

Z02 – Central Scientific Support Unit



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Aim

Providing scientific support to the EForTS project by collecting various types of background data, fostering young Indonesian researchers in ABS-measures, and contributing to the maintenance of EForTS core plots.

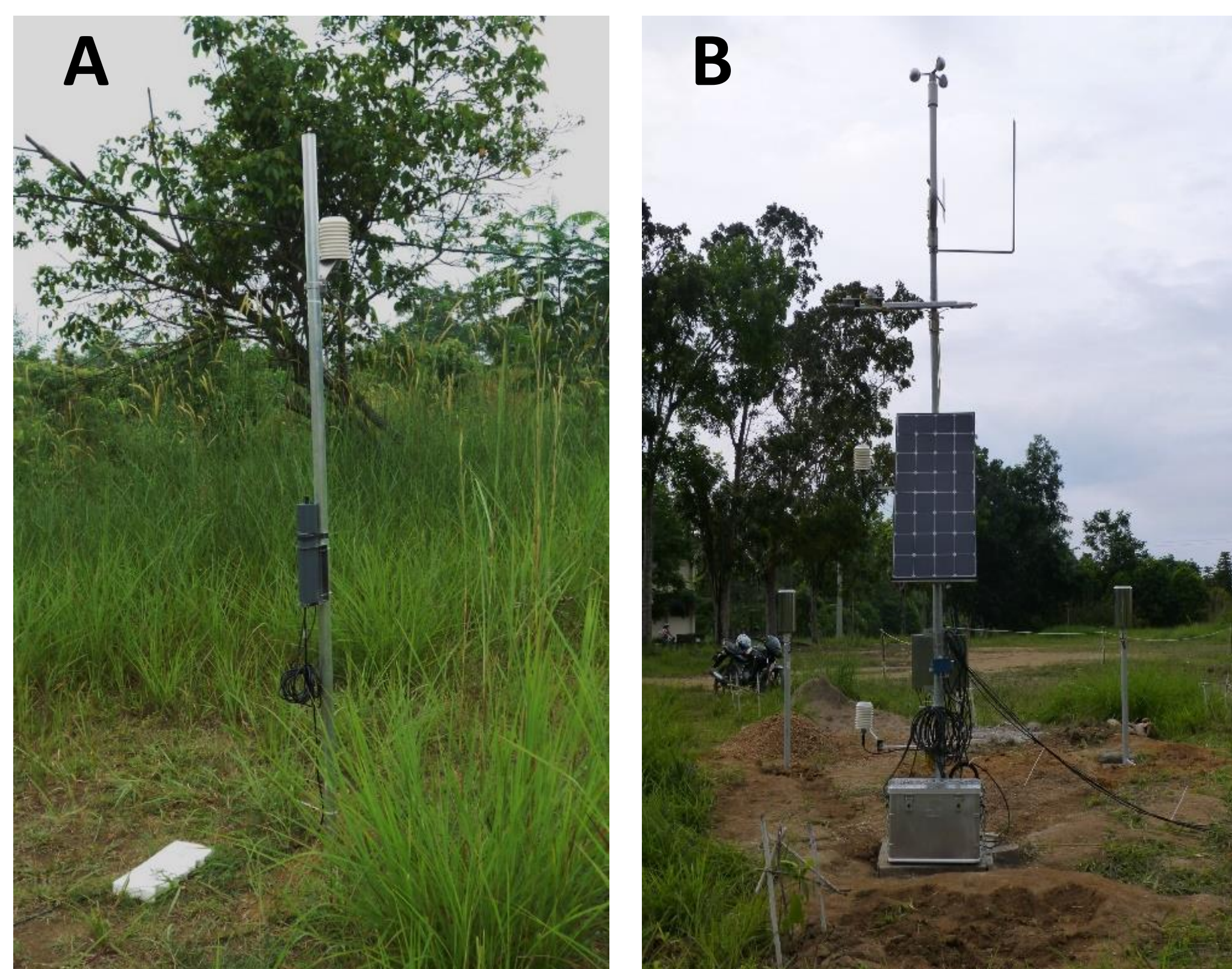


Fig. 1. Meteo-stations in core plots and reference sites.

