



INTISARI

Ekosistem mangrove di pesisir Kalimantan Barat telah mengalami kerusakan akibat reklamasi menjadi kebun kelapa, tambak ikan dan udang. Kerusakan ini mengakibatkan Pemerintah Daerah Kalimantan Barat mengeluarkan biaya sebesar Rp 1 triliun untuk membuat bangunan pemecah ombak sepanjang 16 km. Hal ini berarti peranan ekologi mangrove per ha sebagai pelindung pantai adalah 6,7 juta US\$. Ekosistem mangrove berperan dalam rantai makanan berbasis detritus, habitat perikanan dan pelindung pantai dari abrasi, kuatnya angin dan gelombang laut. Oleh sebab itu, mangrove tidak hanya bernilai ekologi tetapi juga bernilai ekonomi yang sangat tinggi. Mangrove sangat berperan dalam produksi perikanan di perairan ekosistem mangrove, pantai dan lepas pantai. Hal ini sangat mempengaruhi hasil tangkapan nelayan dan tingkat sosial ekonomi nelayan tradisional. Fokus penelitian ini mempelajari kemelimpahan dan distribusi vegetasi mangrove, perubahan garis pantai, dan dampak kerusakan mangrove terhadap sosial ekonomi nelayan. Lokasi penelitian dipilih berdasarkan kualitas kehadiran vegetasi mangrove, dari kondisi baik sampai rusak adalah: Desa Peniti Luar, Sei Raya, Karimunting dan Sei Duri. Metode pengukuran kemelimpahan vegetasi pohon dan sapling mangrove berdasarkan kuadrat plot 10 m x 20 m, sedangkan herba, paku mangrove dan rumput adalah 1 m x 1 m dengan bantuan garis transek memotong tegak lurus zonasi sebanyak lima ulangan. Kajian kualitas tanah secara spesifik mempelajari tekstur, salinitas, berat volume, permeabilitas, EC, pH, Al^{3+} , K^+ , Na^+ , NH_4^+ , NO_3^- , P^+ , FeS_2^- , SO_4^{2-} dan Bahan organik. Parameter kondisi sosial ekonomi nelayan menitikberatkan pada fokus berat hasil tangkapan nelayan, pendapatan perikanan dan pendapatan non perikanan. Metode kajian sosial ekonomi nelayan adalah metode survey dan wawancara terhadap 15 responden per lokasi.

Hasil penelitian menunjukkan bahwa terdapat 12 spesies mangrove, terdiri dari 7 spesies pohon, 1 palma, 2 herba, dan 2 paku mangrove. Kehadiran spesies mangrove ini tersebar tidak merata di seluruh lokasi kajian. Kondisi mangrove yang terbaik di Peniti luar. Sedangkan yang rusak ditemukan di Sei Duri. Luas kanopi di Desa Peniti Luar, Sei Raya, dan Karimunting adalah 1242 m², 788 m² dan 356 m², serta densitas spesies pohon dan anak pohon per 1000 m² berturut-turut adalah 186 indiv., 307 indiv., dan 367 indiv. Meskipun kondisi mangrove di Peniti Luar lebih baik dari lokasi lainnya, namun hadirnya herba mangrove yaitu *Acanthus ilicifolius* di lokasi tersebut merupakan bioindikator kerusakan ekosistem mangrove. Rehabilitasi alami mangrove di Karimunting terjadi pada lokasi yang abrasinya tidak parah dan tersedia sumber benih *Avicennia marina* di dekat lokasi tersebut. Pengaruh luas kanopi dan basal area menunjukkan korelasi positif terhadap penurunan lebar abrasi pantai. Berarti ekosistem mangrove melindungi garis pantai terhadap abrasi. Kehadiran mangrove sebagai pelindung garis pantai terhadap abrasi dapat menghemat uang negara sebesar 6,7 juta US\$ per ha. Pengaruh ekosistem mangrove terlihat positif terhadap berat basah tangkapan perikanan, akan tetapi mangrove menunjukkan korelasi negatif terhadap pendapatan perikanan nelayan. Sehingga ada korelasi negatif antara berat basah ikan terhadap pendapatan nelayan. Hal ini disebabkan perbedaan jenis hasil tangkapan nelayan dan harga ikan. Nelayan di Peniti Luar hanya menangkap tok-tokan (*Saxydomus giganteus*) yang hanya ditemukan di Peniti Luar. *Saxydomus giganteus* memiliki harga yang rendah di pasaran. Sedangkan hasil tangkapan nelayan Sei Raya, Sei Duri dan Karimunting berupa udang dan ikan di perairan tradisional dengan harga yang lebih tinggi daripada *Saxydomus giganteus*. Berdasarkan besarnya potensi produksi, harga ikan dan luasan mangrove, maka peranan ekologi mangrove di Kalimantan Barat bernilai 30 ribu US\$ /ha/tahun.

