

Coastal wetland ecosystem services in RO Korea

Aslan Hwanhwi Lee, Bong-Oh Kwon, Changkeun Lee, Jongmin Lee, Beomgi Kim, Hosang Kim, Junsung Noh, Jong Seong Khim*
School of Earth and Environmental Sciences & Research Institute of Oceanography,
Seoul National University, Seoul 08826, Republic of Korea

Coastal ecosystems have been threatened by indiscriminate coastal destruction and reclamation projects, but studies on ecosystem services value for tidal flats are insufficient compared to interest. Since the 2000s, several studies have been conducted to ecosystem service valuation of tidal flats and regulating and/or support services factors has been defined in tidal flats. In this study, it was investigated that the value of regulating and/or support services in tidal flats of South Korea, based on: (1) habitat characteristics (i.e., grain size, vegetation); (2) nitrogen stock and denitrification rate; and (3) primary production. The samples were analyzed by elemental analyzer-isotope ratio mass spectrometer (EA-IRMS), (Membrane Inlet Mass Spectrometer) MIMS, oxygen microfiling method, and diving pam II, respectively. According to the results, the vegetation area showed higher nitrogen stock and/or denitrification rate than bared area. Likewise, muddy tidal flats were showed higher purification efficiency than sandy tidal flats. The average annual organic matter purification capacity in the west coast of Korea (muddy sand area) was 3.8 Mg/ha, which was 1.4 Mg/ha in the southern coast of Korea (sandy area). The primary productivity of tidal flats has been found to be 1.9 times higher than the global average primary productivity values, which is 3.9 times higher than the Wadden Sea region. Overall, the water purification efficiency and primary productivity of tidal flats in Korea are higher than those of salt marshes in other countries and have high value in terms of ecosystem services. Finally, this data can be used to determine the future conservative policy direction on tidal flats management.