Monitoring of meteorological data

Meteorological stations (Fig. 1A) have been installed in each of the 32 EForTS core plots, measuring basic microclimatic variables such as Temperature, relative Humidity and Soil Moisture. Early results suggest profound effects of land-use type on Air Temperature, Humidity and Soil Moisture (Fig. 2 A-C, mean \pm SE; F=Forest, J=Jungle Rubber, R=Rubber, O=Oil Palm). 5 reference meteorological stations (Fig. 1B) have been installed in the study area, additionally measuring elements of wind, radiation and rainfall. Historical patterns of Jambi rainfall/temperature in the past 20 years are analysed in cooperation with BMKG Jakarta.

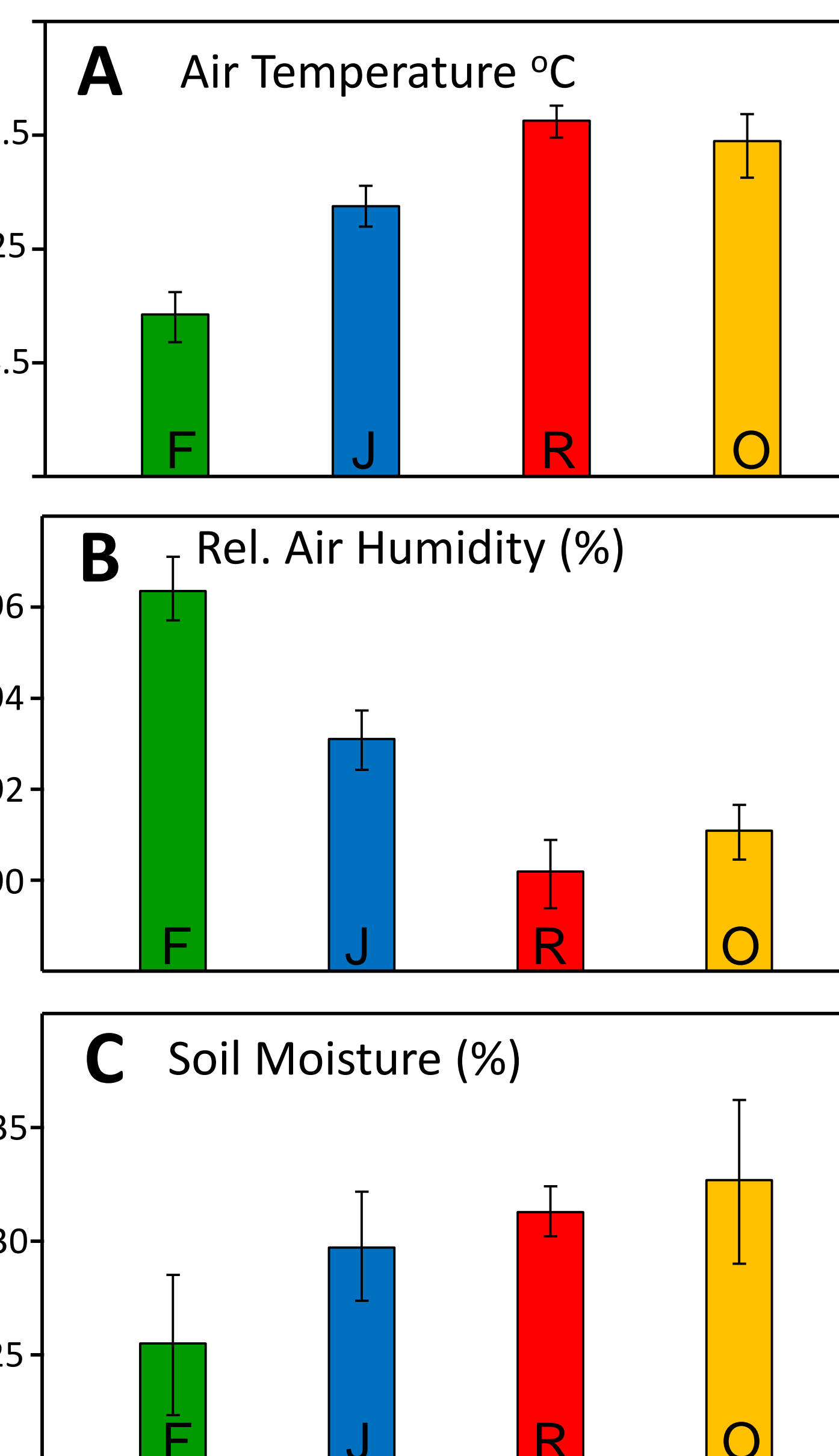


Fig. 2 A-C. Meteo-data from core plots

Barcoding of vascular plants

To be able to assign fine roots to plant species, a genetic barcode library of vascular plants is developed. 5200 leaf samples have been collected from all plots, and genetic barcodes of ca. 50% of all collected specimen have been obtained using two chloroplast DNA markers. Currently, two-loci DNA barcodes are being generated for online storage (BOLD) and the matching between species assignment based on DNA barcodes and morphological identification is being checked.



