

**THE COMMUNITY STRUCTURE OF SNAPPERS
(GENUS: *LUTJANUS*) AT LANKAYAN REEFS,
SUGUD ISLANDS MARINE CONSERVATION
AREA**

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ABSTRACT

The family Lutjanidae, or snappers, are gonochoristic fishes, which occur mostly in marine waters in the tropics and subtropics region. In this study, the population structure of snappers, specifically *Lutjanus* spp. were investigated at 3 patch reefs within Sugud Islands Marine Conservation (SIMCA). This study was designed to determine the composition of snappers between respective monsoonal seasons and tidal ranges, investigate the relationship of snappers with respect to the reef substrates, and ocean currents. Fish observational surveys were carried out 12 times in each of the 3 selected patch reefs, from August 2016 until March 2017, between tidal ranges at each monsoonal season. During each survey, the species, abundance, and total length of every snapper sighted were recorded, along with the reef substrate that the snapper was found to be swimming nearby, Current direction and current speed were also recorded during each survey. Throughout the study period, 12 species of *Lutjanus* were found. There were significant differences ($p < 0.05$) in abundances and estimated biomass, collectively or at certain sites, with respect to monsoonal seasons for the species *L. argentimaculatus*, *L. fulviflamma*, *L. quinquelineatus*, *L. russelli*, and *L. vitta*, and tidal ranges for *L. lutjanus* and *L. russelli*. As many as 94.87% snappers sighted at the reef were observed to have close association to specific substrate, with rock, coral branching and coral sub-massive as the most preferred substrates. The ocean currents were observed to affect only *L. argentimaculatus*, where this species was seen to respond positively to current direction as they frequently occurred at the reef slope facing current, X^2 , (3, $N = 336$) = 628.02, $p < 0.05$ regardless of the current speed intensity. The findings of this study serve to provide insights in aiding the development of effective fisheries management, especially *Lutjanus* spp.

Keyword: community structure, snappers, *Lutjanus*, patch reefs

ABSTRAK

STRUKTUR KOMUNITI IKAN MERAH (GENUS: LUTJANUS) DI TERUMBU LANKAYAN, KAWASAN PEMELIHARAAN MARIN KEPULAUAN SUGUD, SABAH, MALAYSIA

*Famili Lutjanidae, atau ikan merah, merupakan ikan "gonochoristic" yang sering ditemui di laut kawasan tropika dan subtropika. Dalam kajian ini, struktur populasi ikan merah, khususnya Lutjanus spp. telah disiasat di 3 lokasi terumbu tompok, dalam Kawasan Pemeliharaan Marin Kepulauan Sugud (SIMCA). Kajian ini direka untuk mengenalpasti komposisi ikan merah, dari segi kepelbagaian spesies, kelimpahan, dan biojisim anggaran antara monsun dan antara pasang purnama-perbani, menyiasat hubungan antara ikan merah dengan substrat terumbu, dan arus laut. Kaji selidik pemerhatian ikan telah dibuat sebanyak 12 kali di setiap terumbu tompok terpilih, dari Ogos 2016 sehingga Mac 2017, antara pasang purnama-perbani di setiap monsun. Pada setiap kaji selidik, kepelbagaian spesies, kelimpahan dan panjang keseluruhan setiap ikan merah yang dijumpai, serta substrat terumbu yang mana ikan merah tersebut berenang berhampiran direkod. Arah pergerakan dan kelajuan arus juga direkod pada setiap kaji selidik. Sepanjang waktu kajian, terdapat 12 spesies Lutjanus dijumpai di tapak kajian. Perubahan ketara ($p < 0.05$) dikesan pada kelimpahan dan biojisim anggaran, secara kumulatif atau di terumbu tompok tertentu, di antara musim monsun bagi spesies *L. argentimaculatus*, *L. fulviflamma*, *L. quinquelineatus*, *L. russelli*, dan *L. vitta*, dan antara pasang purnama-perbani bagi *L. lutjanus* dan *L. russelli*. Sejumlah 94.87% daripada jumlah ikan merah yang dijumpai dilihat mempunyai hubungan dengan substrat terumbu tertentu, dengan batu, terumbu bercabang dan terumbu "submassive" menjadi substrat paling digemari. Pengaruh arus laut dilihat mempengaruhi taburan *L. argentimaculatus* sahaja, yang mana kelompok spesies ini dijumpai dengan sangat kerap di cerun terumbu yang menghadap arus χ^2 , (3, N = 336) = 628.02, $p < 0.05$, tanpa mengira kelajuan arus. Penemuan-penemuan daripada kajian ini menyediakan maklumat-maklumat yang membantu pengurusan sumber ikan, khususnya *Lutjanus spp.**

Kata kunci: struktur komuniti, ikan merah, Lutjanus, terumbu tompok