

Assessing the impacts of the nuclear power plant accident on the gathering of edible-wild plants and mushrooms in mountainous villages, Japan



Toshiya MATSUURA

(Tohoku Research Center, Forestry and Forest Products Research Institute, JAPAN)

Email: matsuu50@affrc.go.jp, HP: <https://researchmap.jp/tm50jp?lang=en>

Abstract: Radioactive contamination by the Fukushima Dai-ichi Nuclear Power Plant (FDNPP) accident has impacted cultural and provisioning forest ecosystem services in eastern Japan. A household questionnaire survey in mountainous villages showed that the number of households who enjoyed edible-wild plants/mushrooms gathering or mountain stream fishing had decreased significantly after the accident (Fig. 1) due to radioactive contamination, depopulation, and aging. Using a face-to-face questionnaire survey to experienced gatherers (Fig. 1b), multi-criteria evaluation, and geographic information systems (GIS), potential gathering sites of wild vegetables/mushrooms before the accident were estimated (Fig. 2). By overlaying this potential gathering sites map with the future air dose rate map (Fig. 3), future reusability of the previous gathering sites was assessed from the view of external radiation exposure.

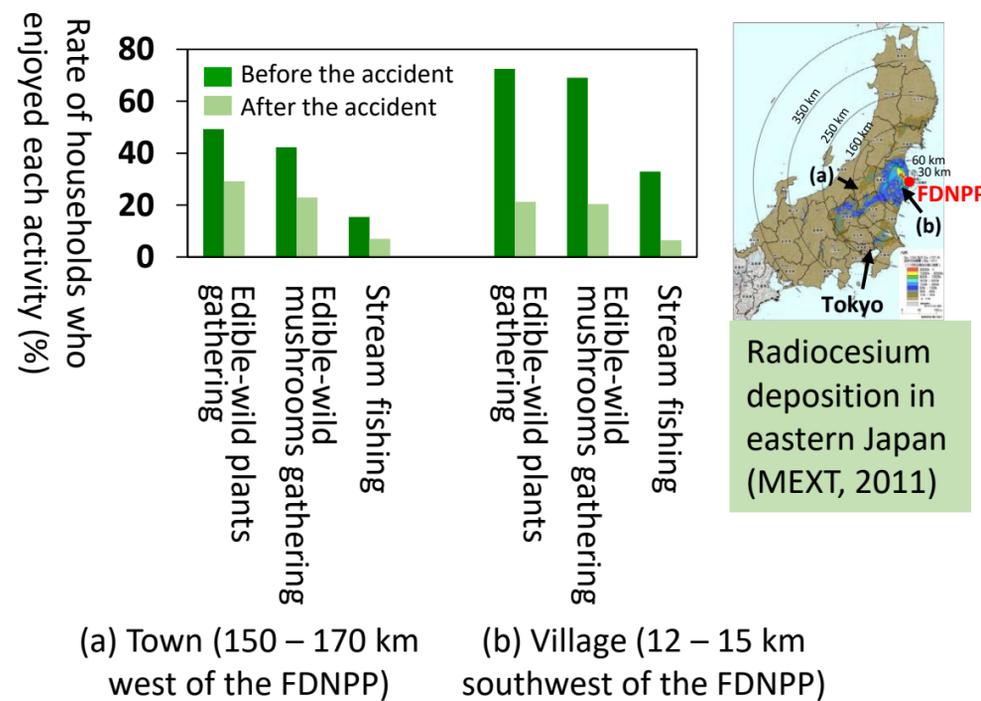


Fig. 1. Rate of households who enjoyed each activity before (2008 – 2010) and after (2015) the accident.

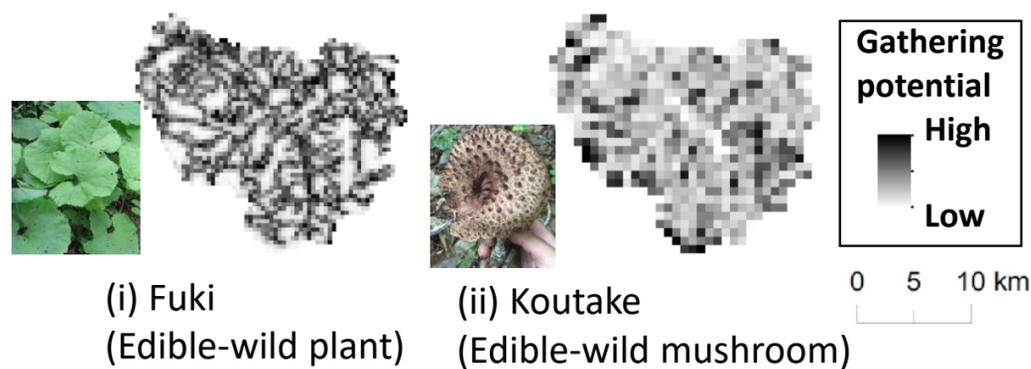


Fig. 2. Potential gathering sites of edible-wild plants/mushrooms before the accident.

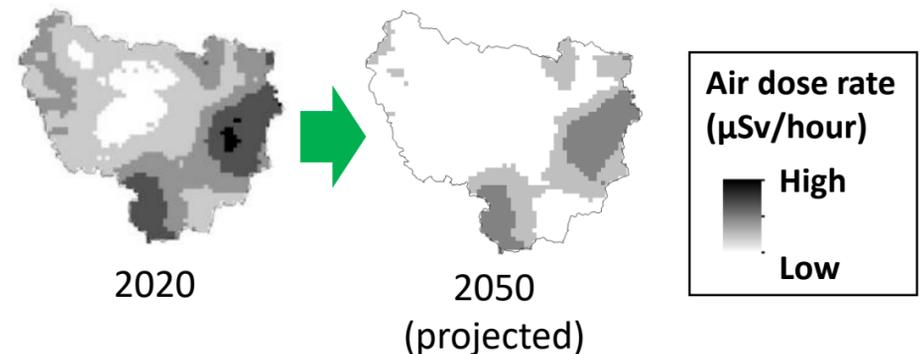


Fig. 3. Projected change in air dose rate using airborne radiation monitoring data.

More information: Matsuura, T (2021) Assessment of potentially reusable edible wild plant and mushroom gathering sites in eastern Fukushima based on external radiation dose. *Journal of Environmental Radioactivity*, 227, 106465 (open access).

<https://doi.org/10.1016/j.jenvrad.2020.106465>

Research grants: Japan Society of the Promotion of Science (JSPS) 15K18717, 15K11931

Research areas: Geographic information sciences (interactions between human and nature), forest landscape ecology, ecosystem services assessment (cultural and provisioning services)

Research topics:

1. Geospatial assessment of cultural ecosystem services and their sustainability (e.g., outdoor recreational activities, non-timber forest products use)
2. Sustainable forest resources management in a population decline and an aging society
3. Relationships between the historical backgrounds of forest land ownership/tenure and forest use/management

Research grants: JSPS 20K06117, 20H04397, 20H00057

Expected international collaboration: To develop robust tools for assessing the sustainability of cultural ecosystem services considering changes in the society and the environment

More info about the FDNPP accident: A webinar video on “Forests in Fukushima and Chernobyl: People, wildlife and landscape” is available in IUFRO 8.01.02 Landscape Ecology working party website.

<https://iufrole-wp.weebly.com/webinars.html>