Monitoring Aquarium Fish Inventory at the Collector/Coordinator Level

Compared with mammals or other terrestrial vertebrates, which are relatively easy to count by visual inspection when they are in a cage, it is difficult to count fish without handling them. This causes them undue stress. Fish live in a three-dimensional environment, which collapses if, for instance, we pull a holding net out of the water to count the fish. Counting fish underwater, without removing the holding net, can be difficult, too, as the water might be turbid. Even in clear systems, it is impossible to count large numbers of small fish.

Physical counting that involves excessive handling will cause the fish stress, thus affecting their condition and quality. Even brief stress such as rapid netting and movement from one container to another can affect the fish, resulting in a "fight-or-flight" response. Prolonged stress from sustained or repeated handling (e.g., when counting hundreds of fish) can cause suppression of appetite, reproduction, and growth [1],thus affecting the quality of the fish.

Although several factors, including the presence of certain salts, optimal water quality parameters, limited exposures to temperature fluctuations, and use of anesthetics, can limit the detrimental effects of handling stress, it is difficult to eliminate the stress response completely. The best method is to limit the number of times fish are handled, thereby reducing the potential for mortality[2].

Mechanical devices, if available, can also be used to help move and count fish. However, mechanical handling also disturbs fish and produces some level of stress and mortalities. As with manual counting, these mortalities often occur several days after initial handling.

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[1] Russell J. Borski and Ronald G. Hodson, Research and the Institutional Animal Care and Use Committee, Physiological Research Outside the Laboratory , ILAR Journal V44(4) 2003

[2] Ibid

The main purpose of inventory is to be able to gauge if your fish stock is aligned with the order.

It is possible to obtain reliable numbers for tracking and inventory of fish per order by counting the catch. This number is your beginning balance. Add the number of new catches, subtract mortalities, rejects, and shipments. Any discrepancy is assumed to be loss. Below is an example of inventory tracking for an order. The example is similar to MAC Logbook format:

Species	Exporter 1's Order	Day 1 Catch: Beginning Balance	Day 2 Catch	Reject	Mortality	Loss	Packed & Shipped for Exporter 1's order	Ending Balance
Sp. 1	650	300	400	12	34	2	650	2
Sp. 2	360	200	200	8	23		360	9
Sp. 3	480	200	300	5	14	1	480	0

Inventory management of materials and supplies

Is it wise to build inventories of your materials and supplies as an insurance against uncertainties? Is it true that this will help collection and shipment run smoothly?

The most common problem encountered with this approach is that it is difficult to determine appropriate inventory levels which must be done for each species or variety. If inventory levels are set too high, the collector's or coordinator's cash will be tied up with inventory. If the inventory is too low, there is an insufficient buffer against high demand or slow delivery from your supplier, and, consequently, revenues and customers might be lost. In either event, the total cost, including opportunities and reputation lost can be high.

The best way possible to estimate the appropriate inventory level is to approximate the average volume of catch per week and determine the materials and supplies needed to support this average volume. Set this weekly requirement as your buffer level. This simply means that you should always have one week's volume of materials and supplies as reserve.