Pacific Islands Climate Change Cooperative

PACIFIC ISLANDS
CLIMATE CHANGE COOPERATIVE

Study reveals the future(s) of Pohnpei birds

An analysis of 1000 potential "futures" that include changes in climate, sea level, and human land use on the highest island in the Federated States of Micronesia, indicates that 7 of 10 specialized or unique bird species are likely to suffer declines. Pohnpei boasts the world's lowest montane cloud forest and vast expanses of mangrove, along with 6 bird species and over 100 plants that are unique to the island, placing it among the top "hot spots" in the world for conservation of plant and animal life.

With support from the Pacific Islands Climate Change Cooperative, Conservation Society of Pohnpei, and Pohnpei State Department of Forestry, researchers from the University of Missouri surveyed bird populations and their habitats in 2012, then compared results to previous surveys conducted over the past 3 decades. They next modeled future conditions, showing 1000 possible Pohnpei futures with different combinations of agricultural expansion, new agriculture in undisturbed forest, patterns of rainfall, drought, and sea level rise.

Combining results from all 1000 future scenarios, they found that on average, each species is predicted to decline by approximately 7.6%. Population declines are most closely associated with sea level rise, negatively affecting 7 out of 10 species studied. However, changes in the amount and location of cultivated land or secondary regrowth (after human use) consistently ranked as one of the top 2 factors impacting half of the species studied.

Future climate and land development

Anticipated climate changes for the Central Western Pacific region include increased sea level rise, more rainfall in the dry season, less rainfall in the wet season, and more frequent and intense storms. People have used Pohnpei's forests since they first arrived on the island, with occupancy concentrated in lowland regions. In recent years, changes in traditional land use practices have resulted in more and more commercial cultivation of sakau (a pepper shrub grown for use as a communal beverage) and other crops. Plantations are also encroaching into higher elevations where they impact undisturbed cloud forest habitat. The effects of urbanization and expanded agriculture will likely be exacerbated by climate change, as forest changes and sea level rise cause people to move to higher ground.

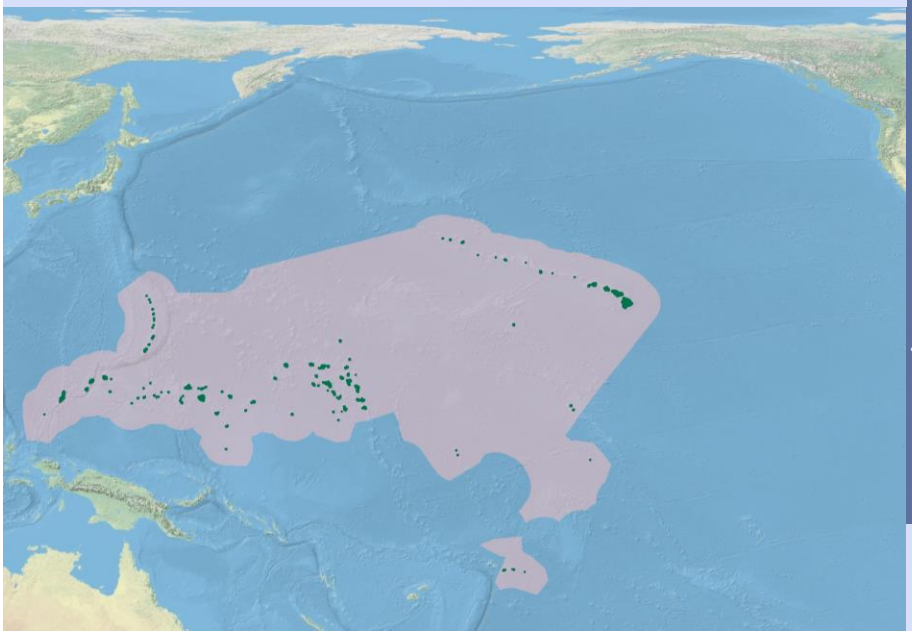
Birds and forest health are linked

Birds are indicators of forest health. This study highlights the importance of Pohnpei's cloud forests and mangroves in sustaining the island's specialized bird communities. Cloud forests are also important as a source of freshwater, and mangroves serve as protective barriers against storm damage. The researchers' management recommendations focus on the protection of upland habitats and mangroves, along with management for native vegetation in areas near existing settlements.

An application developed by University of Missouri researchers during the course of this study may be useful in pinpointing high priority areas for future protection and management. Further immediate benefits of this research include educational outreach offered to Pohnpei landowners and the public, as well as training in standardized bird and plant survey techniques conducted for staff of the Conservation Society of Pohnpei and the Pohnpei Department of Land and Natural Resources.

For more details about this project, visit the PICCC projects page: piccc.net/our-projects.

The map below depicts the PICCC geography, which includes Hawai'i, American Sāmoa, Guam, the Northern Mariana Islands, the Marshall Islands, the Federated States of Micronesia, Palau and 4 Marine National Monuments.



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Project Partners

College of Micronesia
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The Pacific Islands Climate Change Cooperative (PICCC) was established in 2009 to assist those who manage native species, island ecosystems, and key cultural resources in adapting their management to climate change for the continuing benefit of the people of the Pacific Islands. The PICCC provides a range of services and tools to help managers in Hawai'i, the Mariana Islands, American Sāmoa, and other Pacific Island groups make informed decisions for conservation of natural and cultural resources including climate models at the scale of islands and archipelagos, ecological response models, and implementation and monitoring strategies for island species, resources, and communities. Our goal is to help managers reach explicit biological and cultural conservation objectives in the face of climate change and ongoing threats such as fire, land conversion, and invasive species.

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