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Empowering communities through citizen science in seaweed management

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Brown seaweed blooms (i.e. overgrowth of native seaweed) and invasions (i.e. introduction, establishment and dispersal of non-native seaweed with associated impacts) have affected 29% of the Earth's coast. For example, the proliferation of invasive pelagic *sargassum* across the tropical Atlantic poses significant environmental challenges and socio-economic problems to coastal communities. This study investigates the role of citizen science in enhancing local responses to nuisance seaweed. By integrating communities in Ghana, Mexico and Jamaica affected by invasive *sargassum* spp., and the UK affected by blooming *ulva* spp., the research uses four innovative approaches: (1) establishing permanent volunteer monitoring stations, (2) providing training on coastal monitoring, (3) co-creating educational content for schools and (4) forming an international network for experience sharing. The monitoring stations – Ghana (n = 7), Mexico (n = 7), Jamaica (n = 2) and the UK (n = 1) – enable communities to collect data by photographing their coastlines. These images provide valuable insights into seaweed seasonality and its localised impacts. Community engagement is deepened through tailored educational programs for students aged 11-18, fostering an understanding of seaweed dynamics and adaptive measures. The establishment of the Seaweed School and Community Network amplifies these efforts by connecting seaweed-affected regions, facilitating knowledge exchange and collaborative problem-solving. Our findings suggest that citizen science offers an intervention point to work with communities to help them learn about the problem and share knowledge of how to handle these challenges. It generates important data and more informed citizens can engage more effectively in co-developing locally-appropriate seaweed policy through this process. Given that other seaweed species are blooming/invasive in coastal regions across the planet, the lessons being generated from community monitoring of *sargassum* and *ulva* have the potential to drive improved adaptations to nuisance algae globally.