

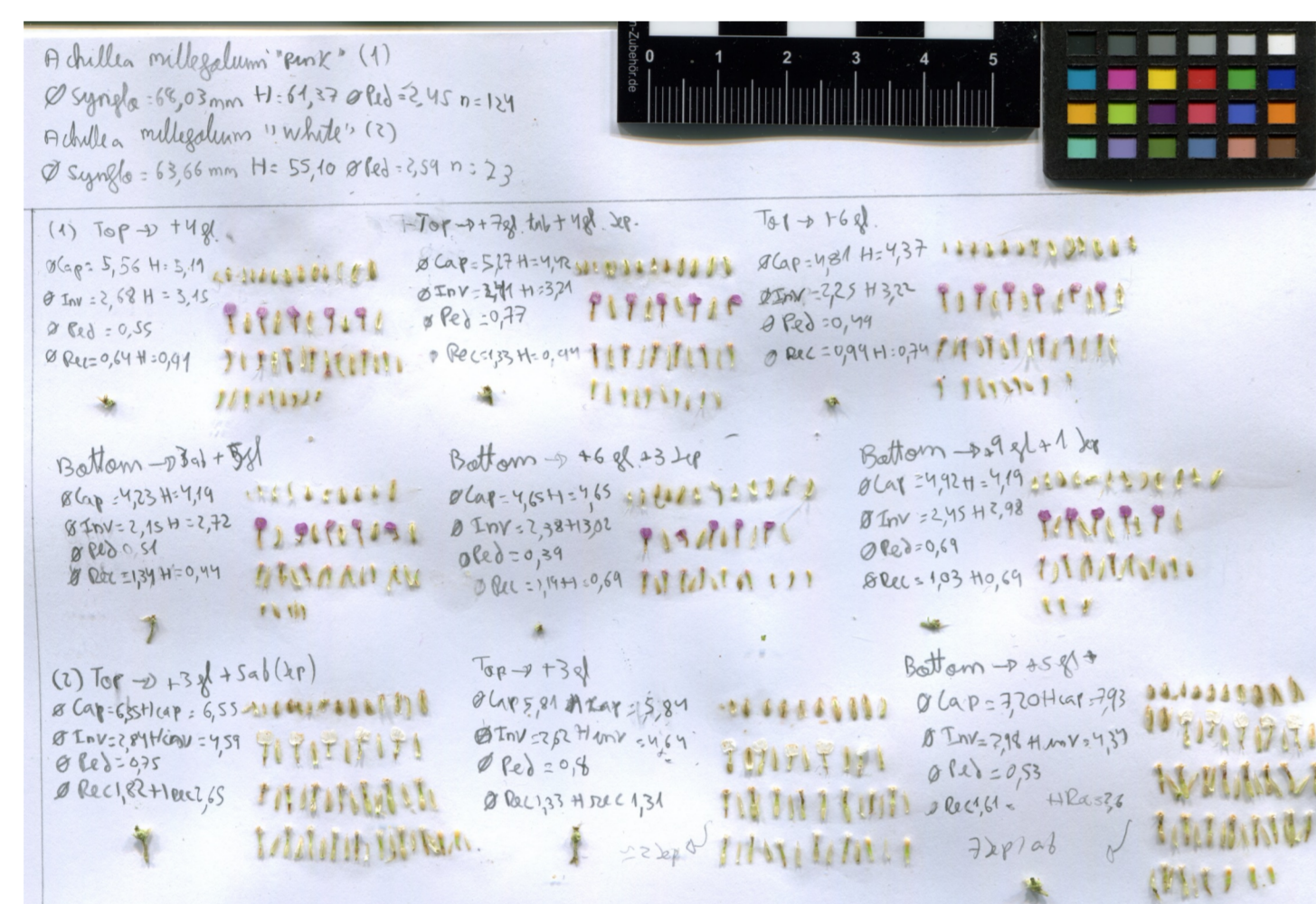
