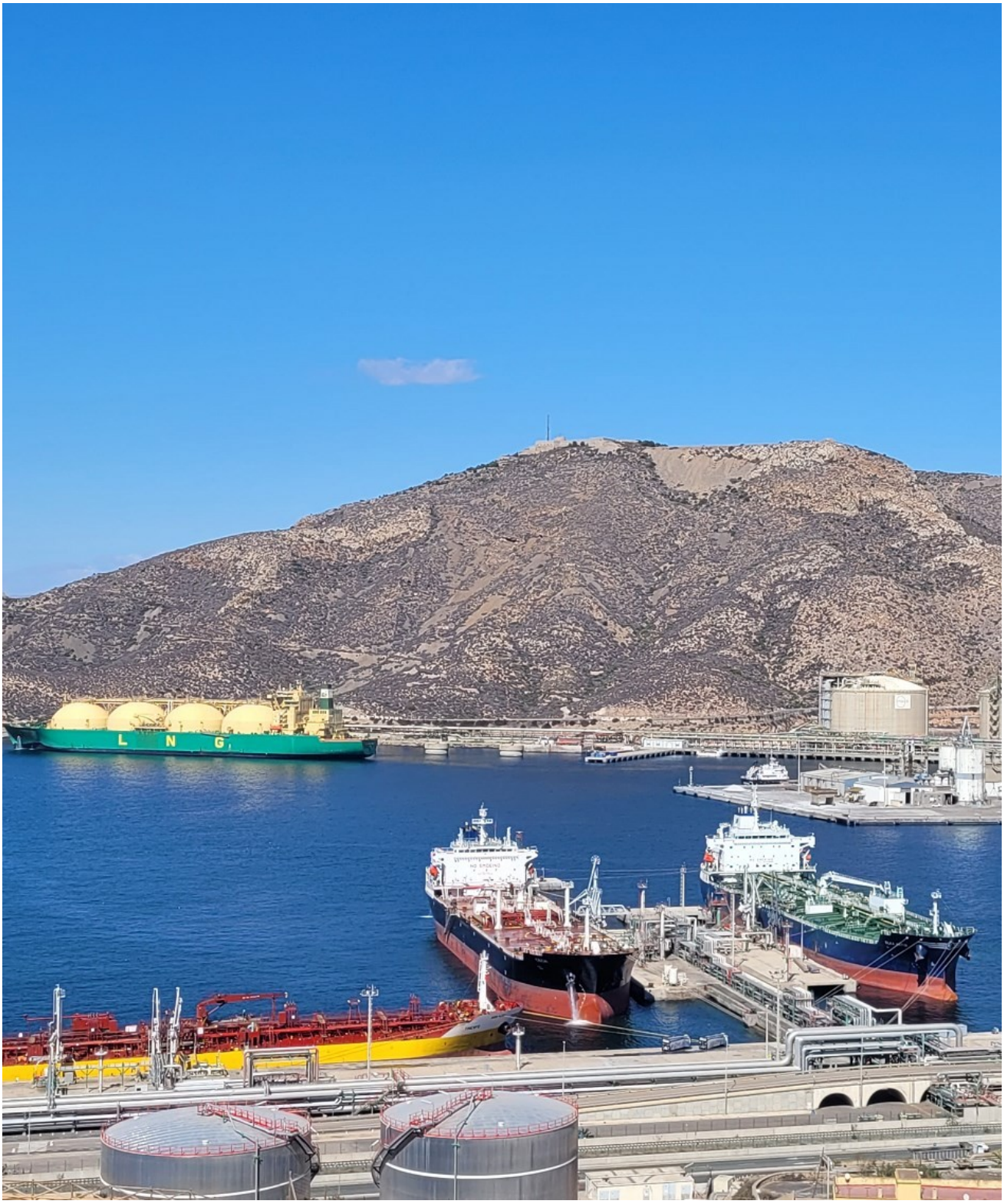
This Environmental Declaration has been verified:

- In external audit, carried out by the Verifying Body: Bureau Veritas Iberia, S.L. Verifier:
  No.: ES-V-0003

This Environmental Declaration will be updated in successive annual declarations, which will be validated by an accredited entity and submitted to the Regional Administration.

