The general and main **Objective** of MACFLOR "MACARONESEAN ATLAS OF REPRODUCTIVE BIOLOGY" is to develop the most representative reproductive traits of the Macaronesian Flora.

This involves the analysis of morphological and functional of the flowers and their anthers (papillae), corolla (petals), androecium (stamens, pollen) and gynoecium (ovule, ovary) to know its capacity to produce fruits and seeds. This knowledge allows to detect reproductive failures and so to design effective **RECOVERY STRATEGIES of endangered species**.

This general objective correlates three partial specific objectives and a series of associated activities:

### The First Partial Objective

**FLOWERS, FRUITS & SEEDS. MICRO-MORPHOLOGICAL CHARACTERIZATION.**

Different preparations of the floral organs, as well as fruits and seeds, are elaborated for their observation and capture of images in:

- **MACROSCOPY**
- **OPTICAL MICROSCOPY**
- **ELECTRON MICROSCOPY**
- **SEM** (Scanning Electron Microscope)

The types of flowers according to sexual systems (male, female or hermaphrodite) or self-incompatibility systems (pin-thorn, pap-thorn, etc.) are considered.

### The Second Partial Objective

**TRAGETIC STRATEGIES**

- **Seed Banks** (at ELF & IBERCOM):
  - Seeds collected in MACFLOR will be stored in the Seed Banks of the participating partners (EBCH and IFB).

- **ATLAS & RECOVERY STRATEGIES**
  - The detection of envious processes in the reproductive cycle (flowering and fructification) associated with the loss of reproductive success or failures in the formation of viable seeds, closely related with the morphological and functional traits of flowers, will allow to design recovery strategies in the macaronesian endemic species studied in MACFLOR.

### The Third Partial Objective is aimed at:

**THE EVALUATION OF FEMALE REPRODUCTIVE SUCCESS (SEED MATURITY)**

- **Pre-emergent (PERS):** evaluation of flowers which form Fruits and ovules that form seeds.
  - Fruit/Flower ratio: Seed/Ovule

- **Post-emergent (POE):** evaluation of seeds germination and survival of seedlings.
  - The types of individuals according to sexual or self-incompatibility systems will be compared (hermaphrodite vs female, col-th or pap-th, pin-th or pap-th).

**RECOVERY STRATEGIES**

- **Survival of populations**
  - Seminal reproductive success, (monogamy, xenogamy, & self-fertilization) and survival of seedlings.

**REPRODUCTIVE EFFICIENCY**

- The percentage of fertile flowers, fruits, and seeds, and the number of seeds per fertile flower.

**BREEDING SYSTEMS. SELF-INCOMPATIBILITY**

- The breeding systems (autogamy-xenogamy) will be evaluated by Pollen/Ovule ratio (P/O) and, in some species, also by experimental pollination with detection of self-incompatibility.

**NEOCHAMAELIA. PATERNITY ANALYSIS**

- Neochamaelea, with a complex sexual system, where four sexual phenotypes are present (dichogamous-PD, protogynous-PG, protandrous-PI and male-M individuals), genetic paternity analysis (microsatellites) will be carried out to check the pollen donors and crossings between sexual phenotypes.

**ANOSARIA. GENETIC SEVERITY OF GENUS IN MADEIRA**

- The study of the population genetic diversity in Anosaria from Madeira, using SSR molecular markers, will allow to characterize the variability and genetic structure of the populations in Madeira, to test the regeneration and crossing between endemic species.