

生物策略格式

KJC, 2019/10/21

類別	生物策略 (Strategy)	
生物策略 STRATEGY	用濃密的內層絨毛防止熱量散失 (Dense underfur insulates)	
生物系統 LIVING SYSTEM	馴鹿 <i>Rangifer tarandus</i> (Reindeer)	
功能類別 FUNCTIONS	#保護免受溫度危害 #Protect from temperature	
作用機制標題	馴鹿的皮毛在濃密內層絨毛的幫助下捕獲空氣並隔絕極地的寒冷 (The coat of a reindeer insulates against polar cold with the help of dense underfur that traps air.)	
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>「自然地，那些住在極地的動物擁有最溫暖的毛皮。馴鹿的毛皮由長條的防水護毛所組成，具有相當緻密的內層絨毛，像粗毛地毯般的深層堆疊。」 (Foy and Oxford Scientific Films 1982: 84)</p> <p>「成年馴鹿的冬季毛皮由充氣腔室的濃厚護毛 (guard hair) 和薄層羊毛狀的內層絨毛所組成...護毛的密度差異很大，腿部平均約為 2000 /cm²、12 mm 厚，腹部平均約為 1000 /cm²、30 mm 厚，背部平均為 1700 /cm²、30 mm 厚。小馴鹿背部相應的護毛厚度是 3200 /cm²、10 mm 厚...所有毛髮都是羊毛狀和空心的...濃厚的內層絨毛是非常重要的，因為它有效地防止空氣在其中移動，從而減少散熱...結果顯示成年馴鹿在寒冷環境中溫度調節的主要機制是隔熱。」 (Soppela et al. 1986: 275, 277)</p> <p>“Naturally, animals that live in polar regions have the warmest coats of all. The reindeer’s coat combines long, water-repelling guard hairs with an extremely dense underfur, deep-piled like a shag carpet.” (Foy and Oxford Scientific Films 1982: 84)</p>		

“The winter fur of adult reindeer consisted of thick guard hairs with air-filled cavities and an underfur of thin and woolen hairs...The density of guard hairs varied considerably and averaged 2000/cm² and 12 mm on the legs, 1000/cm² and 30 mm on the abdomen, and 1700/cm² and 30 mm on the back. The corresponding count on the back of calves was 3200/cm² and 10 mm...All hairs were wool-like and hollow...The thick underfur is very important, since it effectively prevents air movement within it and thus reduces heat dissipation...The results suggest that the prime mechanism by which adult reindeer thermoregulate in a cold environment is insulation.”
(Soppela et al. 1986: 275, 277)

參考文獻清單與連結 (REFERENCE LIST)

Foy, S. (1983). *The grand design: Form and colour in animals*. Prentice-Hall.

Soppela, P., M. Nieminen, and J. Timisjärvi. (1986). Thermoregulation in reindeer. *Rangifer* 1: 273-278. (<https://septentrio.uit.no/index.php/rangifer/article/view/659>)

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/Rangifer_tarandus

文章貢獻/編修者與日期:

游子朋翻譯 (2019/04/27)；朱天愛編修 (2019/12/28)；吳皓編修 (2020/01/04)；
譚國銜編修 (2020/05/26)；紀凱容編修 (2020/11/26)；施習德編修 (2020/12/15)

AskNature 原文連結

<https://asknature.org/strategy/dense-underfur-insulates/>