Layman's report LIFE SeaBiL

Evaluate and reduce marine litter impact on seabirds

3 years of action to tackle plastic pollution

2021 – 2024

LIFE 20 GIE/FR/000114

Context: plastic pollution and seabirds

Plastic was popularized in the 1960s, revolutionized industries due to its durability, versatility, and low production cost. Widely used in food and sanitary sectors for hygiene and traceability, its short life span and long-lasting nature have created a major environmental crisis. Once discarded, plastic breaks down into micro and nanoparticles but never fully disappears, posing a severe threat to marine ecosystems.

Each year, **415 million tons of plastic are produced**[1] globally, with **over 14 million tons** ending up in the oceans . Marine litter has devastating effects on biodiversity. Studies estimate that 90% of seabirds currently have plastic in their stomachs, a figure expected to rise to 99% by 2050 without intervention . Plastic ingestion causes suffocation, asphyxiation, and can create a false sensation of fullness, leading to starvation. A newly discovered condition, “plasticosis,” highlights the scarring of stomach tissues caused by plastic ingestion, harming and killing seabirds.

Plastic pollution’s indirect impacts are equally concerning. Fragments often infiltrate nests, endangering chicks, while habitat damage can occur during cleanup efforts. Despite these threats, much remains unknown about the long-term effects of plastic on seabirds.

The LIFE SeaBiL project, funded by the European Union’s LIFE program, aims to bridge this knowledge gap. By uniting partners to study and mitigate plastic’s impacts, the project contributes to global efforts to safeguard biodiversity and protect marine ecosystems.

What is a LIFE project ?

Since 1992, the LIFE program (The Financial Instrument for the Environment) has been the European Commission’s financial tool supporting projects in the fields of environment and climate. These projects are referred to as «LIFE projects.»

It is aimed at both public and private project sponsors and seeks to promote and fund innovative projects, such as those focused on the conservation of species and habitats, soil protection, improving air or water quality, waste management, or addressing climate change through mitigation or adaptation.

OBJECTIVES

Throughout the LIFE SeaBiL adventure, the LPO and its partners have notably:

- Worked to train numerous stakeholders in low footprint beach clean-ups practices.
- Established a transnational monitoring network for collecting stranded seabirds, storing them in care centers, and analyzing them in laboratories.
- Identified the sources of plastic pollution by training operators in standardized marine litter monitoring protocols and collaborating with local authorities on an action plan to reduce waste at its source.
- Raised awareness among the public.

415 million tons
of plastic produced each year globally

LIFE SEABIL PROJECT

Within the context of the fight against marine pollution, the LIFE SeaBiL Project “Saving SeaBirds from marine Litter” intends to evaluate and reduce the impact of plastic pollution on seabirds. The project involves 5 pilot sites in France, Spain and Portugal. It is coordinated by Ligue pour la Protection des Oiseaux (LPO) in France and brings together **4 Associated beneficiaries:**

- LIENSs (research unit of La Rochelle University and CNRS)
- University of Almería, replaced during the project by University of Cadiz
- Sociedad Española de Ornitología/Birdlife (SEO BIRDLIFE)
- Sociedade Portuguesa para o Estudo das Aves (SPEA BIRDLIFE)

Duration : October 2021 – December 2024
Budget : 1 076 352 €

Objective 1: Collecting data and training stakeholders to low impacts beach clean-ups

Plastics directly harm seabirds through strangulation, suffocation, and invasive species transport. Less well-known effects include chemical pollution, reproductive issues, and endocrine disruption. Indirectly, plastics pollution also impacts biodiversity. For instance, beach clean-ups, while combating marine litter, can disturb shorebirds like **Kentish plovers by trampling nests and causing disruption.**

Although clean-ups allow collecting data to monitor plastic pollution, poorly coordinated efforts can also inadvertently harm the beach ecosystems, such as the dunes.

To address this, we created a **Beach clean-up guide** for natural area managers and clean-up organizers. It outlines best practices, highlighting sensitive areas (e.g., upper beach) and periods (e.g., nesting season from march to august) to avoid. A risk map identifying nesting areas at pilot sites complements the guide, highlighting areas to be avoided during nesting times.