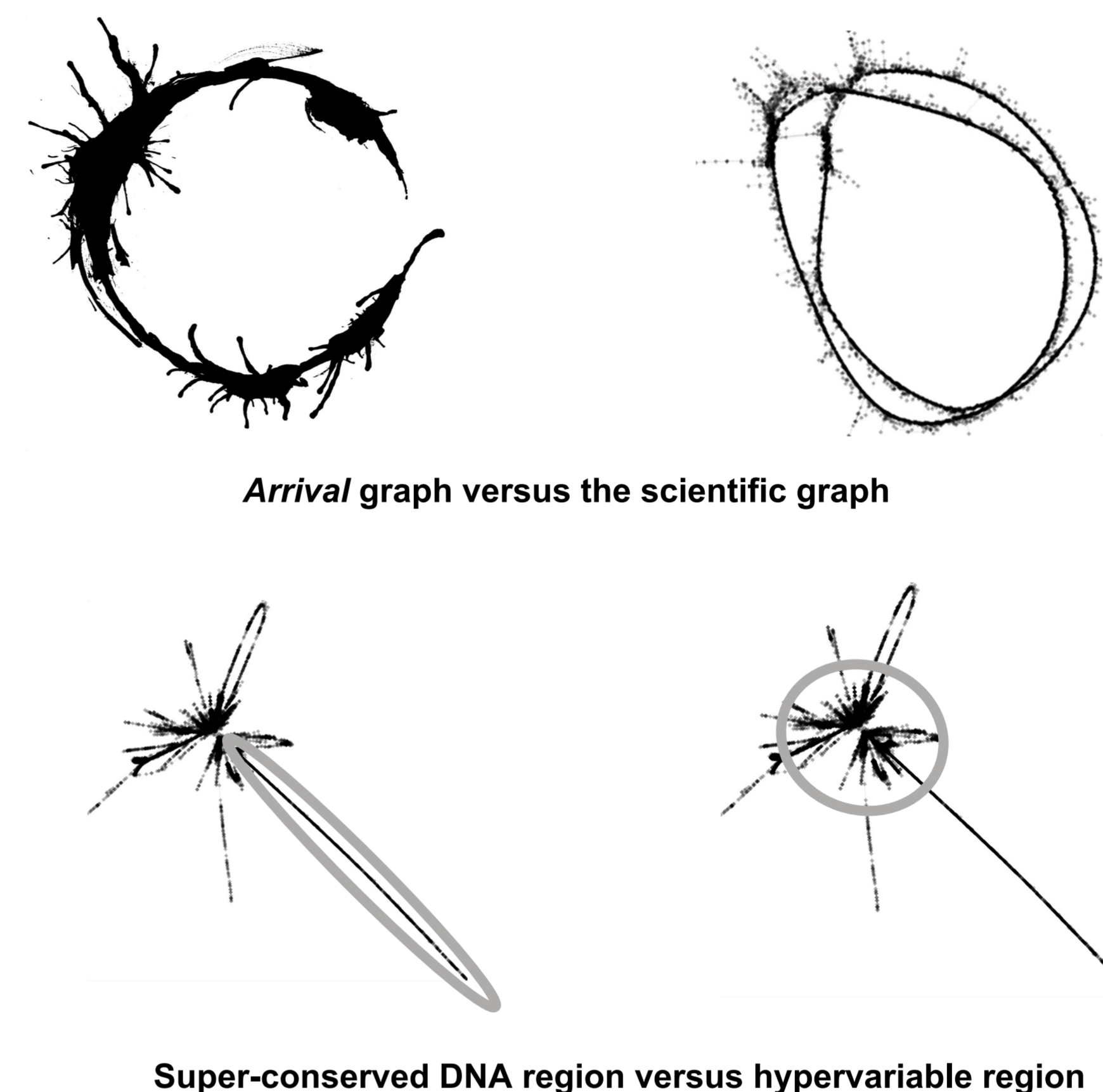
PRELUDE

