

Journal of Biological Research

Bollettino della Società Italiana di Biologia Sperimentale



**Primo simposio di Biologia Sperimentale
applicata al mare e all'ambiente**

*First symposium on experimental biology:
sea and environment*

Trapani, Italy, 24-25 May 2019

ABSTRACT BOOK

www.jbiolres.org

jbr

Journal of Biological Research

Bollettino della Società Italiana di Biologia Sperimentale

eISSN 2284-0230

EDITORS IN CHIEF

Marco Giammanco (*University of Palermo, Italy*)

Gian Luigi Mariottini (*University of Genoa, Italy*)

ASSOCIATE EDITORS

Renzo Antolini (*University of Trento, Italy*)

Massimo Cocchi (*President of SIBS, University of Bologna, Italy*)

Luigi Pane (*University of Genoa, Italy*)

Emma Rabino Massa (*University of Turin, Italy*)

EDITORIAL BOARD

James Anthony, *Michigan State University, East Lansing, USA*

Saeme Asgari, *Pasteur Institute, Iran*

Han Bao, *MSU-DOE Plant Research Laboratory of Michigan State University, USA*

Emilia Bellone, *University of Genoa, Italy*

Maria Grazia Bridelli, *University of Parma, Italy*

Dario Cantino, *University of Turin, Italy*

David Caramelli, *University of Florence, Italy*

Giuseppe Caramia, *G. Salesi Hospital, Ancona, Italy*

Emilio Carbone, *University of Turin, Italy*

Brunetto Chiarelli, *University of Florence, Italy*

Amelia De Lucia, *University "Aldo Moro", Bari, Italy*

Danila Di Majo, *University of Palermo, Italy*

Andrea Drusini, *University of Padua, Italy*

Luciano Fadiga, *University of Ferrara, Italy*

Vittorio Farina, *University of Sassari, Italy*

William Galanter, *University of Illinois, Chicago, USA*

Lorenzo Gallus, *University of Genoa, Italy*

Darren Grice, *Institute for Glycomics and School of Medical Science, Griffith University, Nathan, Australia*

Stefania Grimaudo, *University of Palermo, Italy*

Millie Hughes-Fulford, *University of San Francisco, USA*

Gaetano Leto, *University of Palermo, Italy*

Gianni Losano, *University of Turin, Italy*

Mansoor A. Malik, *Howard University Hospital, Washington DC, USA*

Neville A. Marsh, *Queensland University of Technology, Brisbane, Australia*

Bruno Masala, *University of Sassari, Italy*

Alejandro M.S. Mayer, *Midwestern University, Downers Grove, USA*

Vincenzo Mitolo, *University "Aldo Moro", Bari, Italy*

Amir Sasan Mozaffari Nejad, *Hamadan University of Medical Sciences, Iran*

Werner E.G. Muller, *Johannes Gutenberg University, Mainz, Germany*

Kary B. Mullis, *Children's Hospital, Oakland Research Institute, USA*

Giuseppe Murdaca, *University of Genoa, Italy*

Giuseppe Palumbo, *University Federico II, Naples, Italy*

Gian Luigi Panattoni, *University of Turin, Italy*

Massimo Pregnolato, *University of Pavia, Italy*

Mark R. Rasenick, *University of Illinois, Chicago, USA*

Angela Maria Rizzo, *University of Milan, Italy*

Giacomo Rizzolatti, *University of Parma, Italy*

Aldo Rustioni, *University of North Carolina, USA*

Salvatore Sapienza, *University of Catania, Italy*

Pietro Scotto Di Vettimo, *University of Naples, Italy*

Vinicio Serino, *University of Siena, Italy*

Lynne Christine Weaver, *University of Western Ontario, Canada*

Ming Wei, *Griffith University, Australia*

Mario Wiesendanger, *University of Friburg, Switzerland*

Editorial Staff

Francesca Baccino, *Managing Editor*

Claudia Castellano, *Production Editor*

Tiziano Taccini, *Technical Support*

Publisher

PAGEPress Publications

via A. Cavagna Sangiuliani, 5

27100 Pavia, Italy

Tel. +39.0382.464340 – Fax. +39.0382.34872

info@pagepress.org – www.pagepress.org



PRESIDENT OF SIBS 2019

Massimo Cocchi (*University of Bologna, Italy*)

