

# Potensi Makroalga Alami *Sargassum polycystum* dan Makroalga Budidaya *Eucheuma cottonii* dalam Menyerap dan Menyimpan Karbon serta Nutrien di Pulau Panjang, Teluk Banten = The Potency of Wild Macroalgae *Sargassum polycystum* and Cultivation Macroalgae *Eucheuma cottonii* to Absorb and Store Carbon also Nutrient in Panjang Island, Banten Bay

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## Abstrak

[Penelitian mengenai potensi makroalga alami *Sargassum polycystum* dan makroalga budidaya *Eucheuma cottonii* dalam menyerap dan menyimpan karbon serta nutrien di Pulau Panjang, Teluk Banten telah dilakukan pada bulan Oktober hingga November 2014. Penelitian bertujuan untuk mengetahui laju penyerapan karbon, kandungan nutrien dan produktivitas primer dari makroalga *S. polycystum* dan *E. cottonii*. Lokasi penelitian terletak di bagian hamparan gosong karang dan berlumpur dengan kedalaman 0,5-5 m. Pengamatan pertumbuhan dan laju penyerapan karbon menggunakan metode penandaan thallus pada 30 sampel makroalga setiap hari selama 7 hari. Sampel makroalga selanjutnya dianalisis kandungan nutriennya. Hasil penelitian didapatkan estimasi laju penyerapan karbon *S. polycystum* dan *E. cottonii* adalah 0,0081 gC/hari dan 0,0083 gC/hari. Kandungan karbon, nitrogen dan fosfat di *S. polycystum* adalah sebanyak 6,84%, 1,72% dan 0,009% sedangkan kandungan karbon, nitrogen dan fosfat di *E. cottonii* adalah 5,99%, 0,67% dan 0,006%. Berdasarkan analisis statistik dengan uji t, terdapat perbedaan yang signifikan pada laju pertumbuhan, kandungan nitrogen dan fosfat *S. polycystum* dengan *E. cottonii*. Sedangkan untuk kandungan karbon tidak terdapat perbedaan yang signifikan antara *S. polycystum* dengan *E. cottonii*. Selanjutnya, uji korelasi didapatkan bahwa adanya korelasi antara laju pertumbuhan *S. polycystum* dan *E. cottonii* dengan kandungan nitrogen masing-masing sedangkan antara laju pertumbuhan dengan kandungan karbon dan fosfat tidak terdapat korelasi. Produktivitas primer diukur dengan metode botol terang dan botol gelap yang dimodifikasi. Pengukuran produktivitas primer dilakukan pada kedalaman 0,5 m untuk *S. polycystum* dan 0,1 m untuk *E. cottonii*. Kandungan oksigen terlarut diukur dengan DO meter. Hasil penelitian didapatkan rata-rata produktivitas primer *S. polycystum* sebesar  $10,259 \pm 3,385$  mgC/g/hari dan *E. cottonii* sebesar  $7,757 \pm 4,398$  mgC/g/hari.;The research about the potency of wild macroalgae *Sargassum polycystum* and cultivation macroalgae *Eucheuma cottonii* to absorb and store carbon also nutrient in Panjang Island, Banten Bay was held on October until November 2014. The research was aimed to estimate carbon sequestration, nutrient content and primary productivity from macroalgae *S. polycystum* and *E. cottonii*. Location of

the research in the stretch of reef and muddy with a depth of 0,5-5 m. The observation of growth rate and carbon sequestration used thallus marking method in 30 macroalgae shoots everyday for 7 days. Macroalgae was analyzed its nutrient content. The results showed that estimation carbon sequestration by *S. polycystum* and *E. cottonii* were 0,0081 gC/day and 0,0083 gC/day. The content of carbon, nitrogen and phosphor for Macroalgae *S. polycystum* were 6,84%, 1,72% and 0,009% respectively while the content of carbon, nitrogen and phosphor for Macroalgae *E. cottonii* were 5,99%, 0,67% and 0,006% respectively. Based on statistical analysis by t test, there was found significant difference on the growth rate, nitrogen and phosphor content of *S. polycystum* with *E. cottonii*. While for the carbon content, there was no significant difference between *S. polycystum* with *E. cottonii*. Furthermore, correlation test showed that there was a correlation between the growth rate of *S. polycystum* and *E. cottonii* with nitrogen content respectively while between the growth rate with carbon and phosphor content, there was no correlation. Primary productivity were measured by the light and dark bottle method with modification. Measurement of primary productivity was held at a depth of 0,5 m from the surface for *S. polycystum* and 0,1 m from the surface for *E. cottonii*. Dissolved oxygen was measured by DO meter. The result showed that mean of primary productivity for *S. polycystum* was  $10,259 \pm 3,385$  mgC/g/day and *E. cottonii* was  $7,757 \pm 4,398$  mgC/g/day; The research about the potency of wild macroalgae *Sargassum polycystum* and cultivation macroalgae *Eucheuma cottonii* to absorb and store carbon also nutrient in Panjang Island, Banten Bay was held on October until November 2014. The research was aimed to estimate carbon sequestration, nutrient content and primary productivity from macroalgae *S. polycystum* and *E. cottonii*. Location of the research in the stretch of reef and muddy with a depth of 0,5-5 m. The observation of growth rate and carbon sequestration used thallus marking method in 30 macroalgae shoots everyday for 7 days. Macroalgae was analyzed its nutrient content. The results showed that estimation carbon sequestration by *S. polycystum* and *E. cottonii* were 0,0081 gC/day and 0,0083 gC/day. The content of carbon, nitrogen and phosphor for Macroalgae *S. polycystum* were 6,84%, 1,72% and 0,009% respectively while the content of carbon, nitrogen and phosphor for Macroalgae *E. cottonii* were 5,99%, 0,67% and 0,006% respectively. Based on statistical analysis by t test, there was found significant difference on the growth rate, nitrogen and phosphor content of *S. polycystum* with *E. cottonii*. While for the carbon content, there was no significant difference between *S. polycystum* with *E. cottonii*. Furthermore, correlation test showed that there was a correlation between the growth rate of *S. polycystum* and *E. cottonii* with nitrogen content respectively while between the growth rate with carbon and phosphor content, there was no correlation. Primary productivity were measured by the light and dark bottle method with modification. Measurement of primary productivity was held at a depth of 0,5 m from the surface for *S. polycystum* and

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