

生物策略表

類別	生物策略 (Strategy)
生物策略 STRATEGY	翅膀振動導致花粉釋放 (Wingbeat vibrations cause pollen release)
生物系統 LIVING SYSTEM	木蜂 <i>Xylocopa</i> (Carpenter Bees)
功能類別 FUNCTIONS	#獲得、吸收、或過濾固體 #傳遞振動訊號 #Capture, absorb, or filter solids #Send vibratory signals
作用機制標題	木蜂透過導致花藥振動的頻率拍翅，促使粉紅色龍膽科花朵釋放花粉 (The wings of carpenter bees cause pink gentian flowers to release their pollen by beating at a frequency that causes the anthers to vibrate.)
生物系統/作用機制 示意圖	
作用機制摘要說明 (SUMMARY OF FUNCTIONING MECHANISMS)	
文獻引用 (REFERENCES)	
<p>「一種粉紅色的龍膽科植物 (gentian) 生長在非洲南部，是藉由帥氣又毛茸茸的木蜂 (carpenter bees) 授粉。龍膽花開展它們的花瓣，向大家展露彎曲的白色花柱 (style) 以及三枚巨大的雄蕊 (stamens)。每枚雄蕊的末端是一根又長又粗的花藥 (anther)，看起來像是覆蓋著黃色的花粉，這對於任何經過的花粉攝食 (pollen-feeding) 昆蟲都是明顯的誘惑。但那只是某種假象。黃色花藥是中空的，內部裝滿花粉。花粉散出的唯一途徑是通過位於花藥頂端的小孔，而只有一種方法能取得花粉。蜜蜂知道要怎麼做。」</p> <p>「木蜂訪花時會以翅膀製造高頻率的振動聲音 (buzzing noise)，如同大多數蜜蜂一般。當牠降落在花藥上時，牠會持續拍動翅膀，但會降低其頻率，使得振動的音調突然降到大約中央 C (middle C)。這導致花藥以恰好能釋放花粉的頻率振動，使得花粉粒像黃色的噴泉般從花藥頂端的孔洞噴出。」 (Attenborough 1995: 100)</p> <p>“A pink gentian grows in southern Africa, which is pollinated by handsome furry carpenter bees. The flowers of the gentian spread their petals wide, revealing to all a curving white style and three large stamens. Each stamen ends in a long thick anther that seems to be covered in</p>	

yellow pollen, an obvious temptation to any passing pollen-feeding insect. But that is something of an illusion. The yellow anther is hollow and the pollen is held inside. The only way it can escape is through a tiny hole right at the top of the anther and there is only one way of extracting it. The bee knows how.”

“It arrives at the flower making a high-pitched buzzing noise with its wings as most bees do. As it alights on an anther, it continues beating its wings but lowers the frequency so that the note of its buzz suddenly falls to approximately middle C. This causes the anther to vibrate at just the right frequency needed to release the pollen and the grains spout out of the hole at the top in a yellow fountain.” (Attenborough 1995: 100)

參考文獻清單與連結 (REFERENCE LIST)

Attenborough, D. (1995). *The private life of plants*. Princeton University Press.

延伸閱讀

生物系統延伸資訊連結 (LEARN MORE ABOUT THE LIVING SYSTEM/S)

<https://en.wikipedia.org/wiki/xylocopa>

<https://www.onezoom.org/life/@xylocopa>

<https://eol.org/pages/35910>

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AskNature 原文連結

<https://asknature.org/strategy/wingbeat-vibrations-cause-pollen-release/>