**Primo simposio di biologia sperimentale
applicata al mare e all'ambiente**

***First symposium on experimental biology:
sea and environment***

Trapani, Italy, 24-25 May 2019

ORGANIZING COMMITTEE

Massimo Cocchi (*University of Bologna - QPP Institute, Italy*)

Concetta Messina (*University of Palermo, Italy*)

Maria Grazia Bridelli (*University of Parma, Italy*)

Caterina Faggio (*University of Messina, Italy*)

Gian Luigi Mariottini (*University of Genoa, Italy*)

***In collaboration with the Marine Biology Institute
and the Laboratory of Marine Biochemistry and Ecotoxicology***

Andrea Santulli (*University of Palermo; University Consortium of Trapani, Italy*)

Laura La Barbera (*University Consortium of Trapani, Italy*)

Simona Manuguerra (*University of Palermo, Italy*)

Maria Morghese (*University of Palermo, Italy*)

Rosaria Arena (*University of Palermo, Italy*)

Giuseppe Renda (*University of Palermo, Italy*)

Cristóbal Espinosa Ruiz (*University of Palermo, Italy*)

Giulia Di Franco (*University of Palermo, Italy*)

Giovanna Ficano (*University of Palermo, Italy*)

Eleonora Curcuraci (*University of Palermo, Italy*)

Thanks to



Stazione
Zoologica
Anton Dohrn
Napoli



REGIONE SICILIA



AGCI AGRITAL
ASSOCIAZIONE
GENERALE
COOPERATIVE
ITALIANE Settore Agro Ittico Alimentare

Primo simposio di biologia sperimentale applicata al mare e all'ambiente

*First symposium on experimental biology:
sea and environment*

Trapani, Italy, 24-25 May 2019

* * *

TABLE OF CONTENTS

ORAL COMMUNICATIONS

Session: Marine and aquatic environment	1
Session: Environment and health	3
Session: Marine biotechnology and blue growth	5

POSTERS

Session: Environment and health	6
Session: Marine biotechnology and blue growth	7
Session: Marine and aquatic environment	9

Index of authors	13
----------------------------	----

threat to marine environment. Microplastics were reported in several marine environments, from the surface to bottom. Moreover, it is well known their occurrence in the gastrointestinal tract (GIT) of several fish species from oceans and closed and semi-closed basins. In order to explore the microplastics contamination of our seas and in particular of the central Mediterranean Sea, the present study focuses on two demersal fish species: *Zeus faber* (John Dory) and *Lepidopus caudatus* (silver scabbardfish) from a fishery exclusion area (Gulf of Patti, Messina, Sicily, Italy). Visual sorting, using a dissecting microscope of the gastrointestinal tract of 67 specimens (35 *Z. faber* and 32 *L. caudatus*), was performed under controlled conditions, to avoid atmospheric contamination. The characterization of extracted microplastics was performed using a Raman spectroscopy. The results showed that the 51.4% of *Z. faber* and 78% of *L. caudatus* specimens were positive to plastic particles, with 2.1 and 4.8 item/specimen respectively. Of these particles, mostly were represented by microplastic (98.4% in *Z. faber* and 94% in *L. caudatus*) and mesoplastics for the remaining percentages. Both fragments and fibers of various colors showed an overall composition of polypropylene (PP), polyamide (PA), nylon and, to a lesser extent, polyethylene (PE). From our results it is conceivable that also in Gulf of Patti plastics ingestion is a serious threat to marine species. Further studies are necessary to deepen the knowledge about microplastic intestinal uptake to comprehend the real risks for the final consumer.

MICROFIBERS OCCURRENCE IN THE MEDITERRANEAN SEA: EVIDENCE OF INGESTION BY DEMERSAL-SEMIPELAGIC (BOOPS BOOPS) FISH SPECIES

Dario Di Fresco^{1*}, Giuseppe Panarello¹, Gioele Capillo¹, Serena Savoca¹, Teresa Bottari^{2,3}, Monique Mancuso^{2,3}, Nunziacarla Spanò⁴

¹Department of Chemical, Biological, Pharmaceutical and Environmental Sciences, University of Messina, Messina; ²Institute for Biological Resources and Marine Biotechnology (IRBIM) - CNR Section of Messina, Messina; ³Stazione Zoologica Anton Dohrn, Centro Interdipartimentale della Sicilia; ⁴Department of Biomedical, Dental and Morphological and Functional Imaging University of Messina, Messina, Italy

