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Opinion

Research on Environmental Stress in Fishes

Augustine Ehireme Okonofua*

Department of Fisheries, Aqua-Vet Enterprises, General Gas, Akobo Ibadan, Nigeria

***Corresponding Author:** Augustine Ehireme Okonofua, Department of Fisheries, Aqua-Vet Enterprises, General Gas, Akobo Ibadan, Nigeria.

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Stress is a state produced by an environmental or other factors which pushes the adaptive response of an animal beyond the normal range.

It may also be defined as a response that disturbed the normal functioning of the organism to such an extent that the chances of survival are significantly reduced.

Stressor

Any condition which produces stress e.g., of common environmental stressors in water include un-ionized NH3, overcrowding, handling, toxins, extreme H2O temperatures, low dissolved oxygen concentration etc.

There are three stages in the response of fish to stressors

- **Alarm reaction:** There is an increase in the production of adrenalin and other associated hormones.
- **Stage of resistance:** The fish may become accustomed to some of these sea water to fresh water through serial dilution or vice versa.
- **Exhaustion:** If the stressor is not removed after a time, the fish may pass into the stage of exhaust.

For example, prolonged exposure to low dissolved oxygen can bring about exhaustion leading to external manifestation of diseases.

Stressors combine to form marked metabolic changes designed to elicit several physic logical responses in fish. They include

- Increase in blood sugar and decrease in the level of glycogen.
- Decrease in blood salt level.
- Increase in the number of circulating blood cells hence, a decrease in clothing time.
- Suppressed inflammations
- Decrease in white blood cells resulting in their inability to phagocytize.
- Increase in the production of cortisone.