Art has enormous potential to generate and convey knowledge through senses and emotion, complementing and enriching scientific production. In this work, three artistic manifestations grounded in botanical experimentation are explored. First, graphs generated from studying repetitive elements in genomes manifest a powerful visual language capable of untangling genetic diversity, but at the same time, resembling other art forms, highlighting the beauty in data structure. Nocturnal monitoring and dissections revealed an unexpected diversity in the reproductive biology of the yarrow (*Achillea millefolium* L.). The video installation *Noctes achilleienses* [1] immerses viewers in the nocturnal activities of arthropods, using the yarrow flowers as scenario. Lastly, the artistic installation *A modern dance* [2] uses pressed specimens of invasive species, the cruel plant (*Araujia sericifera* Brot.) and the mother of millions (*Kalanchoe × houghtonii* D.B. Ward.) to depict "phyto-monsters", dancing in a choreography that reflects ecological conflicts from a non-human perspective.

ACT 1 - How can scientific language be hidden in art?

Repetitive elements are DNA sequences that repeat thousands of times and constitute the major part of a plant's genome although most of their functions remain unknown. The software RepeatExplorer2 [3] creates graphs of these entities by connecting similar sequences, represented by points, with lines. These graphs can exhibit both, astonishing complexity or delicate simplicity, providing valuable scientific insights. They serve as a visual language that reveals aspects such as hybridization, DNA degradation, and conservation.

Repetitive signs [4] is a serial artwork based on multiple graphs of repetitive elements found in the DNA of an orphan hybrid and a giant genome. As explained in the attached figure, the artwork contains a fictional interpretation of these graphs inspired by the alien communication forms depicted in Denis Villeneuve's film *Arrival* (2016) [5]. We then explain how this visual language can help unravel aspects of the evolutionary history of plants such as *Arctium × mixtum* (Simonk.) Nyman. and *Tmesipteris* Bernh.