Training sessions on using these tools were held to ensure effective and eco-friendly beach cleaning efforts. In total, **56 beach clean-ups** took place in the different project pilot sites, as well as an online training in each country.

1 beach clean-up guide and local risks maps

56 beach clean-ups in total
1 263 volunteers involved

1,8 tons of marine litter collected

139 stakeholders trained

Download the LIFE SEABIL guide

Citizen data collection for science

Citizen science is crucial for large-scale environmental data collection. Monitoring oil spills, fishing debris, and seabird mortality helps address root causes. Despite existing tools in Europe, **stranded seabird data is scarce**, though they are key pollution indicators. Initiatives like Faune France, managed by the LPO, focus on general bird monitoring but lack large-scale stranded seabird tracking.

As part of LIFE SeaBil, SEO manages the ICAO app for tracking stranded seabirds, but its complexity limited use. The project adapted ICAO, making it widely accessible to citizens in France, Spain, and Portugal. ICAO now easily records seabird and marine fauna mortality, identifies causes, locations, and species, highlights threats.

Linked to **MARNOBA**, a marine litter monitoring tool, ICAO enables data collection on seabirds and marine litter, addressing interconnected issues and enhancing environmental monitoring.

1 mobile application for monitoring stranded seabirds in the three countries

1619 registered users on ICAO

More than **3500** kms ranged by the volunteers through ICAO app

Download ICAO App

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Objective 2: Analyzing plastic's impact on seabirds by structuring a stranded sebirds' network

The stranded seabirds' network

Adopted in 2008, the EU **Marine Strategy Framework Directive** requires member states to restore or maintain marine ecosystem health and assess the **good environmental status** of maritime areas. However, the impacts of plastic pollution on seabirds remain speculative due to limited data, despite their value as ecological indicators.

For over 40 years, the Ornithological Group of Normandy has coordinated a stranding network in Normandy and the Channel–North Sea coast, using **Northern Fulmar** for plastic pollution and Common Guillemot for oil pollution, contributing to EU indicators. LIFE SeaBiL duplicated this network to France, Portugal and Spain, identifying new indicator species for the region.

LIFE SeaBiL **established five local stranding networks** at pilot sites, forming a large transnational monitoring system. Volunteers collected stranded seabirds and data via the ICAO app, which were sent to care centers and then to La Rochelle and Cadiz Universities for tissue analysis. Monitoring and logistics followed protocols developed by LIFE SeaBiL under specific authorizations. In Portugal, SPEA monitored seabirds' colonies at Berlengas.

88 networked structures (27 care centers, 14 Natura 2000 managers, 20 scientific partners, 27 volunteer's structures)

