

Multidisciplinary Approach for the Study of Plastic Litter Pollution in Mediterranean Ecosystems



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Marine litter pollution is one of the greatest global challenges facing the environment and humanity. Particular attention has been paid by the scientific community to the issue of plastic pollution and its wide range of economic, social, and environmental impacts.

In this context, the semi-closed basin of the Mediterranean Sea has been described as one of the most affected and threatened areas by marine litter in the world. Despite the efforts of the scientific community to improve knowledge on various aspects of plastic pollution and the need to provide new management measures to address this phenomenon, many gaps remain to be filled in its effects, policies, and potential solutions in the Mediterranean context.

The Summer School PLASTMed was conceived to address plastic pollution in the Mediterranean area through a **multidisciplinary approach**: the course will explore the **ecological, biotechnological and toxicological aspects of plastic pollution** through lectures by leading experts and field and laboratory activities. **Possible solutions** to reduce the impact of plastics by considering both new technological applications and bioplastic challenges will also be discussed.

Open to: graduate and PhD students and early career researchers.

The course will be a personal and professional enrichment for participants, both in terms of thematic insights and in the creation of new collaborative networks.

PROGRAMME

DAY 1

Plastic pollution in the Mediterranean basin



Session 1 - "Plastic pollution challenge in the Mediterranean Sea"

Participants will be introduced to the Summer School topic by an overview of the current state of plastic pollution in the Mediterranean basin: contamination levels, policies, and analytical techniques.

Session 2 - "Plastic monitoring approach in the Mediterranean marine environment"

Lectures from experts will address monitoring approaches and Conservation Measures (CM) to combat plastic litter in marine environments at Mediterranean level.

DAY 2

Plastic at the sea-surface



Session 1 - "Field experience"

Sampling activities will be carried out for the collection of plastic from environmental matrices including seawater.

Session 2 - "Approaches to the study of floating litter and its impacts"

Lectures will be focused on the distribution and accumulation of plastic in the surface waters of the Mediterranean Sea, on drivers involved in the transport and accumulation of floating litter and on plastisphere as a new challenge ecosystem for microbial life.

Session 3 - "Laboratory experience"

Laboratory sessions will be devoted to extracting and identifying plastics from seawater samples using the FT-IR spectroscopy technique, as well as isolating and characterizing bacterial communities on plastics. Approaches to the study of floating litter and its impacts will also be introduced.

DAY 3

Plastic on the seabed and in marine organisms



Session 1 - "Seafloor litter: impacts on habitats and species"

Lectures will focus on both deep and shallow habitats. The importance of studying the nature, presence or abundance of marine litter on the seafloor, which is less investigated than on the sea surface, especially as depth increases, will be discussed.

Laboratory activities will include extraction and detection of plastics from sediment samples and identification by FT-IR spectroscopy.

Session 2 - "Plastic ingestion: impacts on marine organisms and ecosystems"

The plastic ingestion by marine biota represents one of the main pathways for the uptake, bioaccumulation of plastic as well as the transfer of pollutants into the organisms. In this session, the effects and the consequent biomagnification along the trophic web will be addressed.

Laboratory activities will focus on isolation of plastics from marine organisms and for the identification of polymers by FT-IR spectroscopy, as well as in a special mesocosm experiment session. The students will gain skills for the maintenance of organisms and the control of environmental parameters in mesocosm conditions.

DAY 4

Plastic solutions



Session 1 - "Insights on potential solutions and technological applications"

Students will be engaged in sessions on possible solutions to mitigate plastic pollution. Special attention will be paid to the patented system focusing on reducing the release of microplastics and microfibres from domestic laundering.

Session 2 - "A glimpse into the future: the challenge of biopolymers application"

The challenge of the application of biopolymers will be dealt with. In this regard, different aspects of the possible applications of biopolymers in fisheries and aquaculture sectors and their potential implications in the marine environment will be discussed.

N.B. Programme may be subject to modifications.

Expert SPEAKERS on the topic



Dr. Francois Galgani



Prof. Maria Cristina Fossi



Dr. Manuel Bensi



Prof. Damià Barceló



Dr. Salud Deudero



Dr. Giuseppe Suaria



Prof. Silvestro Greco will introduce his book "La plastica nel piatto". Giunti, Slow Food Editore.

Registration fee:

Early registration (until June 28 th)	€ 300
Late registration (until August 26 th)	€ 350
Remote participation	€ 150

We will accept a **maximum number of 20 participants**, plus **10 online**, selected following the order of the registration requests. The school will take place upon the participation of a **minimum of 15 participants**.

Application deadlines:

Submit your CV and motivation letter to summerschool.crimac@szn.it by **August 26th**.

You will receive an acceptance e-mail by **August 30th** with the **registration form** and all the instructions to complete your application.

Payment will be due by September 5th.

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