

# A novel quantitative ecological and microbial risk assessment methodology: theory and practice

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© 2019, © 2019 Taylor & Francis Group, LLC. The environment is a complex system where humans, materials (e.g. pollutants), and ecological (e.g. plants, animals, microbes) and meteorological conditions interact with each other. The impact of humans potentially causes significant damage to either the environment (e.g. oil spills may pollute coastal ecosystems) or turns against humans themselves by favoring the growth of unwanted species (e.g. poor sanitation increases microbial populations that cause the risk of large numbers of humans falling ill). Thus, this paper presents a flexible method for quantifying either ecological risks (i.e. the percentage likelihood of adverse effects on the ecosystem due to its exposure to stressors such as chemicals, fishing, etc.) or microbial risks (i.e. the likelihood of negative effects in humans due to their exposure to microbial pathogens). The method uses population modeling to simulate future changes in the numbers of key-species (e.g. fish, corals