More than 500 seabirds collected between all countries for analysis

More than 440 active volunteers part of the network in the different countries

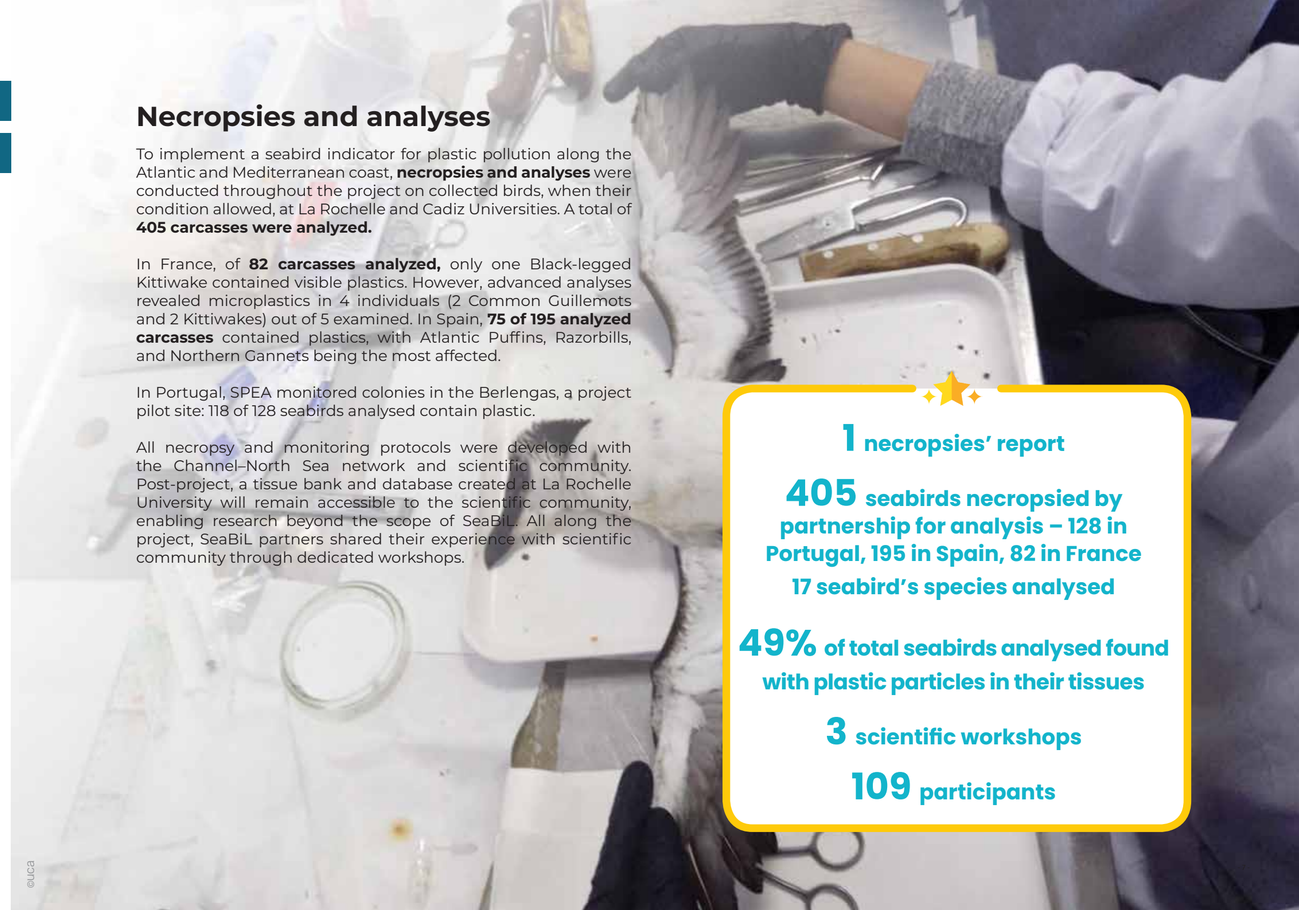
Necropsies and analyses

To implement a seabird indicator for plastic pollution along the Atlantic and Mediterranean coast, **necropsies and analyses** were conducted throughout the project on collected birds, when their condition allowed, at La Rochelle and Cadiz Universities. A total of **405 carcasses were analyzed.**

In France, of **82 carcasses analyzed,** only one Black-legged Kittiwake contained visible plastics. However, advanced analyses revealed microplastics in 4 individuals (2 Common Guillemots and 2 Kittiwakes) out of 5 examined. In Spain, **75 of 195 analyzed carcasses** contained plastics, with Atlantic Puffins, Razorbills, and Northern Gannets being the most affected.

In Portugal, SPEA monitored colonies in the Berlengas, a project pilot site: 118 of 128 seabirds analysed contain plastic.

All necropsy and monitoring protocols were developed with the Channel–North Sea network and scientific community. Post-project, a tissue bank and database created at La Rochelle University will remain accessible to the scientific community, enabling research beyond the scope of SeaBiL. All along the project, SeaBiL partners shared their experience with scientific community through dedicated workshops.



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1 necropsies' report

405 seabirds necropsied by partnership for analysis – 128 in Portugal, 195 in Spain, 82 in France

17 seabird's species analysed

49% of total seabirds analysed found with plastic particles in their tissues

3 scientific workshops

109 participants

Objective 3: Reducing marine litter at its source

Monitoring marine litter

Marine litter is often blamed on incivility, but most of it comes from inland, carried to coasts and oceans by water cycles and wind. Nearly 75% of marine litter is invisible, lying on the seabed or in midwater. Tackling this issue requires identifying and containing pollution at its source.

