# [***Hokkaido University study on linking humans with blue carbon ecosystems***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:63MK-SVC1-JB5M-W25S-00000-00&context=1516831)

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**Body**

Summary: Social vulnerabilities of coastal communities and their reliance on ***blue carbon*** ecosystem services may be improved by addressing three major factors, according to a new study.

Social vulnerabilities of coastal communities and their reliance on ***blue carbon*** ecosystem services may be improved by addressing three major factors, according to a study led by Hokkaido University researchers.

Ecosystem services (ES) are benefits nature provides to humans. In coastal areas, seagrass meadows and ***mangroves*** provide key ecosystem services, including carbon sequestration and climate mitigation. The carbon sequestered in coastal and marine vegetated ecosystems is known as ***blue carbon***, and the ecosystems are usually referred to as ***blue carbon*** ecosystems. ***Blue carbon*** ecosystems are being lost at a high rate in Southeast Asia. This is problematic because local communities living on the coast heavily rely on seagrasses and ***mangroves*** for provisioning services such as livelihoods and food security.

A team of scientists from Japan and the Philippines, including Dr. T. E. Angela Quiros, Dr. Kenji Sudo and Professor Masahiro Nakaoka of the Field Science Center for Northern Biosphere at Hokkaido University's Akkeshi Marine Station, examined the social vulnerability of fishing communities that rely on ***blue carbon*** ecosystems. The Hokkaido University team collaborated with Busuanga-based NGO C3 Philippines and members of the local government, as well as the Busuanga community for the field collections. Their findings, presented at the sixthInternational Marine Conservation Congress(IMCC6) and published in the journalFrontiers in Marine Science, suggest conservation strategies to manage social vulnerabilities of coastal communities who rely on ***blue carbon*** ecosystems.

Seagrass ecosystems and their fisheries were more vulnerable to loss and degradation than ***mangrove*** ecosystems and fisheries as it takes more effort to catch the same amount of fish from seagrass ecosystems compared to ***mangrove*** ecosystems. Furthermore, certain seagrass meadows and ***mangrove*** forest types were more sensitive as they occupied a smaller area of the coastline and were host to lower species numbers; others had decreased adaptive capacity due to physical isolation and hosting species with slower growth.

Socio-economic sensitivity increased in communities with greater reliance on fisheries and tourism income. Communities with low adaptive capacity were mainly composed of fisherfolk with low education levels and high average fishing experience, and thus few alternatives to fishing. Urbanized (Barangay 5, Tagumpay) communities were more vulnerable than rural communities (Borac, Quezon, Turda) due to degraded ***blue carbon*** ecosystems, greater population density and threats from tourism and development.

The scientists examined how ten fishing communities on Busuanga Island, Palawan Province, Philippines responded to the loss or degradation of ***blue carbon*** ecosystems, namely seagrasses and ***mangroves***. They assessed the ES provision for small-scale fisheries in multiple ways. They performed ecological assessments of seagrass beds, spatial analysis of seagrass and ***mangroves*** along the coast, fisher landing surveys, household and key informant interviews. This wealth of data was used to map social vulnerability in 3 criteria: Exposure, or threats to the ***blue carbon*** ecosystems; Sensitivity, or the local importance of ***blue carbon*** ecosystems; and Adaptive Capacity, the assets available to avoid impacts in the future from the loss of ***blue carbon*** ecosystems.

Across all communities, adaptive capacity was constrained by the lack of education, but increased with diversified livelihoods and access to information from and initiatives by NGOs and community organizations.

"Our findings show the need to improve access to education, increase NGO activities and the number of organizations around ***blue carbon*** ecosystems, and initiate equitable fisheries management for the vulnerable seagrass and ***mangrove*** fisheries," says Angela Quiros.

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