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ASSESSMENT OF CORALLINE ALGAL SPECIES DIVERSITYAND COMPOSITION AT EUROPEAN CO2 SEEPS USING DNA BARCODING

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Marine benthic (sand-dwelling and epiphytic) dinoflagellates consists of known potentially toxic species, which are harmful to marine organisms as well as human by consumption of sea food in mostly tropical and subtropical region. Occurrence and distribution of these species are less studied from temperate region. The benthic dinoflagellates in the intertidal zone along the coasts of Jeju Island was determined by monthly collection of sand sediment and macroalgae samples from eight sampling locations from March 2011 to February 2012. Thirty-seven dinoflagellate taxa belong to eighteen genera were identified; twenty six found only in sand sediment, seven in macroalgae samples and four in both samples. The most frequently occurring species was *Amphidinium carterae*, followed by *A. operculatum, Coolia malayensis*, and *Ostreopsis ovata*, occurred at all sampling stations. *G. yasumotoi* and *Gambierdiscus* sp. were rarely occurred. The seasonal abundance of epiphytic dinoflagellates was also quantitatively estimated by monthly collection of macroalgae samples (Rhodophyta, Phaeophyta, and Chlorophyta) from six sampling locations from July 2012 to June 2013. Ten epiphytic dinoflagellate taxa, including eight potentially toxic species *Amphidinium carterae, A. operculatum, Gambierdiscus* sp., *Ostreopsis ovata, Prorocentrum concavum, P. emarginatum, P. lima*, and *P. rhathymum*, were identified. A significant change in seasonal abundance was recorded with maximum (751.82±223.12 cells g^{-1} wet weight of algae; cells g^{-1} hereafter) in June, followed by October (650.45±225.02 cells g^{-1}) and September (598.02 ±197.82 cells g^{-1}). *O. ovata* was the most abundant (338.21±11 cells g^{-1}) in October and *Gambierdiscus* sp. was the least abundant only in September (6.92 ±16.97 cells g^{-1}) and October (average 6.54±6.54 cells g^{-1}) at Hamduk. Significantly, highest spatial abundance of total dinoflagellates for all sampling stations was found at Hamduk (547.91±315 cells g^{-1}), while it was lowest at Hwasun (232.59±144.93 cells g^{-1}). Generally, each of the epiphytic dinoflagellates did not show specific preference of macroalgae as host.

10PO.14

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Coralline red algae are one of the most abundant groups of benthic seaweeds throughout the photic zone. In Europe, they are ecosystem engineers of high-diversity habitats such as maerl beds, coralligenous, vermetid reefs/*trottoir*. A major driver of change in coastal ecosystems is the rise of CO_2 levels which is warming surface waters and reducing the amount of carbonate available to calcified organisms. Work at volcanic seeps has shown that CO_2 is a resource for certain seaweeds but that carbonation causes dissolution of calcified organisms. Volcanic seeps are starting to be used as natural analogues for a high CO_2 world, but so far assessments of diversity of coralline algae around those seeps have not been studied in detail. We present the first study focused on coralline species diversity and composition along well constrained CO_2 gradients in two naturally acidified sites in Europe: Vulcano- Italy- in the Mediterranean, and Sao Miguel - Azores- in the Atlantic. Intertidal and subtidal transects were carried out along established CO_2 gradients. Both cover and habit for each coralline species were recorded, and samples were collected to be identified using molecular (DNA barcoding) and morphological (SEM) approaches. In addition, elemental analyses of specimens were examined using Energy-dispersive X-ray spectroscopy technique (EDS). Results obtained in terms of potential changes in species diversity and composition will be discussed. From an evolutionary perspective, our study could shed some light on which coralline lineages might be able to persist on low pH environments given the records of paleo-acidification events since the origin of this group.

10PO.15

REAL TIME *IN SITU* MONITORING OF TOXIC ALGAE

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