

Afforestation and management of coastal disaster prevention forest as forest-based DRR

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In Japan, afforestation of coastal forests has been conducted by planting Japanese black pine (*Pinus thunbergii*) seedlings since the 17 century to protect coastal areas from blowing sand, tidal waves, and strong winds. In March 2011, many Japanese black pine trees with shallow root systems were washed away in the Tsunami disaster that followed the Great East Japan Earthquake. Nowadays, coastal forests with higher resilience for disaster have often been afforested in restoring the damaged area by constructing the embankments as forest growing media using piling-up soils to secure sufficient soil depth and allow roots to penetrate deep into the grounds.

In the subtropical and tropical areas, mangrove forests distributed in the intertidal zones are also known to protect against tidal and wind damage and reduce waves. Therefore, in those areas, expectations are increasing for mangroves as a forest-based disaster risk reduction (f-DRR) against the intensification of a disaster such as storm surges caused by sea level rising. For mangroves to contribute to disaster prevention and mitigation as F-DRR, mangroves must grow healthy in coastal areas. However, reforestation methods of the degraded mangrove forests converted to fish and shrimp ponds are not sufficiently developed.

In this presentation, I would like to introduce the research activity that FFPRI and VAFS are currently collaborating on and discuss the technical considerations for restoring degraded mangrove forests based on the past reforestation results.

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He joined FFRPI in 1998, was transferred to the Tohoku Research Center in 2006, and assumed his current position in July 2021. He specializes in forest soil science. He has been engaged in research on carbon dynamics in soils of terrestrial and mangrove forests, including soil carbon accumulation, humus production, and soil formation. After the Great East Japan Earthquake in 2011, he has also been engaged in research related to the restoration and the characterization of built-up soil of coastal disaster prevention forests.