In France, associations and operators use **OSPAR** (Convention for the Protection of the Marine Environment of the North-East Atlantic) **protocols to monitor and identify marine litter.**

Spain has integrated stranded seabirds into its monitoring efforts, addressing litter and wildlife impacts simultaneously. The LIFE SeaBiL Project fosters transnational dialogue to **harmonize French and Spanish protocols**, ensuring consistent litter categorization across Europe, and specific analyse on 7 beaches in Spain and France.

Additionally, France has tested and adapted **a new protocol for analyzing mesoplastics and large microplastics** in collaboration with CEDRE, a scientific organization specializing in water pollution monitoring.

1 marine litter repository

1 analysis report of MSFD/OSPAR marine litter data

7 beaches monitored with MSFD/ OSPAR protocol

94 % of marine litter found on the monitored beaches was plastic

2 384 meso and microplastics found every 100 meters with CEDRE protocol

Preventing marine litter at its source

Tidal bins offer a hybrid solution for marine litter by combining characterization and active cleaning. In France, local associations and seaside cities installed them along the Charente-Maritime coast, sharing insights with LIFE SeaBIL partners. Following their advice, **5 tidal bins** were placed on **5 Spanish beaches** by SEO and UCA. These bins engage beachgoers in litter collection, raising awareness while improving marine litter characterization, as their contents are analysed locally. In Spain, the most common items found were bottle caps, nets, and plastic pieces.

In France, LPO collaborated with three towns and several stakeholders to develop an action plan tackling marine litter at its source. Designed within a sustainable development framework, it addresses economic, social, and environmental concerns while recommending measures to prevent marine litter to spread into the environment. **The plan includes 28 action** sheets identifying pollution sources and proposing solutions to reduce them to local cities.

5 tidal bins installed in Spain

560 kgs collected in tidal bins in Spain

1 action plan to prevent marine litter at its source

1 technical guide on how to build an action plan

Objective 4: Sensibilize general public

Raising awareness

Plastic pollution is a major environmental challenge that demands industrial adaptation and legislative reforms. However, consumers also have an important role in tackling this issue by reducing their plastic consumption and supporting organizations that advocate for stronger regulations and corporate responsibility.

Raising awareness is therefore essential to driving change. Throughout the project, SeaBiL partners actively informed the public while emphasizing the need to reduce plastic pollution at its source. We hosted informational stands, wrote articles, organised expositions, and participated in conferences. Special attention was given to younger generations through school interventions, hands-on activities for children and teenagers, and film debates involving over 400 participants. To further engage and educate youth, we also published a dedicated edition of Oiseau Magazine Junior, fostering a deeper understanding of plastic pollution and its environmental consequences.

57 informative stands

2 356 persons directly impacted

21 informative panels on marine litter dangers at beaches

2 200 subscribers received a special edition of L'Oiseaux mag Junior about plastic impact on seabirds

Throughout the LIFE SeaBiL project, partners closely monitored its impact on biodiversity and marine ecosystems. They tracked volunteer participation in beach clean-ups, the amount of waste collected, and, most importantly, changes in Kentish plover populations. Specific protocols were improved and harmonized to ensure population stability at pilot sites. During the COVID-19 pandemic, Kentish plover numbers increased significantly, highlighting that disturbance and nest trampling are major threats to the species.

SeaBiL monitoring suggests that populations are stabilizing at project sites, with some even increasing. In 2023-2024, over 32 breeding pairs were observed during breeding season at Ebro Delta, while numbers at Cabo de Gata rose from 10 pairs in 2022 to 40 in 2024. In France, progress was even stronger, with breeding pairs growing from 61 in 2022 to 209 in 2024 at the pilot site. While reproductive success varies, more breeding pairs improve survival chances. Beyond SeaBiL, public awareness efforts, particularly in France, demonstrate that informed communities can contribute to species conservation.

3 500 persons directly sensibilized to Kentish plovers' preservation

38 beach clean-ups associations sensibilized to Kentish plovers and beach ecosystems preservation

Coordinator

Beneficiaries

Financial partners