

An Introduction to Behavioural Ecology, 4th Edition

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MINI REVIEW

Consequences of nuclear accidents for biodiversity and ecosystem services

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Abstract

Nuclear energy is a potential solution to electricity demand but also entails risks. Policy debates on nuclear accidents have focused primarily on negative impacts on humans. Although such impacts are important, we argue that policy debates must also consider the consequences for biodiversity and ecosystem services. We reviewed 521 studies conducted after the Chernobyl accident, the most severe nuclear accident in history. Elevated radiation levels have been recorded among a diversity of species, even up to thousands of kilometers away from the meltdown site, and after more than two decades following the accident. Close to the reactor, physiological and morphological changes have occurred. Negative effects on ecosystem services have been observed, including the contamination of water, soils, and wild food supplies. Informed policy decisions on nuclear energy require a greater understanding of the consequences of accidents, including effects on biodiversity and ecosystem services. Based on our review, we recommend to (1) fully incorporate risks for biodiversity and ecosystem services into policy debates; (2) develop a coherent information chain regarding such risks; (3) use proactive planning strategies to be prepared for potential accidents; and (4) develop a coherent research agenda on the consequences of nuclear accidents for biodiversity and ecosystem services.

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