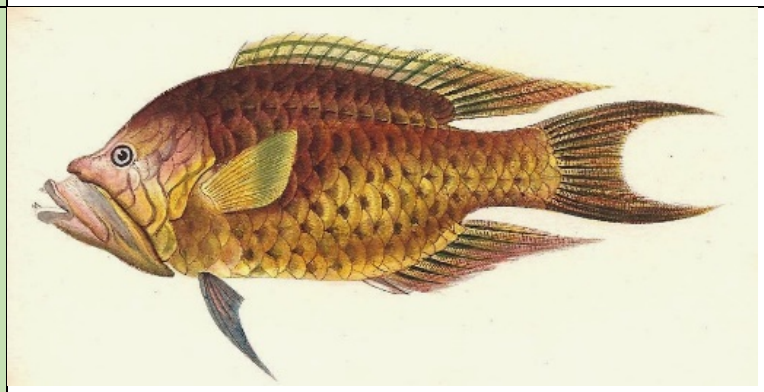
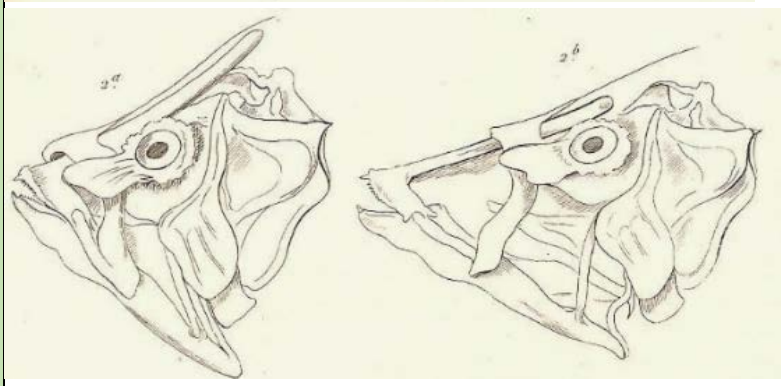
生物策略表

類別	生物策略 (Strategy)
生物策略 STRATEGY	發射可伸縮的口部捕捉獵物 (Shooting snout snags prey)
生物系統 LIVING SYSTEM	伸口魚 *Epibulus insidiator* (Slingjaw wrasse)
功能類別 FUNCTIONS	#獲取、吸收、或過濾生物 #改變位置 #改變大小/形狀/質量/體積 #在液體中/上移動 #Capture, absorb, or filter organisms #Modify position #Modify size/shape/mass/volume #Move in/on liquids
作用機制標題	伸口魚的口部以多桿連鎖高速發射牠的顎以捕捉獵物 (The snout of the sling-jaw wrasse captures prey using multibar linkages to shoot its jaw out at high speed.)
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)

「儘管如此，有些魚的頭部擁有多桿連接 (multibar linkage)，即使是一條別緻蛇類的顎骨機制，與其相較都顯得遜色 (Westneat 1991)。最能彰顯此特點的例子必屬於伸口魚 (sling-jaw wrasse) (*Epibulus insidiator*)，能發射一個難以察覺的口部以迅速捕捉獵物。根據 Westneat 和 Wainwright (1989) 分析此系統的生物機制，伸口魚能伸出的口部長度達其正常頭部的 65%。伸出動作只需 1/30 秒的時間，加速度超過 100 m/s^2，以及口部速

度高達 2.3 m/s，或者超過 5 miles/hr。構成的要件—骨頭、韌帶及肌肉，也許平凡，但是它們的排列是獨一無二的。」(Vogel 2003: 401)

"Nonetheless, the jaw mechanism of even a fancy snake looks simple next to what some fish do with multibar linkages in their heads (Westneat 1991). The most extreme must be the sling-jaw wrasse, *Epibulus insidiator*, which shoots out an otherwise unnoticeable snout to snag prey. According to Westneat and Wainwright (1989), who've analyzed the biomechanics of the system, this wrasse can protrude its jaw by a length equal to 65 percent of normal head length. Protrusion takes only about a thirtieth of a second; acceleration exceeds 100 meters per second squared; and snout speed hits 2.3 meters per second, or over 5 miles per hour. The components–bones, ligaments, and muscle–may be ordinary, but their arrangement is anything but." (Vogel 2003: 401)

參考文獻清單與連結 (REFERENCE LIST)

Vogel, S. (2013). *Comparative biomechanics: life's physical world, second edition*. Princeton University Press.

Westneat, M. W. (1991). Linkage biomechanics and evolution of the unique feeding mechanism of *Epibulus insidiator* (Labridae: Teleostei). *Journal of Experimental Biology* 159: 165-184. (https://jeb.biologists.org/content/159/1/165)

延伸閱讀: Harvard 或 APA 格式

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

https://en.wikipedia.org/wiki/epibulus_insidiator
https://www.onezoom.org/life/@epibulus_insidiator

撰寫/翻譯/編修者與日期

陳柏志翻譯 (2020/04/16)；譚國鎏編修 (2020/06/01)；許秋容編修 (2020/06/28)

AskNature 原文連結

https://asknature.org/strategy/shooting-snout-snags-prey/