



Optimizing the utilization of mangrove coastal resources through the application of intercropping ponds/silvofishery in Sinjai Regency, Indonesia

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Abstract. The study aimed to determine the optimal ratio of pond area and mangrove stands in mangrove forest conservation areas. Several ecological aspects in the mangrove forest conservation area were studied, determining the carrying capacity of the coastal environment, and the feasibility of pond cultivation in the mangrove forest conservation area. Based on the analysis of biophysical and chemical factors of the coastal waters in Sinjai Regency, the area of ponds that can be operated, based on the carrying capacity of coastal waters in Sinjai Regency, is 2,276 ha. Based on the results of the analysis of the economic valuation of fish ponds in Sinjai Regency, 54% are ponds and 46% are mangroves.

Key Words: optimization, coastal resources mangrove, silvofishery, cultivation.

Introduction. The coastal protection and socio-economic functions of the mangrove forests must be balanced (Wamnebo et al 2018). However, the problem that often arises is that if the role of conservation is taken as the sole interest, social issues may arise. On the other hand, if social and economic roles are the main considerations, then ecological problems will threaten the mangroves sustainability. Consequently, it is necessary to determine a model for integrating the various stakeholders' interests, in the mutual advantage. To achieve a balanced, integration, the management of mangrove forest ecosystems should promote a rational exploitation by involving all directly concerned communities around the mangrove forest areas. Tumpangsari (silvofishery) is a fairly good technical approach, which consists of a series of integrated activities of fish/shrimp farming, planting, maintaining, managing and preserving mangrove forests. This system has a simple technology, can be carried out without destroying existing mangrove forests and can be carried out as an intermediary activity while trying to reforest green belt areas in critical coastal areas (MENKLH 1988). This pattern is expected to enhance the mutually beneficial cooperation between smallholders and forestry parties. The implementation of silvofishery activities should prevent the destruction of the mangrove forest ecosystem by the local community, because it provides an alternative source of income. There are two main trends in the management of mangrove forests, focusing either on conservation or on utilization functions. These two tendencies will work synergistically if there is a management model that takes into account the appropriate eco-biological and socio-economic principles. The integration between ecology and economy can be harmonized and optimized to meet the needs of today's society without destroying or reducing the ability of these ecosystems, and can provide the needs for future generations. The principle for an optimization of the cultivation technique in ponds located in mangrove forest conservation areas is to seek a combination of ecological and economic integration. In order to balance the need for ponds on mangrove land and the