

# Genetic diversity of aguaje (*Mauritia flexuosa*) in Peruvian and Ecuadorian Amazon

Dita Mervartová<sup>1\*</sup>, Bohdan Lojka<sup>1</sup>, Marie Kalousová<sup>1</sup>, Jorge Manuel Revilla Chávez<sup>2</sup>, Goldis Perry Davila<sup>3</sup> \*mervartova.d@centrum.cz

<sup>1</sup>Czech University of Life Sciences Prague, <sup>2</sup>Peruvian Amazon Research Institute (IIAP),

<sup>3</sup>National University of Ucayali



## Introduction

*Mauritia flexuosa* (aguaje) is a dioecious indigenous species from the family *Arecaceae* important for local people and for Amazon forest as a whole. The specific environments along the banks of large rivers or inside the lowland jungle forest, where water is retained and where nutrients are slowly decomposed, are called *aguajales*. Particularly these swampy areas, where *M. flexuosa* occurs in abundance, provide a refuge for different kinds of fauna and flora. People from the local communities living in the Amazon depend on its nutritive fruits. The fact that it is a dioecious species presents number of difficulties in cultivation. Therefore, a large part of the production is still obtained from wild stands, usually by cutting the female trees. Unfortunately, this unsustainable management of the fruit collection leads to degradation of *aguajales* and to biodiversity loss.

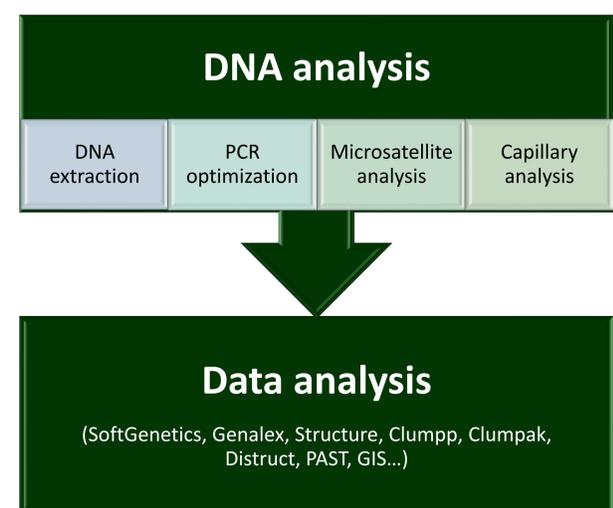
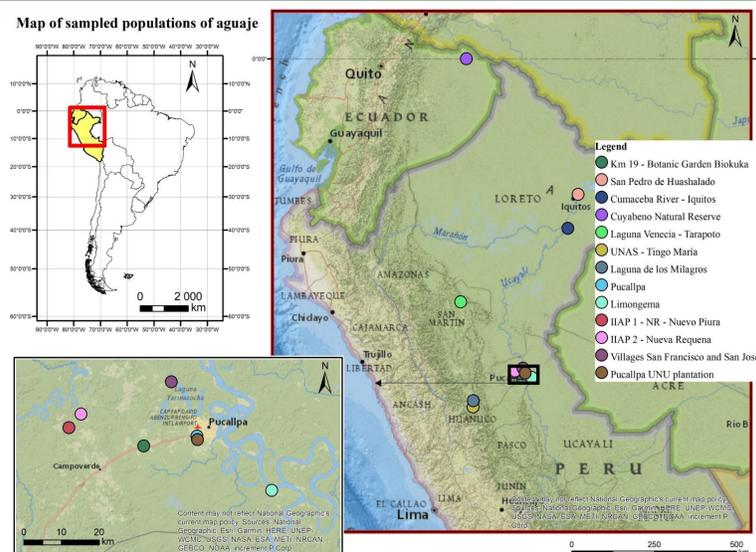
The specific aims of this study were:

1. To assess the intra- and inter-population genetic diversity of *M. flexuosa* in Peruvian and Ecuadorian Amazon by SSR microsatellite markers
2. To determine the genetic structure of sampled populations.
3. To find a correlation between geographical distances and genetic diversity among selected provenances and individuals.
4. To compare genetic variability among populations