The information on this 2023 Environmental Declaration will be available on the Cartagena Port Authority website http://www.apc.es , in Spanish and English, and can also be requested from Customer Service at:

Cartagena Port Authority
Plaza Héroes de Cavite, s/n - 30.201 – Cartagena - Murcia Tel.:
+34 968 325800 - Fax: +34 968 325815 - e-mail SAC:
sac@apc.es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15 Annexes

BUREAU VERITAS

Bureau Veritas Certification

Certificación

Concedida a

AUTORIDAD PORTUARIA DE CARTAGENA

PLAZA HÉROES DE CAVITE S/N – 30201 – CARTAGENA – MURCIA - ESPAÑA

Bureau Veritas Certification certifica que el Sistema de Gestión ha sido auditado y encontrado conforme con los requisitos de la norma:

NORMA

ISO 14001:2015

El Sistema de Gestión se aplica a:

ADMINISTRACIÓN, GESTIÓN Y CONTROL DE SERVICIOS E INFRAESTRUCTURAS DEL PUERTO DE CARTAGENA, DE ACUERDO A LAS LEYES VIGENTES EN EL SISTEMA PORTUARIO ESPAÑOL DE TITULARIDAD ESTATAL.

Número del certificado:	ES131661-1
Fecha de certificación inicial con otra Entidad de Certificación:	02-09-2004
Aprobación original:	26-07-2022
Certificado en vigor:	26-07-2022
Caducidad del certificado:	01-09-2022

Este certificado está sujeto a los términos y condiciones generales y particulares de los servicios de certificación

Bureau Veritas Iberia S.L.
C/ Valportillo Primera 22-24, Edificio Caoba, 28108 Alcobendas - Madrid, España
1/1

ENAC
CERTIFICACIÓN
Nº 03/C MA007

BUREAU VERITAS

Bureau Veritas Certification

Certificación

Concedida a

AUTORIDAD PORTUARIA DE CARTAGENA

PLAZA HÉROES DE CAVITE S/N – 30201 – CARTAGENA – MURCIA - ESPAÑA

Bureau Veritas Certification certifica que el Sistema de Gestión ha sido auditado y encontrado conforme con los requisitos de la norma:

NORMA

ISO 45001:2018

El Sistema de Gestión se aplica a:

ADMINISTRACIÓN, GESTIÓN Y CONTROL DE SERVICIOS E INFRAESTRUCTURAS DEL PUERTO DE CARTAGENA, DE ACUERDO A LAS LEYES VIGENTES EN EL SISTEMA PORTUARIO ESPAÑOL DE TITULARIDAD ESTATAL.

Número del certificado:	ES131660-1
Fecha de certificación inicial con otra Entidad de Certificación:	12-11-2020
Aprobación original:	26-07-2022
Certificado en vigor:	26-07-2022
Caducidad del certificado:	01-09-2022

Este certificado está sujeto a los términos y condiciones generales y particulares de los servicios de certificación

Bureau Veritas Iberia S.L.
C/ Valportillo Primera 22-24, Edificio Caoba, 28108 Alcobendas - Madrid, España
1/1

ENAC
CERTIFICACIÓN
Nº 04/C-SG029

Bureau Veritas Certification

Certificación

Concedida a

AUTORIDAD PORTUARIA DE CARTAGENA

PLAZA HÉROES DE CAVITE S/N – 30201 – CARTAGENA – MURCIA - ESPAÑA

Bureau Veritas Certification certifica que el Sistema de Gestión ha sido auditado y encontrado conforme con los requisitos de la norma:

NORMA

ISO 9001:2015

El Sistema de Gestión se aplica a:

ADMINISTRACIÓN, GESTIÓN Y CONTROL DE SERVICIOS E INFRAESTRUCTURAS DEL PUERTO DE CARTAGENA, DE ACUERDO A LAS LEYES VIGENTES EN EL SISTEMA PORTUARIO ESPAÑOL DE TITULARIDAD ESTATAL.

