Color and Deepwater Fish

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Light levels drop rapidly as you move down the reef face. For example, at about 150 feet, surface irradiance (measured at 100,000 lux) may drop by 97 percent (down to about 3,000 lux). In reef tanks, it is not uncommon to see lux levels of 10,000 to 20,000 (lux is an international metric unit of measurement similar to a foot-candle: 1 foot-candle, which is a measurement of illumination equal to the light from a candle at 1 foot of distance, equals 10.7 lux). Some of the deepwater fish becoming more readily available in the trade are being collected at 200 feet or more, where the light is blue and relatively dim.

The first person to suggest that bright illumination may impact color was biologist Ronald Thresher in his book Reef Fish (1980. Palmetto Publishing, St. Petersburg, Florida). He reported that some grammas may lose color in captivity because of the bright conditions in which they are kept. He was forming this hypothesis back when aquarists were primarily using standard fluorescent bulbs. Since then, I have seen deepwater anthias being fed a healthy and varied diet (including pigments to enhance color), but their colors were bleached out. These fish were housed in small-polyped stony (SPS) coral aquariums illuminated by numerous large metal halides. I have also seen deepwater wrasses exhibiting similar color loss in SPS aquariums that glowed like the sun. There is no doubt that a lot of color loss in marine fish may be related to diet, but there is evidence that the colors of deepwater fishes may also fade as a result of light intensity.

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