

Visual acuity of Pacific saury *Cololabis saira* in capture process of light fishing

(集魚灯漁業の漁獲過程とサンマの視精度)

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[Objective] The visual acuity of Pacific saury *Cololabis saira* was investigated for understanding the mechanism of the behavioural response in the capture process, how the fish can recognize the fishing gear and then how they can avoid the gear

[Methods] The growth change of visual acuity was examined for individuals in the size range of 75-365 mm in fork length through the retinal histological examination. The head segments were dissected immediately after hauling the net onboard. The retina specimens were prepared for the microscopic observation with the microtome tangential dissection in 4 µm thickness

[Results] The contour map of cone density distribution shows that the highest cone density is located in the temporal area of the retina, which indicated the visual axis as the fore direction. The visual acuity depends both on the focal length of the lens and the number of cones in the retina. The lens diameter increased linearly from 1.40 mm to 4.73 mm with the fish growth, while the cone density decreased gradually from 765 cells/0.01 mm² to 378 cells/0.01 mm². Our results show that the visual acuity (V.A.) increases proportionately from 0.057 to 0.140 for individuals ranging in FL from 75 mm to 365 mm as expressed by the following equation;

$$V.A. = 0.0065 FL^{0.5271} \quad (r^2 = 0.9624).$$