Effect of hook and bait size on catch efficiency in the Persian Gulf recreational fisheries

The effect of hook and bait sizes on the catch efficiency and size composition of Spangled Emperor Lethrinus nebulosus, Orange-spotted Grouper Epinephelus coioides, and Narrowbarred Mackerel Scomberomorus commerson was investigated in the recreational and semi-subsistence handline fishery in the Persian Gulf. Based on expectations that increasing hook and bait sizes would decrease the catch efficiency of the smaller individuals while maintaining the catch efficiency of larger fish, we investigated the effect of increasing hook and bait sizes. For all three species, the results indicated slightly lower catch efficiency for the smaller fish when larger hooks were used. Furthermore, the results demonstrated a significant increase in catch efficiency for the larger sizes of Spangled Emperor and Orange-spotted Grouper when fished with larger hooks, an effect that increased with fish size for both species. Additionally, the overall catch efficiency did not vary significantly when increasing hook and bait sizes for the three species investigated. This study shows that fishing with larger hooks and larger bait would change the exploitation pattern of these species toward higher proportions of larger fish in the catches. Moreover, based on the size distribution of the species on the fishing grounds during the study period, the use of larger hooks and bait would lead to significant increases in the total number of Spangled Emperor caught (41% increase; 95% confidence interval [CI] = 17–69%) and the total number of Orange-spotted Grouper caught (151% increase; 95% CI = 132–336%), respectively. The results indicated a similar effect for Narrowbarred Mackerel; however, the effect was far less profound than for the two other species and was not significant for any size-classes.

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