**OPIHI MISCONCEPTIONS**

**General**

* Ocean physics and chemistry are not important to ocean biology
* Sand is made of salt
* The ocean and the coast are unchanging

**Sampling**

* A sample is a miniature version of the population
* The larger the sample, the greater the accuracy
* One sampling method is the “best” for all purposes
* Sampling methods are interchangeable
* Random sampling is better than systematic sampling
* Taking a census is better than sampling
* Taking a census is the only way to really know about the whole population
* Random samples are not subject to random variation and sampling error

**Experimental Design**

* Random is the same as haphazard
* Bias in an experiment is the same as random error
* A person can throw or toss an object with complete randomness
* Randomness does not involve unpredictability
* Rigorous experimental design and data interpretation are easy, trivial skills
* Instrumental error cannot be accounted for
* Accuracy is more important than precision
* Every experiment needs a control
* All scientific studies involve experimental manipulation of variables
* It is not scientifically accurate to change your hypothesis during your study

**Data Representation**

* A line graph is the same as a trend-line, best-fit line, or regression line
* Points on a graph should always be connected
* Bar graphs work for all types of data
* Pie charts make easy visual comparisons
* Data shown in a graph is representative and accurate
* Raw data and/or data tables are not appropriate ways to show data
* Data narratives are not as convincing as graphs
* Graphs always make data easier to interpret

**Plankton**

* Rainforests provide most of the oxygen we breathe
* All plankton are tiny
* All plankton are animals
* Plankton cannot swim
* All plankton are bioluminescent
* Plankton float because they are less dense than water