*Email: dariodifresco@gmail.com

Microfibers pollution has increased severely in almost every marine environment around the world, becoming a serious threat to marine habitats and biota. This study reported the presence of artificial cellulose fibers in the gastrointestinal tracts (GIT) of a commercially relevant demersal-semipelagic fish species (*Boops boops*) in the Mediterranean Sea. The samples were collected during an experimental trawl survey in the Fishery Exclusion Zone of the Gulf of Patti (38.19S–14.94W; 38.315S–15.06W; 38.17S–15.16W; 38.24S–15.21W), Messina Italy, on June 2017. Overall, 30 specimens of *B. boops* were examined. Results highlighted the ingestion of cellulose fibers in 63,3% of the total investigated boggles. Ingested fibers were detected at first using stereomicroscope and Scanning Electron Microscope (SEM), categorized according to size class, color and subsequently characterized using Raman spectroscopy technique. The study showed the presence of different colors and lengths of cellulose fibers with a maximum length of 30 mm and a minimum of 0,5 mm. All analyzed samples appeared black and red, 76 and 4 respec-

tively. The study highlighted only the presence of cellulose fibers into the gastrointestinal tract of the boggles specimens and not plastic.

PRESENCE OF MICROPLASTICS IN THE GASTROINTESTINAL TRACT OF TWO SEABREAMS SPECIES (*PAGELLUS ERYTHRINUS* AND *PAGELLUS BOGARAVEO*)

Sergio Famulari^{1*}, Serena Savoca¹, Giuseppe Panarello¹, Gioele Capillo¹, Monique Mancuso^{2,3}, Teresa Bottari^{2,3}, Nunziacarla Spanò⁴

¹Department of Chemical, Biological, Pharmaceutical and Environmental Sciences, University of Messina, Messina; ²Institute for Biological Resources and Marine Biotechnology (IRBIM) - CNR Section of Messina, Messina; ³Stazione Zoologica Anton Dohrn, Centro Interdipartimentale della Sicilia; ⁴Department of Biomedical, Dental and Morphological and Functional Imaging University of Messina, Messina, Italy

*Email: sergio.famulari93@gmail.com

Microplastic pollution is probably one of the most discussed topics worldwide over the last few years. Due to their very small size (<5 mm), microplastics (MPs) can be ingested by a wide range of marine organisms, from zooplankton to large pelagic and benthic fishes. Once entered the trophic chain, MPs can be transferred along it through biomagnification processes not yet fully understood. Recent studies have shown how the ingestion of MPs can cause physiological injuries and general loss of welfare in aquatic organisms. However, not much is known about the actual damages caused by microplastics. The aim of this study was to investigate the presence of MPs in the gastrointestinal tract (GIT) of two high-values fish species in Mediterranean Sea, *Pagellus erythrinus* (Linnaeus, 1758) and *Pagellus bogaraveo* (Brünnich, 1768). A total of 39 specimens (15 *P. erythrinus* and 24 *P. bogaraveo*) were caught in the waters of Tyrrhenian Sea, between Rasocolmo Cape and Termini Imerese (Geographic coordinates: 38.350946S – 15.542023W; 38.306726S – 15.547955W; 38.229888S – 15.573224W; 38.0085189S – 14.589696W). During laboratory analysis, MPs were collected through visual sorting method, under controlled condition, to prevent airborne contamination. Microplastics composition were subsequently analysed using micro-Raman and FT-IR spectroscopies. The results showed that MPs were found in the GIT of 4 specimens; all microplastics found were black and fibrous. The most frequently observed polymer was Nylon 66 (Polyamide). The data collected in this study confirm that microplastics contamination is a serious and growing threat for marine ecosystems and their functioning.

EXTREMOTOLERANT BLACK YEASTS FROM THE DEPTHS OF THE MEDITERRANEAN SEA

Alessia Marchetta, Clara Urzì, Filomena De Leo^{*}

Department of Chemical, Biological, Pharmaceutical and Environmental Sciences, University of Messina, Messina, Italy

*Email: fdeleo@unime.it

The black yeast-like fungus *Hortaea werneckii* was isolated for the first time in the Mediterranean Sea during two oceanographic cruises, from samples collected at different stations and depths (from surface to 3400 m) and resulted to