Número del certificado:	ES131659-1
Fecha de certificación inicial con otra Entidad de Certificación:	04-12-1996
Aprobación original:	26-07-2022
Certificado en vigor:	26-07-2022
Caducidad del certificado:	01-09-2022

Este certificado está sujeto a los términos y condiciones generales y particulares de los servicios de certificación

Bureau Veritas Iberia S.L.
C/ Valportillo Primera 22-24, Edificio Caoba, 28108 Alcobendas - Madrid, España
1/1

ENAC CERTIFICACIÓN Nº 04/C-SC004

Bureau Veritas Certification

Validación de la declaración Ambiental (EMAS)

Realizada en:

AUTORIDAD PORTUARIA DE CARTAGENA

MURCIA

PLAZA HEROES DE CAVITE, S/N – 30201 – CARTAGENA

Bureau Veritas expone que la Declaración Ambiental de dicha Organización ha sido validada en base a la documentación, datos e información evaluados durante el proceso de verificación, y se ajusta a los requisitos del Sistema Europeo de gestión y auditoría medioambiental EMAS conforme con:

Reglamento Europeo (CE)1221/2009 modificado por los Reglamentos (UE)2017/1505 y (UE)2018/2026

La actividad descrita y en la que se basa en la Declaración Ambiental es:

ADMINISTRACIÓN, GESTIÓN Y CONTROL DE SERVICIOS E INFRAESTRUCTURAS DEL PUERTO DE CARTAGENA DE ACUERDO A LAS LEYES VIGENTES EN EL SISTEMA PORTUARIO ESPAÑOL DE TITULARIDAD ESTATAL.

Fecha de Validación: 26-09-2022

Número del Certificado ES132164-1

El presente documento no equivale al registro en EMAS. El registro en EMAS solo puede ser otorgado por un organismo competente en virtud del Reglamento (CE) nº 1221/2009. El presente documento no servirá por sí solo para la comunicación pública independiente.

Managing office: BUREAU VERITAS CERTIFICATION SA
Issuing office: BUREAU VERITAS CERTIFICATION SA
C/ Valportillo Primera 22-24
Edificio Caoba, Pol. Ind. La granja
28108 Alcobendas Madrid

Regulation reference

The main legal regulations applicable to the activity are listed below:

- ✓ Royal Legislative Decree 2/2011, of September 5, which approves the Consolidated Text of the Law on State Ports and the Merchant Marine.
- ✓ Law 26/2007 of October 23 on Environmental Responsibility.
- ✓ R.D. 2090/2008 regulation on the partial development of the law 26/2007 on Environmental Responsibility.
- ✓ Law 7/2022 on waste and contaminated soil and Royal Decree 553/2020 on the transfer of waste within the State
- ✓ Royal Decree 952/1997 by which the regulation for the execution of the basic law 20/86 of toxic and dangerous waste is modified.
- ✓ Order 304/2002, dated 02/08/2002, MAM: The Waste Recovery and Disposal operations and the European Waste List are published. (Spanish Official Gazette nº 43, of 19/02/2002)
- ✓ Royal Decree 9/2005, of 01/14/2005, establishes the list of Potentially Contaminant Soil Activities and the Criteria and Standards for the declaration of Contaminated Soils. (Spanish Official Gazette nº 15, of 18/01/2005)
- ✓ Law 34/2007, of 15/11/2007, On Air Quality and Atmosphere Protection. (Spanish Official Gazette nº 275, of 16/11/2007)
- ✓ Law 42/2007, on Natural Heritage and Biodiversity. (Spanish Official Gazette nº299 of 14/12/2007)
- ✓ Decree 833/1975, of 06/02/1975, Developing the Law 38/1972, of December 22, on the Protection of the Atmospheric Environment. (Spanish Official Gazette nº 96, of 22/04/1975)
- ✓ Royal Decree 100/2011, of January 28, updating the catalogue of potentially polluting activities in the atmosphere and establishing the basic provisions for its application.
- ✓ Royal Decree 102/2011, of January 28, relative to the improvement of air quality.
- ✓ Law 37/2003, of 17/11/2003, on noise. (Spanish Official Gazette nº 276, of 18/11/2003)
- ✓ Royal Decree 1513/2005, of December 16, developing Law 37/2003, of November 17, on Noise, in relation to the evaluation and management of environmental noise.
- ✓ Royal Decree 1367/2007, of October 19, developing Law 37/2003, of November 17, on noise, in relation to acoustic zoning, quality objectives and acoustic emissions
- ✓ Royal Legislative Decree 1/2001, of 20/07/2001, The Consolidated Text of the WATER Law is approved. (Spanish Official Gazette nº 176, of 24/07/2001)
- ✓ Royal Decree 60/2011, of January 21, on environmental quality standards in the field of water policy.
- ✓ Royal Legislative Decree 1/2008, of 11/01/2008, The revised text of the Law on Environmental Impact Assessment of projects is approved. (Spanish Official Gazette nº 23, of 26/01/2008)
- ✓ Law 6/2010, of March 24, modifying the consolidated text of the Law on Environmental Impact Assessment of projects, approved by Legislative Royal Decree 1/2008, of January 11.
- ✓ Royal Decree 128/2022 on Port Facilities for the Reception of Waste Generated by Ships.
- ✓ Law 11/2012, of December 19, on urgent measures in the field of the environment.
- ✓ R.D. 1695/2012, of December 21, approving the National Marine Pollution Response System, which repeals R.D. 253/2004 of February 13.
- ✓ Law 5/2013, of June 11, which modifies Law 16/2002, of July 1, on prevention and integrated control of pollution and Law 22/2011, of July 28, on waste and contaminated soils
- ✓ Law 21/2013 of October 9 on Environmental Assessment.
- ✓ R.D. 594/2014, of July 11, approving the Hydrological Plan of Segura River Basin District.
- ✓ Royal Decree 817/2015, of September 11, which establishes the criteria for monitoring and evaluating the state of surface waters and environmental quality standards. Local Government Regulation 5.1-2013 water quality control.
- ✓ International Convention to Prevent Pollution from Ships, of November 2, 1973 (MARPOL CONVENTION) and its subsequent regulatory developments
- ✓ Royal Decree 487/2022, of July 4, which establishes the sanitary hygiene criteria for the prevention and control of legionellosis.
- ✓ Royal Decree 3/2023, of February 7, which establishes the sanitary criteria for the quality of water for human consumption.
- ✓ ROYAL DECREE 1367/2007, of 19/10/2007, which develops Law 37/2003, of November 17, on Noise, in relation to acoustic zoning, quality objectives and acoustic emissions (Spanish Official Gazette 254 of 23/10/2007).
- ✓ Law 7/2022, of April 8, on waste and contaminated soil for a circular economy. Among

