

Assessment of Visual and Olfactory Perception of Water Quality in a Fishing Harbor

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Abstract

Many fishing harbors at home and abroad are moving towards tourism development; therefore water quality in fishing harbors is now getting a lot of attention. The accessibility of water in recreational harbors focuses more on people's visual and olfactory perception at the psychological level. Hence, a water quality index based on this is needed as a basis to assess the water quality in fishing harbors.

This research investigated the tourists' assessments of visual and olfactory perception satisfaction toward the fishing harbor water in Hsinchu, Taiwan. It used this result together with the results of a series of water quality tests conducted at the same time to create a harbor water quality assessment model. Research methodology was based on the mathematical concept of envelope. The simple correlation between the visual and olfactory perception satisfaction and a water quality factor was examined while excluding the impacts of other factors. Based on the results, the concept of water quality perception satisfaction curve was established.

The visual or olfactory perception satisfaction curves for water quality factors were divided into four perception satisfaction scales, and the numerical interval for each satisfaction grade was defined which would be used as the water quality assessment standard to assess the visual and olfactory perception satisfaction. Lastly the visual and olfactory water quality assessment standards were integrated and a single water quality assessment standard was proposed which included four water quality factors; dissolved oxygen, ammonia nitrogen, total phosphorus and transparency to facilitate the comprehensive assessment of the visual and olfactory perception about the water quality in the fishing harbor.

Keyword : Visual Perception, Olfactory Perception, Envelope, Water Quality Assessment Index