

生物策略表

類別	生物策略 (Strategy)
生物策略 STRATEGY	狐獴解決衝突 (Meerkats resolve conflict)
生物系統 LIVING SYSTEM	狐獴 <i>Suricata suricatta</i> (Meerkats)
功能類別 FUNCTIONS	#透過自我組織維持群落協調 #Coordinate by self-organization
作用機制標題	狐獴透過輪流交替領導來處理衝突 (Meerkats manage conflict by taking turns leading)
生物系統/作用機制 示意圖	
作用機制摘要說明 (SUMMARY OF FUNCTIONING MECHANISMS)	
<p>意見分歧是生活中很平常的一部分，不只是人類，在很多其他物種中也有。如果人類能瞭解其他物種如何應付並處理意見分歧，可能有助於人類深入了解其他物種，並幫助我們自己的物種看到促進協調及凝聚力的其他選擇。以狐獴來說，就像很多物種般，牠們傾向在覓食時聚集成群。這引起了一些問題，因為狐獴就像其他物種一樣，每個個體的營養需求跟對於食物來源的知識都有差異。某些個體，例如在哺乳期的雌性，在養育幼小時需要較多食物。與此同時，部分個體可能會知道不同的食物來源資訊。這些因素可能導致在狐獴群體應該往哪個方向前進覓食上的意見分歧。狐獴是怎麼解決這些衝突而一同覓食的呢？</p> <p>每個早上，在狐獴們生活的非洲南部沙漠棲地之中，牠們從洞穴裡出來，並組成群體往一個方向出發尋覓昆蟲、果實、蛋以及蠍子。然而，為了瞭解更多關於狐獴如何應付衝突，研究員們製造了人為的狀況，使群組中部分個體注意到食物來源而其他個體沒有。實驗者發現，當群組中兩隻不同的狐獴知道不同方向的食物來源時，群組並不會分裂。群組反而是跟隨第一隻朝某個方向移動的狐獴。這與該隻狐獴是主導還是下級的個體無關。如果牠們先移動，群組就會跟隨著。這種群組追隨者的行為是有道理的：最先動身朝一個方向移動，代表著強烈的行動力，以及可能對食物來源最瞭解。</p> <p>但這個故事還沒結束。第一隻朝著某個方向前進的狐獴，即是發起者 (initiator)，並不會在每天都是同一隻。相反地，發起者經常每天更換一次。如果一隻知道食物來源的</p>	

狐獴在某一天帶領覓食方向，在另一天通常就會由另一隻知道食物來源的狐獴所帶領。換句話說，擔當第一位來選擇一個方向就能帶領群組的動向，但輪流擔當領導者對於解決潛在衝突也同樣有著重要作用。

Disagreements are a normal part of life, not just for humans, but for many other species. How other species manage to resolve disagreements can be helpful for humans to understand, generating insight into other species and helping our own species see other options for fostering coordination and cohesion. Meerkats, for instance, like many species, tend to stay together as a group while foraging for food. This raises questions because meerkats, like other species, differ individually in their need for nutrients and knowledge of where food sources are. Some individuals, such as lactating females, need more food while raising young. Meanwhile, some individuals may know different information about where food sources may be. These factors can lead to disagreements about in which direction meerkat groups should forage. How do meerkats manage to resolve these conflicts and forage together?

Each morning, in their southern African desert habitats where they live, meerkats emerge from their burrow and head off as a group in a direction to forage for insects, fruit, eggs, and scorpions. However, to learn more about how meerkats manage conflict, researchers created a somewhat artificial circumstance, making some individuals in a group aware of food sources and not others. What the experimenters discovered is that, when two different meerkats in a group know about food sources in different directions, the group still doesn't split up. Instead, the group follows the first meerkat that heads off in a certain direction. It doesn't matter if that meerkat is a dominant or subordinate individual. If they head off first, that's where the group follows. This behavior by the group's followers makes sense: to set off first in a direction suggests strong motivation and likely knowledge about a food source.

But there's more to the story. The first meerkat to head off in a certain direction – the initiator – isn't the same every day. Instead, the initiator often changes from one day to the next. If one meerkat who knows about a food source initiates a group's foraging direction one day, another meerkat who knows about a food source often initiates a group's foraging direction the next. In other words, being first to pick a direction guides a group's movements, but taking turns over time being the leader plays an important role in resolving potential conflicts too.

文獻引用 (REFERENCES)

「我們也沒有找到任何位階對於吸引成功 (attraction success) 的顯著效果。因此，作為第一位發起群組行動，看來是使其他群組成員加入的關鍵。」(Bousquet and Manser. 2011: 1105)

「然而，在啟動者的這種一致性和一個上午內方向性衝突的稀少性，並不代表每個早上的發起者都會是同一位。實際上，經過 5 天的測試，在所有群組中被訓練的個體都被群組成員追隨過牠帶領的方向至少一次。因此，個體的行動帶起群組出發的狀況在每天都有變化。這完全符合了輪流交替 (turn taking) 的概念，有著資訊衝突的個體們交換牠們的領導權，因此減少整體的衝突損失… (Bousquet and Manser. 2011: 1105)

“We also did not find any significant effect of dominance on attraction success. Therefore, being the first to initiate the group movement seemed to be the most important for other group members to join.” (Bousquet and Manser. 2011: 1105)

“However, this consistency of initiators and the scarcity of directional conflict within a morning do not mean that initiators are consistent between mornings. Indeed, over the 5 test days, both trained individuals in every group were followed by group members at least once in the direction of their shape. Therefore, the individual motivation to initiate group departure seems to vary from day to day. This fits in well with the concept of turn taking in which individuals with conflicting information alternate their leadership and therefore diminish the overall conflict costs…” (Bousquet and Manser. 2011: 1105)

參考文獻清單與連結 (REFERENCE LIST)

Bousquet, C. A. and M. B. Manser. (2011). Resolution of experimentally induced symmetrical conflicts of interest in meerkats. *Animal Behaviour* 81: 1101-1107.
(<https://doi.org/10.1016/j.anbehav.2011.02.030>)

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/suricata_suricatta
https://www.onezoom.org/life/@suricata_suricatta
<https://eol.org/pages/311580>

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