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### **Identifying reference sites in coastal areas of the Great Lakes**

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Identifying reference conditions in highly modified landscapes poses a challenging problem. We identified “least disturbed” conditions, based on the degree of anthropogenic disturbance in contributing areas of coastal Great Lakes wetlands. Reference sites were identified for the entire Great Lakes Basin based on the extent of anthropogenic stress and then uniquely in two ecoregions (the Northern Great Lakes (NGL) and Erie-Ontario Lowlands (EOL)). The reference threshold Anthropogenic Pressure (AP) metric for all NGL wetlands combined was 0.03, while that of the EOL wetlands was 0.37, approximately a 10-fold difference, illustrating the high level of underlying disturbance in the EOL. To quantify conditions at test sites we used fish community data from the set of reference sites along with non-reference sets sampled during the Great Lakes Environmental Indicators project. A sequence of analyses including cluster analysis, followed by discriminant analysis and a fixed-endpoint ordination allowed us to array sites along a gradient of disturbance.

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