Fig. 3 Canopy Fogging in a rubber plantation.

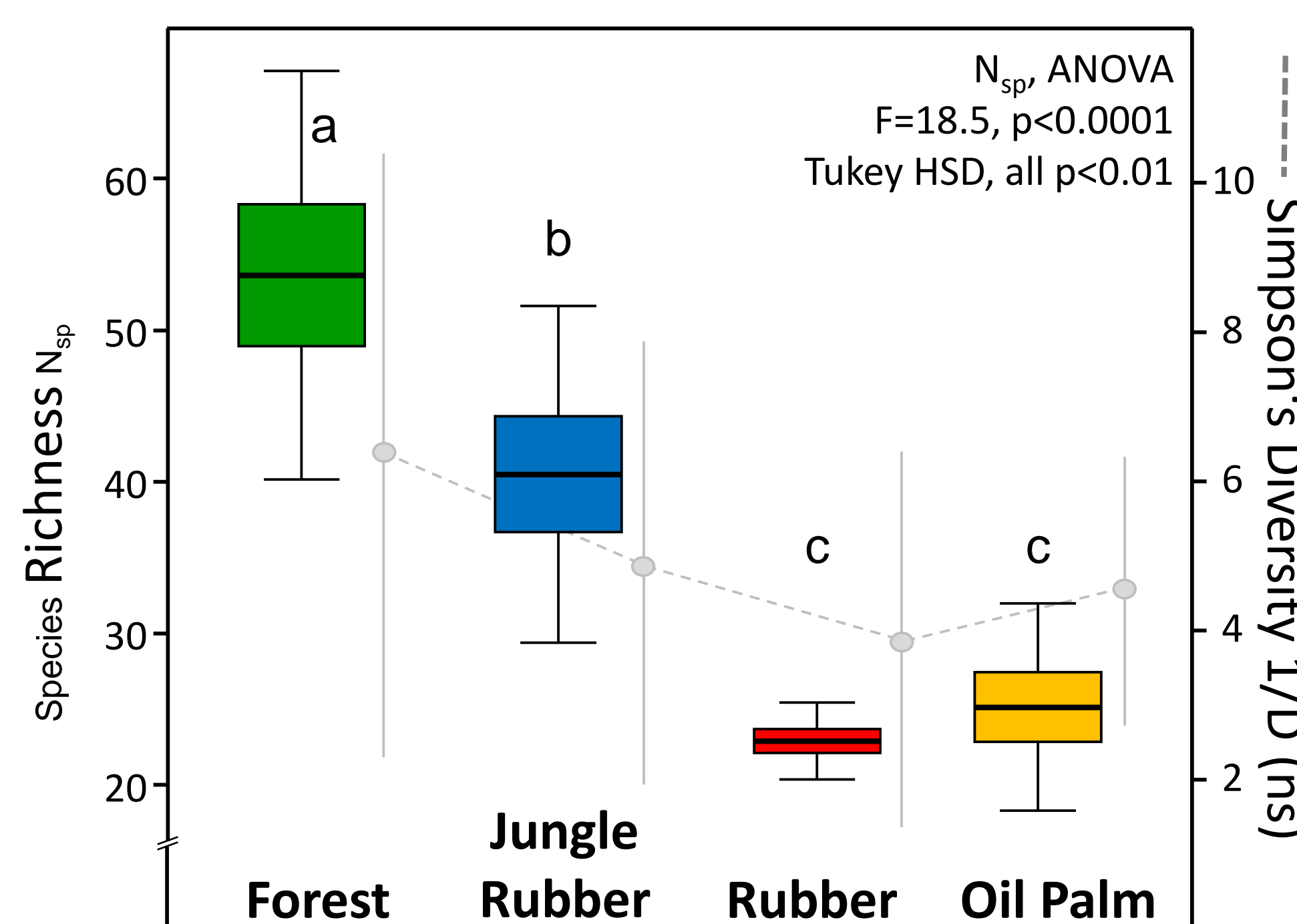


Fig. 4 Ant species richness and diversity.

