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Elements Content in Otolith as Pollution Indicator for Cultured Sea Bass (*Lates calcarifer*) of Malaysia

PDF (Size: 1611KB) PP. 1689-1703 DOI: 10.4236/jep.2012.312184

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ABSTRACT

Otoliths of cultured sea bass and ambient waters were sampled from 24 fish cages and ponds in Malaysia to investigate the contents of Sr, Mg, Ba, Cd and Zn. The following elements content in otolith and water were analysed with Inductively Coupled Plasma Mass Spectrometer (ICP-MS) and/or Atomic Absorption Spectrometer (AAS) to determine the anthropogenic impacts based on the grouping characterisation of the sampling locations. Three groups *i.e.* A, B and C were characterised according to the least, intermediate and high anthropogenic impact to otolith elemental content. The Enrichment Factor (EF) and Metal Pollution Index (MPI) were calculated to determine the pollution source and level. The content of Ba in otolith was found positively related with the salinity variation and Ba content in water. Elevated content of Zn in otolith and water was found in group A suggesting that oil leaking from tourist boating activities effects exceed the urbanisation and industrialisation impact. EF_{Zn} support the enrichment of Zn in waters which exceed the recommended level. MPI showed that group A > C > B and support that tourism activities affect the pollution level and indicate otolith functioned as pollution indicator. Highest EF_{Cd} suggested Cd incorporation onto otolith despite of the low content of Cd in water. The sequence of the elements content in otolith and water are Sr > Mg > Zn > Ba > Cd and Sr > Mg > Ba > Zn > Cd respectively.

KEYWORDS

Pollution; Otolith; Zn; Ba

Cite this paper

A. Sarimin and C. Mohamed, "Elements Content in Otolith as Pollution Indicator for Cultured Sea Bass (*Lates calcarifer*) of Malaysia," *Journal of Environmental Protection*, Vol. 3 No. 12, 2012, pp. 1689-1703. doi: 10.4236/jep.2012.312184.

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