

生物策略表

類別	生物策略 (Strategy)	
生物策略 STRATEGY	白蟻土丘使生態系統生產力最大化 (Mounds Maximize Ecosystem Productivity)	
生物系統 LIVING SYSTEM	白蟻 <i>Odontotermes</i> (Termites)	
功能類別 FUNCTIONS	#形狀/材料最佳化 #產生土壤/更新肥沃度 #維持生物多樣性 #Optimize Shape/Materials #Generate Soil/Renew Fertility #Maintain Biodiversity	
作用機制標題	地下白蟻丘通過有序的空間分佈和改變土壤成分，對熱帶稀樹草原的生產力造成很大程度的影響 (The below-ground mounds of <i>Odontotermes</i> termites strongly influence savanna productivity via ordered spatial distribution and modification of soil composition.)	
生物系統/作用機制 示意圖		
作用機制摘要說明 (SUMMARY OF FUNCTIONING MECHANISMS)		
<p>「生態學家提出稀樹草原的霸主似乎是白蟻，他們發現這些不起眼的生物透過均勻分佈的群落 (colony) 所建立的網路，極大地促進了肯亞 (Kenya) 中部的草地生產力。白蟻土丘 (termite mound) 極大地增強了地區級 (local level) 的動植物活動，同時牠們在更大範圍的均勻分佈，使整個生態系統的生產力最大化…」</p> <p>「白蟻透過哪種行為轉化為對生態系的深遠影響，是一個複雜的機制。Pringle 和 Palmer 懷疑白蟻在其土丘附近將粗糙的顆粒帶進本來幼細的土壤。這些較粗的顆粒促進土壤水分滲透 (infiltration)，它們同時防止降水或乾旱所引起的表土破壞性收縮或膨脹。」</p> <p>“The king of the savanna appears to be the termite, say ecologists who’ve found that these humble creatures contribute mightily to grassland productivity in central Kenya via a network of uniformly distributed colonies. Termite mounds greatly enhance plant and animal activity at the local level, while their even distribution over a larger area maximizes ecosystem-wide productivity…”</p> <p>“The mechanism through which termite activity is transformed into far-reaching effects on the ecosystem is a complex one. Pringle and Palmer suspect termites import coarse particles into the otherwise fine soil in the vicinity of their mounds. These coarser particles promote water infiltration</p>		

of the soil, even as they discourage disruptive shrinking and swelling of topsoil in response to precipitation or drought.”

文獻引用 (REFERENCES)

「土丘還顯示出土壤營養的提升，例如磷 (phosphorus) 和氮 (nitrogen)。這些有益的土壤變化對生態系服務 (ecosystem service) 的直接和間接影響遠遠大於土丘周圍的範圍。」 (EurekAlert! 2010)

Palmer 說：「這些發現對保護自然也具有重要意義。」。

「他說：『當我們考慮復育退化的生態系統時，還有當我們考慮復育珊瑚礁或復育植物群落時，這種過度分散 (over-dispersed) 的模式讓我們從中學習到一些事情。』這是說我們可能可以考慮利用這種提高生態系生產力的現象來進行珊瑚復育或植物復育。」 (ScienceDaily, 2010)

“The mounds also show elevated levels of nutrients such as phosphorus and nitrogen. All this beneficial soil alteration appears to directly and indirectly mold ecosystem services far beyond the immediate vicinity of the mound.” (EurekAlert!, 2010)

“The findings also have important implications for conservation, Palmer says.

“As we think restoring degraded ecosystems, as we think about restoring coral reefs, or restoring plant communities, this over-dispersed pattern is teaching us something,' he says. It's saying we might want to think about doing our coral restoration or plant restoration in a way that takes advantage of this ecosystem productivity enhancing phenomenon.” (ScienceDaily, 2010)

參考文獻清單與連結 (REFERENCE LIST)

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

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AskNature 原文連結

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