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Commentary

Approaches of Aquatic Physiology, and Monitoring the Environmental Changes in Fish Population

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DESCRIPTION

Aquatic Physiology explores all aspects of the physiology of animals living in aquatic ecosystems, from freshwater to marine. Fish physiology is the scientific study of how the components of a living fish work together. This is in contrast to fish anatomy, which studies the shape and morphology of fish.

Assessing the welfare of aquatic animals is currently controversial, especially with respect to animals kept by humans. The classical concept of animal welfare includes three components: The emotional state of the organism (including the absence of negative experiences), The ability to express normal behavior, and the proper functioning of the organism. Methods to assess their emotions (fear, pain, anxiety, etc.) are currently being developed for aquatic organisms, and understanding the natural behaviors of all aquatic taxa interacting with humans is of great interest to many. It is a task that requires time, but the evaluation of internal reactions is in the organism. Marine fishes are at constant risk of losing water from their bodies. Low osmolarity compared to more concentrated media. Water is lost from the body at any surface that is permeable to water, especially the surface of the gills. This inevitable penetration loss such marine fish need to drink seawater to maintain water balance. They compensate for osmotic water loss by drinking plenty of the seawater that accompanies them. Absorbed salt and water are reabsorbed from the intestinal tract increased salt concentration in the body.

Physiological tools are particularly valuable for improving predictions of how fish populations will respond to new conditions. When developing management plans, scientists often examine population monitoring data to determine how fish populations have historically responded to different environmental conditions, and use this information to predict how they will react to current or future conditions. However, without knowing the underlying mechanisms that determine why populations responded in particular ways, we can only reliably use this approach to predict population responses under conditions observed in the past. In contrast, physiological tools that measure the response of individual fish to environmental changes can be combined with population monitoring to actually explain why population characteristics are changing and therefore, to new conditions in nature.

To reduce the risk of resource scarcity and impacts on biodiversity, we need to move to aquaculture production systems that use low-value resources and produce waste that does not exceed the assimilation capacity of the environment. The natural life support and provision of ecosystem services upon which economic development and human well-being depend must be recognized and managed. In addition to his traditional EIA, one way to identify the broader natural resource and ecosystem service needs of aquaculture is the ecosystem area functionally required to support the activity was to be estimated. When a farm faces a problem, the solution focuses on the pond or cage unit and usually ignores the fact that the farm is part of a much larger ecosystem with which it interacts. Provides feed, seeds, clean water, and other vital resources and services, including waste disposal. This precious work of nature sets limits on the level of culture without endangering biodiversity or causing pollution and disease problems. It has proven very useful in shedding light on the unpaid and often overlooked natural labor that underpins our activities. However, while it is not a detailed tool for measuring environmental capacity or sustainability in aquaculture, it is an excellent tool for communicating human dependence on life support systems.

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