

生物資源保種研究中心

Bioresource Conservation Research Center

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Human-driven destruction of the habitats leads us on the brink of a global biological disaster that could rival anything in evolutionary history. Conservation strategies designed to protect plants have been taken place at local and international levels in recent decades. Bioresource Conservation Research Center of the College of Life Science, National Tsing Hua University will work with the Dr. Cecilia Koo Botanic Conservation Center (KBCC) to target these following goals: 1) Expending the living collection with at least 1,000 kinds of new plants per year; 2) Expending the cryopreservation of plant tissue with at least 2,500 species per year; 3) Setting up online database for KBCC plant collections; 4) Building up non-distortion plant specimen research and development facility in KBCC; 5) Setting up international training course for tropical plants conservation in KBCC every year; 6) Keep setting up the Practical Training Courses for undergraduates in KBCC; 7) Making scientific documentaries with local and international media; 8) Providing samples for high quality research. For instance, underwater CAM in *Isoetes taiwanensis* is investigated by generating a high-quality genome assembly and RNA-seq time course [1].

Moreover, Human activities are unintentionally or deliberately accompanied by movements of plants and animals. Non-indigenous species have often been imported into a new country in botanical or zoological parks or farms. If these exotic species are accidentally or intentionally released, they can become invasive and have detrimental impacts on local ecological communities and human activities. The African sacred ibis is an alien invasive bird species that has spread rapidly in Taiwan over the past three decades. However, little information is available on the process of their invasion in Taiwan. In recent years, the Forestry Bureau of the Agricultural Committee has actively engaged in the work of removing these invasive birds. We have taken this opportunity to obtain a large number of DNA and embryo samples of the African sacred ibis with the consent of the Forest Service, making it a potentially good model system for evolutionary biology [2]. Understanding the genetic and molecular basis of the characteristics of the African sacred ibis is also helpful for understanding the genetic basis of the evolution of other long-billed and long-footed waterbirds, and it is also beneficial to the fields of organ development and tissue engineering.

References

- 1) Wickell, D., Kuo, LY., Yang, HP. et al. Underwater CAM photosynthesis elucidated by *Isoetes* genome. *Nat Commun* 12, 6348 (2021); <https://doi.org/10.1038/s41467-021-26644-7>
- 2) Ng, C. S. Invasion and developmental genomics in an emerging bird model: The African sacred ibis. *AIP Conference Proceedings* 2353, 020001 (2021); <https://doi.org/10.1063/5.0053142>



- International Workshop for Zingiberaceae



- Undergraduate internship with Universiti Malaysia Sabah



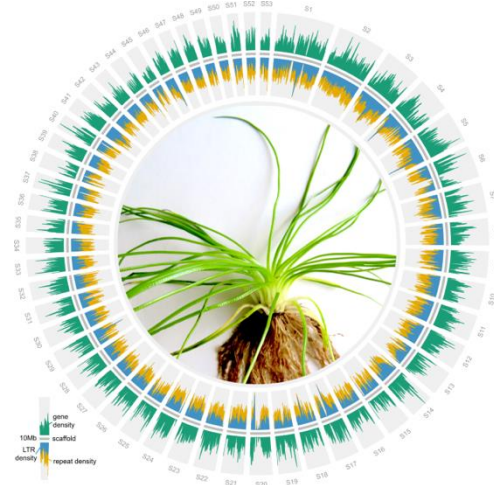
- Non-distortion Preservation of Natural Color in Plants



- A Documentary: Orchid Island



- Invasion and developmental genomics in an emerging bird model: The African sacred ibis



- Distribution of genes and repetitive elements in *I. taiwanensis*.