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ABSTRACT SPECIFICATIONS

Title: Control charts as an informative and robust environmental monitoring tool for decision making

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Abstract:

Although monitoring is recognised as an integral part of environmental management, criteria for determining: a) whether an impact has occurred b) whether management intervention is required and c) whether the impact has been addressed, are often poorly developed. This is a current criticism of approaches such as "adaptive management" where changes to management are rarely implemented because decision rules are not clearly defined and/or agreed upon. Control charts are a transparent means of presenting monitoring data and illustrating distinct thresholds for impact detection and the need for intervention. The visual presentation of data in control charts allows monitoring data to be clearly communicated, and consensus on interpretation to be more easily reached. Control charts were originally developed to monitor manufacturing processes, but are increasingly employed in environmental monitoring. Statistical control charts generally rely on a period of baseline data in order to establish the natural variation of the system which is then used to determine a set of control limits. There are many statistical variations on this theme, and it is possible to monitor a range of different data types including multivariate data (e.g., community composition). We will present the basic structure of control charts, and then demonstrate their utility with examples from plant health and animal population monitoring programs. We will also describe some issues that need to be carefully considered when applying the approach.