

Light adaptation process of Pacific saury in capture process of gill net with light

(集魚灯利用刺網におけるサンマ網膜の明順応過程)

° M. Abduh Ibnu Hajar · 稲田博史 · 有元貴文 (海洋大)

[Objective] The light adaptation process of Pacific saury *Cololabis saira* was investigated for understanding the mechanism of behavioural responses of pacific saury to the light attraction in capture process of gill net at Okhotsk Sea, Hokkaido.

[Methods] The retinomotor response was examined from the cone ellipsoid movement to identify the retinal adaptation for 35 individuals (FL:225-365mm) under the fishing condition with incandescent lamp (9,000watt; $0.48\mu\text{w}/\text{cm}^2/\text{nm}$ at 1m depth), according to the repeated gill-net hauling of time elapsed for lighting as 5, 15, 30, 45, 60, 90, and 150 minutes. The eyeballs were immediately sampled, and then fixed in bouin's solution for histological examination. The cone index (Ci) was calculated as $Ci (\%) = \{1 - [(Cr-Cl) / (Cd-Cl)]\} \times 100$, according to each time interval.

[Results] Cone movement was observed to start in 5 minutes by the lighting stimuli for showing Ci as 32%. The transitional stages were also identified with Ci of 47 – 83%, according to the lighting conditions, for reaching to the fully light-adapted stage of Ci as 97 – 100% for single cones, in 90 – 150 minutes sampling time. The single and double cones showed the different tendency of the photosensitivity. The single cones tended to be more sensitive to the light stimuli than the double cones which did not reach to the fully light-adapted stage even after 150 minutes under the light.