Kata kunci: mangrove, kanopi, abrasi, reklamasi, pelindung, nilai ekologi, nelayan tradisional, pendapatan



Abstract

Mangrove ecosystems in West Borneo have been degraded to coconut farms, shrimp and fishponds. Due to this coastal degradation, the government of West Borneo has constructed the wave breakers 16 km along the West coast line, and with cost one trillion Rupiah. This equal to US \$ 6.7 millions per ha. They play important roles and give ecological services such as in the detritus food chains and protect the coastal areas from the strong current and wave. This ecosystem supports not only the ecological but also economical species in the mangrove ecosystems itself, coastal, and open-sea fishery. This degraded ecosystem will influence the catchments of the traditional fishermen. These researches were to study the structure and abundance of mangrove vegetation, the change of coastal line and the impact of mangrove conditions on the traditional-fishermen social economy at selected sites. The sites were selected base on the quality of mangrove present, which were Peniti Luar, Sei Raya, Karimunting and Sei Duri villages. The vegetation data were collected with transect line quadrat plot across the mangrove zones and disturbed areas in back swamp of settlement areas. The quadrat plot sizes were 10 m x 20 m for trees, and 1 m x 1 m for herbs, seedling, and grasses. The parameter measures were densities, basal areas, canopy of mangroves species, and the soil qualities included: textures, EC, pH, Al, K, Na, NH₄, NO₃, PO₄, FeS₂, SO₄, Salinity, pH, EC, Bulk density, soil permeability, and organic matters. The changing of the coastal line between the 1972 map and landsat imagery of the 2003. The parameter measures for the social economy were fish wet biomass, prices, individual income, the non-fishery income both from rice field and garden.

The results showed there were 12 species of mangrove, consist of 7 tree, 1 palm, 2 herbs, and 2 mangrove ferns. These species were sparsely distributed. The mangrove conditions were better at Peniti Luar village. In contrast at Sei Duri, there was no mangrove any more. The mangrove canopy at Peniti Luar, Sei Raya, and Karimunting were 1242 m², 788 m², and 356 m², and the density of trees and saplings were 186 indiv., 307 indiv., and 367 indiv. Per 0.1 ha in consecutively. Even though the mangrove at Peniti Luar was better then the other areas, the present of *Acanthus ilicifolius* in this area as indication that the area was degraded. In the Karimunting with low abrasion, the natural rehabilitation occurred as long as there were next to the area with mangrove stands, such as *Avicennia marina* as source propagules. The mangrove canopy and basal area had positive correlation with the decreased of abrasion. It means that mangroves protect the shoreline of West Borneo. Thus the present of one ha mangrove vegetation saved US \$ 6.7 millions. There were also positive correlation bet ween mangrove canopy and catchments of fish wet biomass. How ever there were negative correlation between the mangrove canopy and income of traditional fishermen. Similarly, there was negative correlation between fish biomass and fishermen income. This condition was due to the different species of fish catch, and the price. In Peniti Luar, the fishermen only catch the bivalva, *Saxidomus giganteus* that was only found at mangrove of Peniti Luar. Further more, the fishing ground of Peniti Luar fishermen were inside of the mangrove ecosystem. They depended heavily on bivalva, *Saxidomus giganteus* with low price. In contrast, the other did fishing on traditional coastal waters and catches fishes and shrimps which higher price. Based on potential production of fishes, value of fish, and mangrove in West Borneo, the mangrove ecological value was US \$ 30,000 per ha per year.

Key words: Mangroves, canopy, abrasion, protection, traditional-fishermen, ecology value reclamation, income