

Shelford's law of tolerance

It states that an organism's success is based on a complex set of conditions and that each organism has a certain minimum, maximum, and optimum environmental factor or combination of factors that determine success. **Shelford's law of tolerance** is a principle developed by American zoologist Victor Ernest Shelford in 1911.

This points out the second limitation of Liebig's law of the minimum - that factors act in concert rather than in isolation. A low level of one factor can sometimes be partially compensated for by appropriate levels of other factors.

Good restated the theory of tolerance as: Each and every species is able to exist and reproduce successfully only within a definite range of environmental conditions.

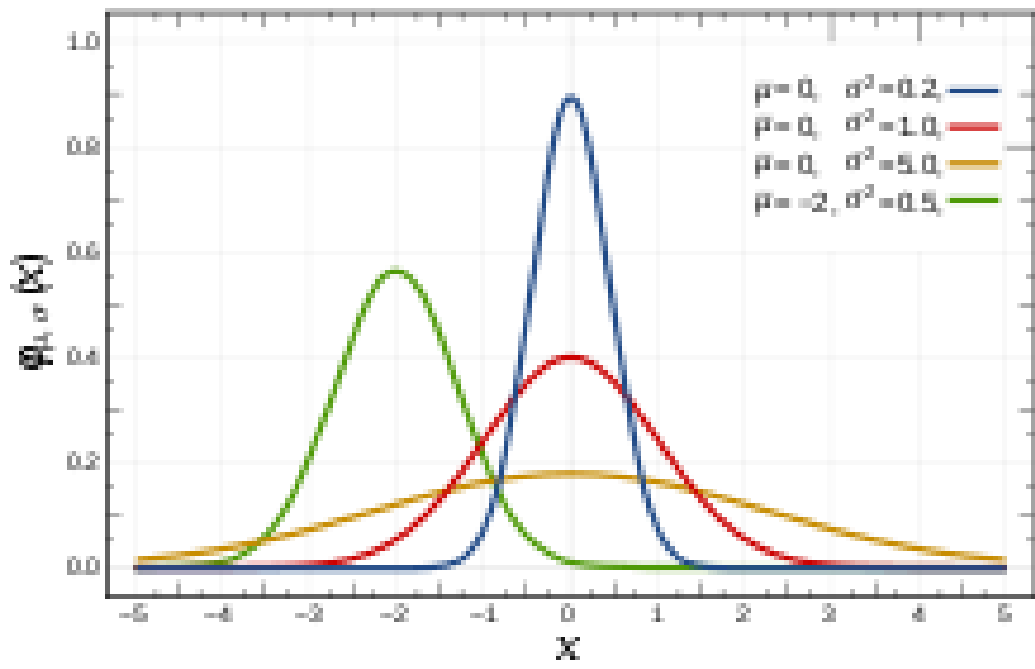
The law of tolerance, or theory of tolerance, is best illustrated by a bell shaped curve. The range of the optimum.

Tolerance ranges are not necessarily fixed. They can change as:

- Seasons change.
- Environmental conditions change.
- Life stage of the organism changes.
- Example – blue crabs. The eggs and larvae require higher salinity than adults.

The range of the optimum may differ for different processes within the same organism.

- Photosynthesis and growth in the pea plant.



Normal distribution curve