the most significant environmental authorizations and obligations, the following stand

out:

- ✓ Registration as a Small Producer of Hazardous Waste
- ✓ Authorization of discharges to the sewer system

EMAS

CERTIFICADO DE INSCRIPCIÓN EN EL REGISTRO

La Consejería de Agricultura y Agua, certifica que el centro de la organización:

AUTORIDAD PORTUARIA DE CARTAGENA

situado en Plaza Héroes de Cavite S/N, 30201 Cartagena

ha sido registrado con el número

ES-MU-000017

De acuerdo al Reglamento (CE) Nº 761/2001 del Parlamento Europeo y del Consejo, de 19 de marzo de 2001, por el que se permite que las organizaciones se adhieran con carácter voluntario a un sistema comunitario de gestión y auditoría medioambientales (EMAS) para las actividades de:

"ACTIVIDADES ANEXAS AL TRANSPORTE MARÍTIMO"

Fecha de la inscripción: 18 de agosto de 2008.

Consejería de Agricultura y Agua
Región de Murcia
Dirección General de Planificación, Evaluación y Control Ambiental

Región de Murcia

PLANIFICACIÓN, EVALUACIÓN Y CONTROL AMBIENTAL

Firmado
EL DIRECTOR GENERAL DE PLANIFICACIÓN, EVALUACIÓN Y CONTROL AMBIENTAL

(*)La validez del presente Certificado de Inscripción en el Registro EMAS está condicionada al mantenimiento de la organización en el citado registro, así como a la renovación del mismo, mediante resolución expresa otorgada por el Organismo Competente. En caso de cancelación, se debe entregar el presente Certificado ante dicho Organismo Competente.

Puerto de Cartagena

Autoridad Portuaria de Cartagena

Scopoli's shearwater *(Calonectris diomedea)*

Environmental Declaration 2023

GOBIERNO DE ESPAÑA
MINISTERIO DE TRANSPORTES Y MOVILIDAD SOSTENIBLE

Puertos del Estado

EMAS

EMAS AWARDS
WINNER 2019
Micro and small
Public organisations

SISTEMA DE ECOGESTIÓN Y ECOAUDITORÍA

Desarrollo Sostenible
Región de Murcia

ECOPORTS

OBJETIVOS DE DESARROLLO SOSTENIBLE