

Assessing the Ecological Status of *Gongolaria Barbata* (Stackhouse) Kuntze (Fucales, Ochrophyta) Habitat Along the Romanian Black Sea Coast - A Source of Multiple Ecosystem Services

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Abstract. *Gongolaria barbata* (Stackhouse) Kuntze (formerly known as *Cystoseira barbata* (Stackhouse) C. Agardh, 1820) builds essential habitats for marine biodiversity and ecosystem optimal functioning along the Romanian Black Sea coast. *G. barbata* forms so-called brown algal forests especially in the southern part of the Romanian Black Sea shore, providing all categories of ecosystem services, at the same time being a source of potentially bioactive metabolites. Over the last decades, *Cystoseira sensu lato* have suffered a general decline due to anthropogenic pressure and the Romanian Black Sea coast is not an exception. *G. barbata* is the only remained representative of *Cystoseira s. l.* from the Romanian coast and currently the most important habitat - forming species, being a suggestive indicator of environmental degradation and loss of habitats. The study aims to present the last fourteen years ecological status assessment of the sensitive habitat Upper-infralittoral rock dominated by *G. barbata*. Sampling was conducted between 2009 – 2022 (summer seasons) and a total number of 144 samples were collected using the “quadrat method” (20 x 20 cm). Data were statistically analyzed, and the specific Ecological Index (EI) was applied to evaluate the ecological status. The results of this study showed that this vulnerable habitat reached good ecological status during 2009 - 20122, except for 2012 and 2014. Nevertheless, the current distribution of *G. barbata* habitat is sparse, and the species remains highly sensitive to increasing anthropogenic activities in coastal zones.

Key words: *Gongolaria barbata*, canopy-forming algae, MSFD, ecological status, Romania.

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1. Introduction

Canopy-forming seaweeds *Cystoseira sensu lato* (further mentioned as *Cystoseira s.l.*) (Fucales, Ochrophyta) form diverse and productive habitats along temperate rocky coasts of the Mediterranean Sea [1] and Black Sea. Are considered among the most productive assemblages in the shallow coastal area