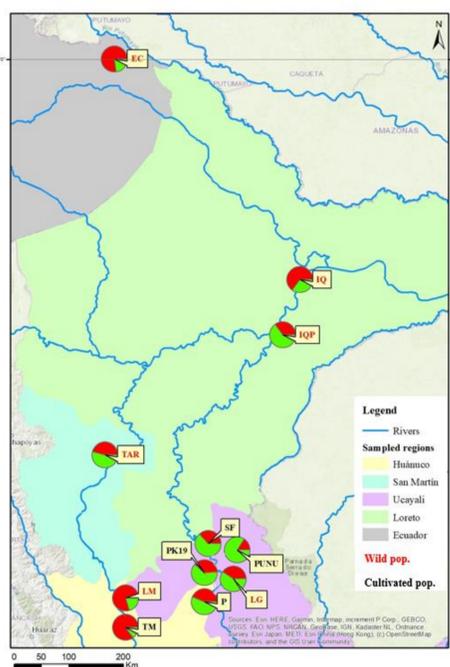
## Materials and Methods



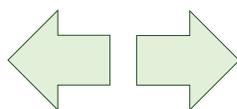
147 samples from 5 regions were collected in Peruvian and Ecuadorian Amazon between June and September 2018.



## Results



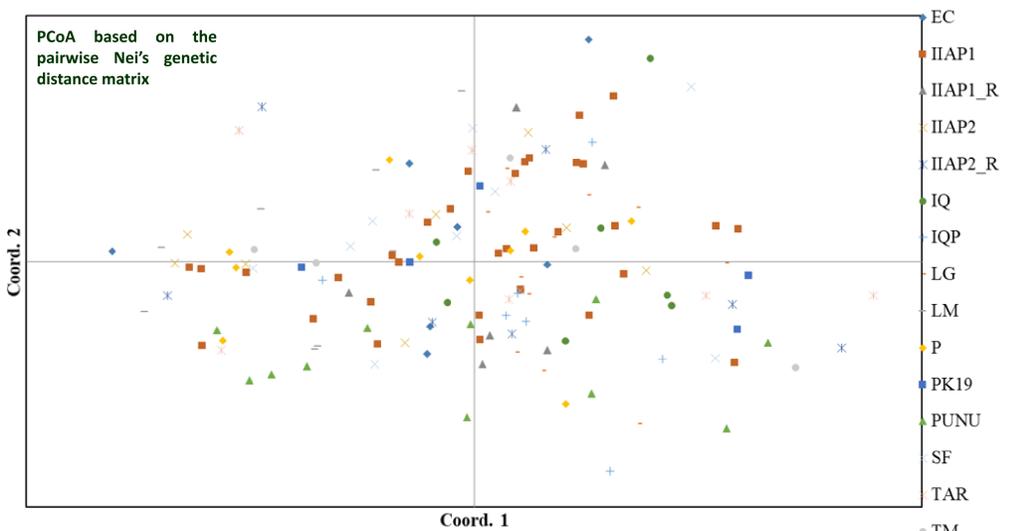
1. The populations were characterized by high values of genetic diversity and very low levels of inbreeding.



2. Sampled populations do not reflect existence of any clear stratification.

3. A very low correlation between geographic and genetic distances was determined using a Mantel test.

4. The high molecular variance was determined especially among individuals.



## Conclusion

➤ **Rivers significantly influence the gene flow.**

Any interference in the culmination of the rivers could irreversibly break long-lasting linkages and could easily result in an immediate decline in genetic diversity.

➤ **Human activity probably contributes to higher genetic diversity of *Mauritia flexuosa* in Peruvian and Ecuadorian Amazon.**

Lives of people have been closely connected to the banks of large rivers, as the same as the *M. flexuosa* occurrence. Numbers of ethnic groups have used *aguaje*, on a large scale, for generations.

### Acknowledgements

The research would not be carried out without the scholarship of the Universidad Nacional de Ucayali, mobility support of the Faculty of Tropical AgriSciences (CULS Prague) and the financial support of the foundation Nadání Josefa, Marie a Zdeňka Hlávkových.

