

## 基于综合生物标志物响应指数法评估近岸海洋环境压力——以广西西部沿海为例

邢永泽,周浩郎,吴斌,阎冰\*\*

(广西红树林研究中心/广西红树林保护与利用重点实验室,广西北海 536007)

Assessment of marine environmental stress based on the integrated biomarker response index model: A case study in west coast of Guangxi.

XING Yong-ze, ZHOU Hao-lang, WU Bin, YAN Bing

(Guangxi Mangrove Research Center/ Guangxi Key Laboratory of Mangrove Conservation and Utilization, Beihai 536007, Guangxi, China)

摘要

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摘要

2011—2012年,在广西西部沿海设置5个站点,以野生文蛤作为指示生物进行3次采样监测。从个体、细胞和分子水平选择了钻沙所需时间、吞噬能力、溶酶体膜稳定性、血浆三价铁还原力、乙酰胆碱酯酶活性及彗星率6项指标,利用综合生物标志物响应指数模型(IBR),整合上述生物标志物指标,并转化为形象直观的星状图,对调查站点的环境状况进行风险评估。结果表明:各站点的综合生物标志物响应指数值(IBR/ $n$ )介于2.30~8.68,茅尾海的环境压力最大,北仑河口最小。虽然不同的生物标志物对污染压力的响应存在差异,但利用IBR可以有效区分文蛤所在区域的环境压力状况。利用生物标志物的监测结果与化学监测结果基本吻合。

关键词: 文蛤 生物标志物 综合生物标志物响应指数 环境压力

Abstract:

*Meretrix meretrix* were collected for 3 times from 2011 to 2012, at 5 stations along west coast of Guangxi and wild and used as a biological indicator for assessing the marine environmental stress. Six biomarkers at individual, cellular and molecular levels were selected, including time required to drill the sand, phagocytic ability, stability of lysosomal membrane, ferric reducing ability of plasma (FRAP), acetylcholinesterase activity (AChE), and comet rate. Utilizing the Integrated Biological Response Index (IBR) model, the above biomarkers were integratedly analyzed and the data were displayed by intuitionistic star plots to evaluate the environmental situation of the 5 stations. The results indicated that the biological response indices (IBR/ $n$ ) of the 5 stations varied between 2.30 and 8.68. Maowei Sea had the highest environmental stress, whereas Beilun Estuary had the lowest. Although different biomarkers were different in response to pollution stress, IBR model could effectively distinguish environmental stress of a specific area. The results of biomarker monitoring were basically in agreement with those of chemical monitoring.

Key words: *Meretrix meretrix* biomarker integrated biomarker response index environmental stress.

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