
Effect of microplastic pollution on Mediterranean coastal plants

Noy Kaminer Bitton*¹

¹Tel Aviv – Haim Levanon 39 Tel Aviv, Israel

Abstract

Plastic contamination is often found in various environments in correlation with human presence in those areas. This plastic degrades in the environment through chemical, biological, and physical processes, resulting in formation of micro and nano-sized particles that are known to be harmful to a variety of living organisms, including plants. While most research on microplastic implications on terrestrial plants to date is focused on effects on agriculture plants. Knowledge on microplastics effects on wild plant species is needed in order to understand their impacts on natural habitats, and particularly coastal plants, which could be highly impacted by plastic pollution. Our research focuses on evaluation of the effects of microplastics-weathered and pristine as well as biodegradable and non-biodegradable-on the native coastal plants. We first use a top-down approach to synthesize engineered microplastics with controlled physicochemical characteristics from bulk plastic products. We use two species of the local flora as coastal model plants, including *Cutandia Maritima*, an annual plant (Poaceae family), and *Pancratium Maritimum* (sea daffodil), a perennial plant (Amaryllidaceae family). Treatment effects were estimated with physiological parameters (such as carbon assimilation and transpiration), morphological parameters (stem length, weight and root weight) and fitness parameters (seed number and weight, as well as percent of seed growth in generation F1). We find that microplastics effect was overestimated when pristine plastics are used compared to weathered ones, particularly in parameters related to water stress, indicating their potential effect on soil properties.

Keywords: Microplastic, coastal plants, Israel, *Cutandia Maritima*

*Speaker