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### Fundamental Study on Estimation of Standing Seaweed Biomass by Remote Sensing

[Shin-ichi SEKIOKA](#)<sup>1)</sup>, [Daitaro ISHIKAWA](#)<sup>2)</sup>, [Tadahide NORO](#)<sup>3)</sup> and [Etsuji ISHIGURO](#)<sup>4)</sup>

1) Graduate School of Agriculture, Kagoshima University

2) The United Graduate School of Agricultural Sciences, Kagoshima University

3) Faculty of Fisheries, Kagoshima University

4) Faculty of Agriculture, Kagoshima University

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#### Abstract

Seaweed are essential primarily producer in coastal seashore. However the seaweed vegetation has decreased in Japan and changing the seashore environment was expected to the barren sea. This study was focused on developing estimating method for the biomass of seaweed in the habitat using remotely sensed data fundamentally.

The spectral reflectance of seaweed was measured with handheld spectral radiometer on varying the depth, i.e. distance from sea surface to the top of seaweed. At the same time, spectral images were taken by the video camera mounted with several bandpass filters. The several wavelengths, corresponded with depth (special wavelength), were identified by differentiating the reflectance curves with wavelength. An index for identifying the seaweed with several depths was estimated in this study. In these calculations, the effects of the surface reflection of the sea were neglected by estimating the uniformly scattering using the Lambert-Beer law.

Studying the relationships between the digital numbers of the composed image by the applied the index for the spectral images, the heights of seaweed were estimated. These algorithms and procedures show the possibility of monitoring seaweed bed in the coastal region.

Keywords: [seaweed](#), [biomass](#), [Lambert-Beer law](#), [spectral reflectance](#), [spectral image](#)

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