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Ramapo College Professor Leads Team that Finds High Genetic Diversity in an Ancient Clone

(MAHWAH, NJ) – The entire Hawaiian population of the peat moss *Sphagnum palustre* appears to be a clone that has been in existence for some 50,000 years researchers have discovered. Among the most long lived of organisms, every plant of the Hawaiian population appears to have been produced by vegetative rather than sexual propagation and can be traced back to a single parent, according to a team of researchers headed by Ramapo College Professor of Plant Ecology.

The genetic diversity of the Hawaiian clone is comparable to that detected in populations of *S. palustre* that do propagate sexually and occur across vaster regions, chronicled the study, which was published online in December by the journal *New Phytologist.*

"The genetic diversity of populations occurring on small remote islands is typically much lower than that detected in populations of the same species found on continents and on larger, less isolated islands," said Karlin.

As the Hawaiian Islands are the most remote high volcanic island system in the world, the comparatively high genetic diversity detected in the Hawaiian population of *S. palustre* is unusual.

The occurrence of high genetic diversity in a clone was also "quite unexpected" said Professor Karlin.

This study indicates that significant genetic diversity can develop in a clonal population. It also suggests that vegetative propagation does not necessarily preclude long term evolutionary success in a plant.

Headed by Professor Karlin, the research team also included colleagues at the University of Wisconsin-Madison (Sara Hotchkiss) in Madison, Wisconsin, USA, Duke University (Sandra Boles, Jonathan Shaw) in Durham, North Carolina, USA, and the Norwegian University of Science and Technology (Hans Stenøien, Kristian Hassel, Kjell Flatberg), in Trondheim, Norway.

Genetic lab work was done at the Duke University Bryology Lab headed by Professor Jonathan Shaw.

Data on the population of *S. palustre* in eastern North America was provided by a prior study led by Professor Karlin and published in *The Bryologist*; Ramapo College students Melissa Giusti

and Rebecca Lake were among the secondary authors of this prior study. In addition, a grant from the Ramapo College Foundation, which partly funded the Hawaiian project, enabled a third Ramapo College student, Falon Cartwright, to visit the Duke Bryology Lab where she gained experience with genetic analysis.

The study is available at: http://onlinelibrary.wiley.com/doi/10.1111/j.1469-8137.2011.03999.x/abstract

For more information, please contact Professor Karlin at 201.684.7743 or via email at ekarlin@ramapo.edu. For more information about *New Phytologist*, please visit http://www.newphytologist.org/.

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Ranked by *U.S. News & World Report* as sixth in the Best Regional Universities North category, Ramapo College of New Jersey is sometimes mistaken for a private college. This is, in part, due to its unique interdisciplinary academic structure, its size of approximately 6,008 students and its pastoral setting in the foothills of the Ramapo Mountains on the New Jersey/New York border.

Established in 1969, Ramapo College offers bachelor's degrees in the arts, business, humanities, social sciences and the sciences, as well as in professional studies, which include nursing and social work. In addition, Ramapo College offers courses leading to teacher certification at the elementary and secondary levels. The College also offers five graduate programs as well as articulated programs with the University of Medicine and Dentistry of New Jersey, New York Chiropractic College, New York University College of Dentistry, SUNY State College of Optometry and New York College of Podiatric Medicine.