


## 生物策略表

類別	生物策略 (Strategy)
生物策略 STRATEGY	合作驅趕以捕獲更多食物 (Cooperative herding catches more food)
生物系統 LIVING SYSTEM	美洲白鵜鶘 <i>Pelecanus erythrorhynchos</i> (American white pelican)
功能類別 FUNCTIONS	#獲取、吸收、或過濾生物 #相同物種之間合作 #Capture, absorb, or filter organisms #Cooperate within the same species
作用機制標題	美洲白鵜鶘的合作驅趕行為，可集中獵物捕獲更多的食物 (Cooperative herding behavior by the American white pelican catches more food by concentrating prey.)
生物系統/作用機制 示意圖	
作用機制摘要說明 (SUMMARY OF FUNCTIONING MECHANISMS)	
<p>美洲白鵜鶘 (American white pelican) 是一種大型水鳥，生活在北美洲一帶，在大陸內部繁殖，並在海岸上度冬。與其近親褐鵜鶘 (brown pelican) 不同，美洲白鵜鶘很少潛水攝取食物。牠通常在水面上游動，並用它的囊狀喙 (pouch-shaped bill) 抓住或舀起魚和其他獵物。這些鵜鶘可用以增加漁獲量的一個策略是合作攝食。在合作性攝食行為中，鵜鶘群體 (通常少於 20 隻) 一起工作，同時游動並把一小群魚驅趕成密集的球狀或趕至淺水區，在那裡魚很難逃脫。當鵜鶘的存在吸引更多的鵜鶘到該區域，並形成一群時，這種行為就開始啟動。然後鵜鶘會在魚群的一側排成一條線或半圓形，並開始游向彼此，朝魚群靠近。當一隻鵜鶘開始攻擊密集魚群中的魚時，其他鳥也會立刻開始攻擊。</p> <p>部份科學家觀察到利用這種合作驅趕行為來捕獲獵物，最成功的是較小群的鵜鶘 (二到六隻)。最有效率的群體大小，可能有賴於幾個因子，包括獵物密度，以及太多隻鳥是否會增加過早攻擊的機率，反而把魚嚇走。</p> <p>The American white pelican is a large waterbird that lives across North America, breeding in the interior of the continent and spending its winters on the coasts. Unlike its relative the brown pelican, the American white pelican rarely plunge-dives for food. It typically swims on the surface of the water and grabs or scoops up fish and other prey with its pouch-shaped bill. One strategy that these pelicans can use to increase their catch is cooperative feeding. In cooperative feeding behavior, groups of pelicans (usually less than 20) work together while</p>	

swimming to herd small schooling fish into a dense ball or toward shallow water, where it's difficult to escape. This behavior can start when the presence of pelicans attracts more pelicans to the area and a group forms. The pelicans then form a line or semicircle on one side of the schooling fish and begin to swim toward each other, closing in on the school. Once one pelican strikes at a fish in the dense school, the other birds immediately begin to strike, as well.

Some researchers have observed that smaller groups of pelicans (between two and six) are the most successful at catching prey using this cooperative herding behavior. The most effective group size likely depends on several factors, including prey density and whether too many birds increases the chance of a premature strike that could scare fish away.

### 文獻引用 (REFERENCES)

當與同類一起捕食時，鵜鶘通常會進行某種形式的「合作驅趕」，即將魚類驅逐至淺水中，或是在更開闊處包圍牠們。二至六隻成員的群體，其捕獲的魚類數量明顯多於單一隻或較大群體中的成員。攻擊頻率最初隨著群體大小而增加，在鳥群為四隻時，則達到上漸近線。以誘餌加以測試 (test with decoys)，顯示鵜鶘會被吸引到有其他鵜鶘存在的區域。(Anderson 1991: 166)

“When feeding with conspecifics, pelicans usually engaged in some form of “cooperative herding”, either driving fish into shallow water or surrounding them in more open areas. Members of groups of two to six birds caught significantly more fish than single birds or those in larger groups. Strike frequency initially increased with group size, reaching an upper asymptote at a flock size of four. Tests with decoys revealed that pelicans were attracted to areas by the presence of other pelicans.” (Anderson 1991: 166)

### 參考文獻清單與連結 (REFERENCE LIST)

Anderson, J. G. T. (1991). Foraging behavior of the American white pelican (*Pelecanus erythrorhynchos*) in Western Nevada. *Colonial Waterbirds* 14:166-172.  
([https://www.jstor.org/stable/1521506?seq=1#metadata\\_info\\_tab\\_contents](https://www.jstor.org/stable/1521506?seq=1#metadata_info_tab_contents))

### 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/American\\_white\\_pelican](https://en.wikipedia.org/wiki/American_white_pelican)

### 撰寫/翻譯/編修者與日期

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### AskNature 原文連結

<https://asknature.org/strategy/cooperative-herding-catches-more-food/>