ACT 2 - Reproduction in the Shadow: the case of Achillea

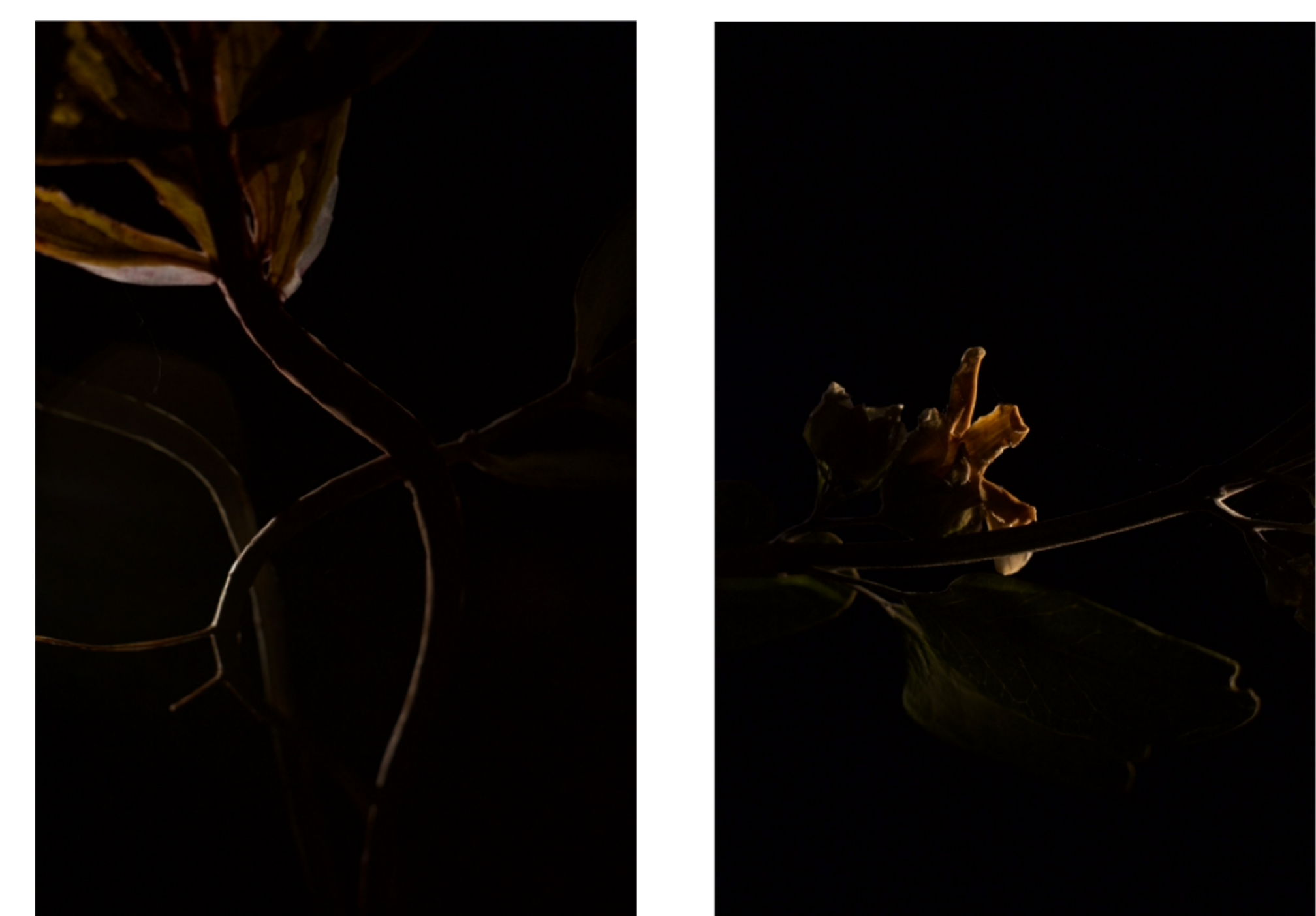
Common on (path) margins and known for its impressive synflorescences, yarrow have captivated humans since time immemorial. However, its sexuality is cryptic. Their family, Asteraceae, is often accused of being promiscuous, without clear limits... From their perspective, yarrow may see us as diurnal and floriculturist. How could we understand what goes on in the yarrow's head? During the last summer, several night vision devices were installed to study the presence of interactors. The raw videos obtained from this experiment were used to create *Noctes achilleienses* [1], an audiovisual composition that invites the audience to immerse themselves in those moments where the human eye is unable to see. Following this exploring urge, dissections were made [6] revealing intrapopulation differences in the color, length of the flowers or the number of heads. We present the plate and the specimen, get to know them, explore the unknown darkness.

ACT 3 - The phyto-monsters dance to advise of our responsibility in biological invasions

According to biology, the cruel plant has a binary story: in the eastern part of South America, its cultivation is recommended for hosting the southern monarch butterfly (*Danaus erippus* Cramer.) [7]. However, in southern Europe, it is subject to eradication for being an aggressive invasive species that "chokes" the forest and crop trees (Royal Decree 630/2013, of August 2, which regulates the Spanish Catalogue of Invasive Exotic Species). These two narratives deposited in the same species are comparable to *The Strange Case of Dr. Jekyll and Mr. Hyde* [6].

The mother of millions is the result of an artificial cross carried out in the 1930s by the horticulturist A. D. Houghton, who sought a more prolific and resistant plant [8]. These characteristics have led it to be considered one of the invasive species with the greatest expansion power. The story of the mother of millions has similarities to the monster of *Frankenstein, or the modern Prometheus* [9], a creature created by an irresponsible human (and named after the creator) who ends up being pursued.

In the artistic installation *A modern dance* [2] the plant versions of Mr. Hyde (embodied by the cruel plant) and Frankenstein (represented by the mother of millions) move clumsily to the rhythm of a sound piece that alludes to modernity and globalization as the origin of botanical expeditions, commercialization, and the expansion of species classified as invasive. The installation, therefore, points to us, humans, as responsible for this phyto-zombie choreography. The plants dance to the sound of our limitless desire for possession and control.



Details of the installation *A modern dance* [2]. Photo: Ana Lorente.



Installation video: