



Definitions and Vocabulary

White Shark: The largest predatory fish in the ocean. More colloquially called a GREAT white shark but scientists are actively trying to change the sharks' public image so the 'great' part is typically left off.

Population: A group of organisms that can interbreed and occupy the same general location. This population does not intermingle with other groups of the same species.

Activity level: The amount of activity that an animal undergoes during a given time.

Biologging Tag: An electronic on-board computer that scientists put on animals to understand how they move and behave and, in this context, their physiology.

Energy: The ability to do work and the amount of calories an animal requires to do this work.

Metabolism: The chemical processes in one's body that convert energy into everything that we do.

Resting Metabolic Rate: The amount of energy your body needs to function at rest- this is all the background processes like digestion, circulation, etc.

Tailbeat Frequency: How many times the tail of an animal beats from side to side within a given period- typically 1 second. This is used as a proxy for speed/movement similar to footsteps for people.

Group/class: a subset of a population that is different than others based on some defining characteristic- like sex, size, color etc.

Energy expenditure: The amount of energy expended for a given activity.

calorie: The energy needed to raise the temperature of 1 gram of water through 1 °C (now usually defined as 4.1868 joules)

Calorie: (Note the large C) Equivalent to a Kcal or 1000 calories. This is typically what we call Calories with food etc. Defined as 4186 joules.

Joule: The SI unit of work or energy, equal to the work done by a force of one newton when its point of application moves one meter in the direction of action of the force.

White shark ecology: The role that a white shark plays in the ecosystems in which it lives.

Titles in the Energetic Calculations Spreadsheet

Naming Code: A standardized naming convention that the researchers use to identify key information about a shark.

Shark Name: The name the students can provide for each shark. Get creative.

Location: The locations (California or South Africa) where the shark was tagged. These groups don't mix.

Sex: Male or female assigned to the shark based on presence or absence of claspers. Claspers are basically modified penis on male sharks that are externally visible.

Length (cm): The total length from the snout to the end of the tail of the shark measured in centimeters.

Weight (k): The estimated weight of a white shark in Kilograms based on its total length.

Time for 10 tailbeats: The length of time it takes to complete 10 tailbeats- comes from spreadsheet (in seconds).

Tailbeat Frequency (TBF): Number of tailbeats per second (in Hertz).

Speed: How fast an animal goes based on TBF (meters per second).

Mass Specific Metabolic Rate: The rate at which an animal burns calories per Kilogram per hour.

Absolute Metabolic Rate: The total amount of energy an animal burns per hour. This is dependent on the actual total weight of the animal.

Energetic Requirements: Total number of MegaJoules an animal needs to sustain itself for a day.