Let’s Fly the Mangangá

Back in the 80’s and 90’s I remember seeing some very large fluffy orange bumblebees regularly visiting the flowers and fruit trees in my garden. Sometimes, one of them would fly into the living-room and bump against the glass panes, buzzing loudly. Then we had to help it out, but with care, for it certainly could sting!

They were everywhere in the forests, visiting their favourite native flowers: amancays, chilcos, and mutisias.

Last year a nagging question rose in my mind: where are the mangangás? My garden still has plenty of bumblebee visitors, but they’re different: smaller, with black, yellow and white stripes. I googled and read about what has been happening since 1993: the mass importation of a European bumblebee species (Bombus terrestris) into Chile, for pollination in commercial greenhouses. This species is highly invasive and has been prohibited in other countries.

The exotic bumblebees have escaped from the greenhouses, crossed the Andes mountain range, and keep spreading throughout the territory. This has been devasting for the mangangá, whose queen is actually the largest bumblebee in the world. The invading bumblebees are more aggressive, and also carry pathogens that anihilate our local bumblebee. Legal actions are being carried out against the Chilean government by activists, but as yet, importation continues on a grand scale.

The main exporters of these bumblebees are Koppert (Netherlands) and Biobest (Belgium). Biobest have acknowledged they may have done wrong, underestimating the impact of the bumblebee in Latin America, but have not stopped exporting it, since, with very dubious reasoning, it is too late for the native species. Scientific studies show that the magangá could make a comeback if importations stopped.

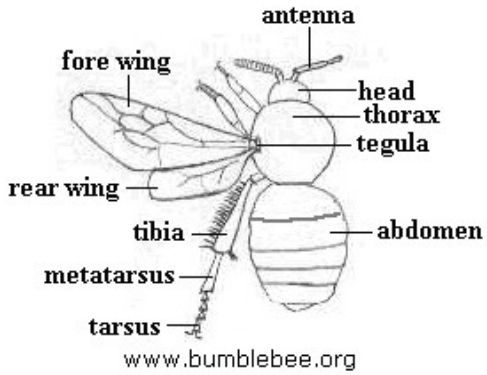
*A*n interesting fact is that *Bombus dahlbomii* is sacred to native Mapuches, known as *dulliñ* in Mapudungun, it represents the spirit or incarnation of their tribal leaders and heads of families, who return to visit their loved ones each spring.

I began painting images within three hexagons that together form a triangular structure (inspired by the *manu taratahi*, a Maori kite). This helped me become familiar with the anatomy of bumblebees, and start to imagine how to make a bumblebee kite.

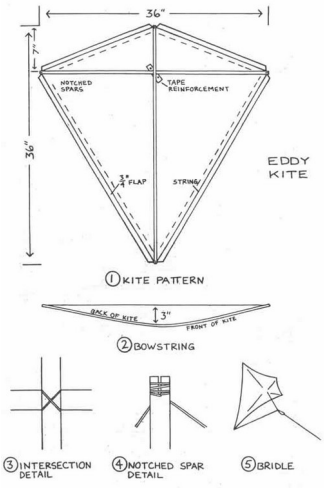
In April 2019, I answered a call for projects from Fondo Nacional de las Artes (National Arts Foundation). There was a category called Art and Science where my proposal fitted well: the object of this project would be to design a kite depicting the mangangá bumblebee, which is by now in danger of extinction, to collect information, film it flying, and give talks to the general public with a biologist from CONICET. The National Scientific and Technical Research Council is an Argentine government agency which directs and co-ordinates most of the scientific and technical research done in universities and institutes.

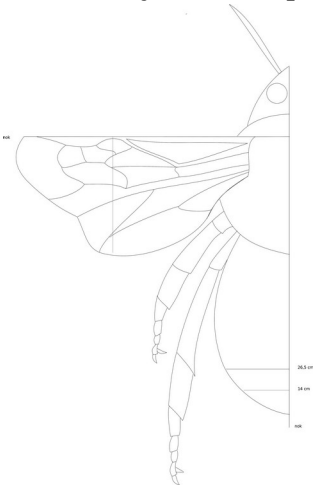
I got in touch with one of our local ecological organizations, S.N.A.P (Sociedad Naturalista Andino Patagónica), who introduced me to Dr Marina Arbetman, a specialist in pollinators and the mangangá in particular. I couldn't have been more fortunate. Marina enthusiastically supported me throughout the project, and provided valuable information and guidance.

The first step in designing a kite, is to make a viable plan, then make a prototype for testing flight. I worked with photos such as these.



The general shape of the bumblebee reminded me of an Eddy kite, which is perhaps the best-known shape there is. Imagining the bumblebee as an Eddy kite, simplified the design very much.





I adapted my drawing to the curvature of the rods, which fortunately did not require changing the original shape of the bumblebee too much.

However, it wasn’t finished yet: my project entailed making a kite from natural materials.

Then the 2020 pandemic began, and we went into strict lockdown for months. Test-flying became impossible. I decided not to take too many risks and work on the kite that already flew well.

I would replace parts of it and decorate it with natural materials. I used dried flowers and herbs, *lunaria annua (*silver dollars or honesty silicles) for the wings,

and I cut out parts and replaced them with paper. Now my bumblebee was mostly made from natural materials.

And it still flew very well

Using a photo of the natural kite, I made a printable version, which can be replicated by other kite makers. I now have several mangangá kites, scaled up and down, to fly together and present whenever we give a talk, or visit schools.

Due to the pandemic, the project concluded with a presentation via Zoom with Dr Marina Arbetman, organized by S.N.A.P (https://youtu.be/viVTthgX35U).

When schools opened again, we gave talks for primary school children, and I've designed a simple paper version which can be coloured, flies very well, and serves as a great motivator in class.

Diane Ross
May 2022

Watch the mangangá fly:
https://youtu.be/_vn7MEB6BW0?si=f5NAV4KpPESgumWt

For more information about the mangangá please visit:

https://www.theguardian.com/environment/2019/may/04/the-battle-to-save-the-worlds-biggest-bumblebee-from-european-invaders

https://www.scielo.cl/scielo.php?script=sci_arttext&pid=S0717-65382018000200118&lang=pt

https://www.abejorros.ar/