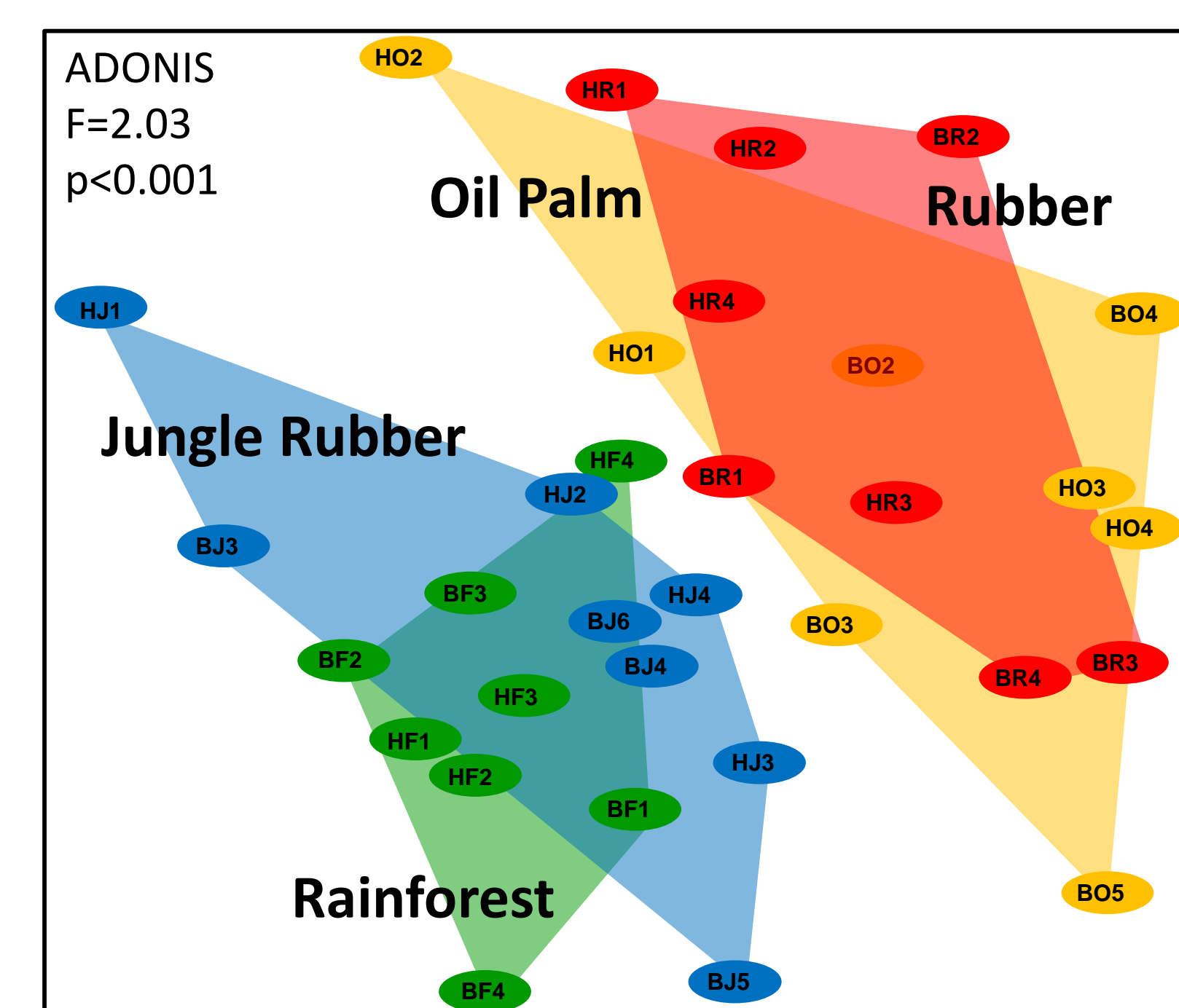


Fig. 5 NMDS of ant community composition.

Monitoring of canopy arthropod communities

Arboreal arthropods have been collected from all core plots in dry and rainy season 2013/2014 via canopy fogging (Fig. 3). Overall, ca. 1 million canopy arthropod specimen have been collected, of which ca. 420.000 have been assigned to order levels. Of those, ca. 70.000 ant specimen have been identified to species level. Results indicate a substantial loss of ant species richness with increased land-use intensity, while ant species diversity is not significantly affected (Fig. 4, Mean \pm SE/SD). This is partially explained by ant community composition, which shifts from native forest species to introduced, non-native species (Fig. 5).

Core plot management

Due to vandalism, theft or weather influences, the condition of the EForTS core plots deteriorates over time. Z02 CSSU staff visits all core plots in a biweekly cycle for regular maintenance. In forested areas such as PT REKI, Z02 also maintains the trails to the plots, e.g. by organizing the construction of bridges (Fig. 6). The Central Scientific Support Unit will also partake in the survey for future plots and organize their establishment and maintenance.

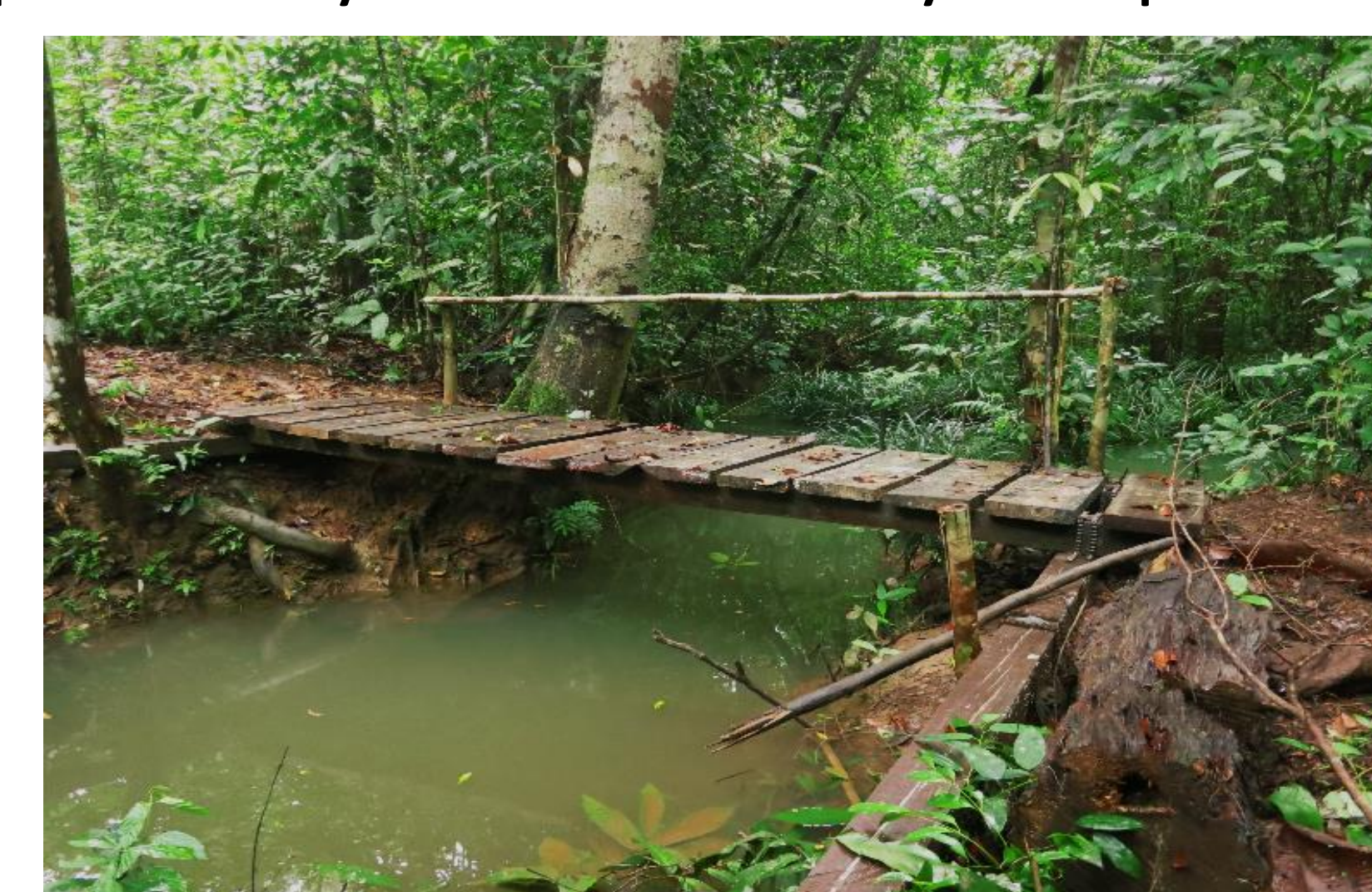


Fig. 6 Bridge to HF4 in Hutan Harapan