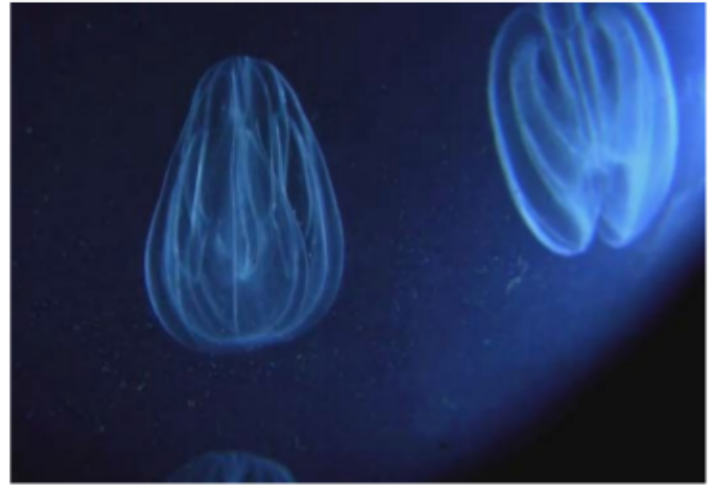


**Methods in Experimental Ecology II (PCB 6468)**  
**Exercise 13 – GAM Models**



Gillibrand et al. (2007) collected data about pelagic bioluminescence along a depth gradient in the northeast Atlantic Ocean. Analyze the relationship between bioluminescence and depth.

1. Use the `Exercise13_data.R` script. Select two locations of your choice (there are 19 options) and compare their profiles with depth.
2. State *your* scientific hypothesis.
3. Inspect and plot *your* data (publication quality).
4. Select and justify the most likely statistical model to test *your* hypothesis using the data.
5. Verify the assumptions of the model *you* selected using plots.
6. Plot *your* predicted model with 95% CI (publication quality).
7. Interpret *your* results.

**Hint:** *This exercise was taken from Zuur et al. (2009).*

**NOTE 1:** Please submit your paper as a single word document. Remember to include your raw data and all the appropriate R code as appendices at the end.

Gillibrand EJV et al. (2007). Seasonal development of a deep pelagic bioluminescent layer in the temperate Northeast Atlantic Ocean. *Marine Ecology Progress Series* 341:37-44.

Zuur, A.F., E.N. Ieno, N.J. Walker, A. Savaliev, G.M. Smith. 2009. *Mixed effects models and extensions in Ecology with R*. Springer.