

Data Analysis: Emperor penguins and the function of fat

<http://www.arkive.org/emperor-penguin/aptenodytes-forsteri/video-09.html>

Necessary background knowledge:

- 1) Functions of lipids (Lecture Question #7)
- 2) Pie charts
- 3) Calculating percent change

During the Antarctic winter female Emperor penguins live and feed at sea, but males have to stay on the ice to incubate the single egg the female has laid. Throughout this time the males eat no food. After 16 weeks the eggs hatch and the females return. While the males are incubating the eggs they stand in tightly packed groups of about 3,000 birds. To investigate the reasons for standing in groups, 10 male birds were taken from a colony at Pointe Geologie in Antarctica. They had already survived 4 weeks without food. They were kept for 14 more weeks without food in fenced enclosures where they could not form groups. All other conditions were kept the same as in the wild colony. The mean air temperature was -16.4°C the composition of the captive and the wild birds' bodies was measured before and after the 14-week period of the experiment. The results in **kilograms** are shown in figure 8.

1) Calculate the total mass loss for each group. Show your work!

a. Wild

b. Captive

2) Calculate the percent change in lipid content for each group. Show your work!

a. Wild

b. Captive

3) Describe the changes in lipid and protein content for each group.



