

What is a mangrove? A global expert-based approach on definition, functionality and resilience of the ecosystem

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Abstract

Mangroves vary considerably in their attributes (species composition, structure, function, dynamics and resource use) across the globe. Thereby it is difficult for one person or a few individuals to arrive at a synthesis view on mangroves as an ecosystem. It is perhaps even more challenging to comprehend the resilience of mangroves to a suite of disturbances given the alarming rate of their decline. In addition, currently there is little or no consensus on which attributes to focus on while studying ecological functionality of any ecosystem. This is particularly problematic for a pan-tropical ecosystem like mangroves given: (i) their varied ecological settings and structure, (ii) their occurrence in a zone of flux (at the interface of rivers, land and the sea).

In order to resolve these gaps in knowledge we invited 106 experts from around the globe to participate in an online iterative survey based on the Delphi method. The Delphi method is a group consensus technique widely used in medical sciences and nursing. The advantage of this method lies in its anonymous and iterative nature. The experts were chosen based on (i) their research experience and (ii) number of peer-reviewed publications related to mangrove ecology. The participants were encouraged to offer a worldwide and varied view with respect to the above complexity. Thirty three (33) experts participated in the first round. Experts were asked to contribute to their opinion on open ended questions (e.g. definition of mangrove ecosystem) or rank items on a Likert Scale of 1 to 5 for close-ended questions. The results of this initiative will help us develop a better understanding of the 'whole ecosystem' of mangroves rather than gather knowledge 'on a sum of its parts'. We also evaluate whether the issues raised by the experts may or may not have a bearing on mangrove management policies.

Keywords

Delphi method, ecosystem function, species composition, threats, Likert scale, ecosystem service