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FACTSHEET

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Smart Fishing Initiative

HARVEST CONTROL RULES: STREAMLINING FISHERIES DECISION MAKING AND SUSTAINABILITY

A Harvest Control Rule (HCR) is a pre-agreed action, or set of actions, to be taken by a management body designed to achieve a medium or long-term target stock size (the Target Reference Point or "TRP") while avoiding stock levels that pose a risk to sustainability (the Limit Reference Point or "LRP"). Simple HCRs can be described as an "if, then" statement. An example of a very simple HCR would be "if the fishery stock level falls below the target level, then the level of fishing must be reduced by 20%." Managers may also agree in advance what the specific management actions would be to reach the 20% reduction in the level of fishing, such as a regional closure or gear restriction.

Other basic examples of HCRs depend on the management objectives of the fishery, but might include:

1. Total Allowable Catch: Fisheries are managed by a total allowable catch (TAC). A maximum TAC is set for each stock so that the respective target biomass is maintained on average. This maximum TAC may be taken as long as biomass fluctuations remain above a TRP.
2. TAC Reductions: If the biomass falls below a TRP, then the TAC is linearly reduced, as a function of biomass, to reach zero catch at an LRP.
3. Mixed Fisheries: In fisheries where several target species are caught with the same gear, the maximum TACs for the respective stocks are set such that the most sensitive stocks do not fall below a TRP on average over a specified number of years, with a high probability of not falling below an LRP (also known as "weak stock management").
4. Discard: No discard of commercially exploited species are allowed, except for species with a demonstrated high discard survival rate.
5. Bycatch: Ecological risk assessments are conducted on bycatch species and to assess potential damage to the environment caused by fishing, with respective measures to be taken to minimize risk.
6. Size structure: The mean size and age in the catch are adjusted to minimize changes in age structure caused by fishing, and to reduce the potential for driving artificial selection leading to smaller individual fish sizes over time.

Example: Automating the Process

To recall the water tank analogy, when the water level starts to decline in the tank to concerning levels, the manager must take steps to reduce the consumption of that resource, either by placing restrictions on how it is used or otherwise limiting how much is used. This would be very difficult if every time this occurred he had to negotiate with every person in the village as to how water is distributed. In fact, by the time the manager negotiates with every person to meet their individual needs, he might find that the tank is dry! What the manager needs is an automatic measure in place to maintain the a water tank level such that a sufficient water level is maintained for all the community members that, in turn, negates the need for excessive deliberation by allowing community members to decide in advance what steps need to be taken in the event of a shortage. For instance, the community members decide when and where the cuts need to be made in advance of a situation that requires making those kinds of difficult decisions. Similarly, an HCR can act as an automatic measure to ensure that management objectives of a fishery, including stock levels, are maintained within agreed parameters without having to go through the extensive, time consuming, and often times, non-transparent process of establishing new management measures.

Creating More Transparent and Responsive Management through Harvest Control Rules

Current management of the tuna fisheries relies on annual decision-making processes that can be heavily influenced by sporadic, and sometimes unrelated, political factors. These factors and other considerations can lead to bureaucratic gridlock and inaction even when the biological, ecological, or socioeconomic situation calls for swift and decisive action. Using pre-established Reference Points and well-defined HCRs minimizes excessive debate, allowing managers to act quickly and decisively when the fishery reaches a pre-defined threshold (e.g. LRP or TRP).

Key features of HCRs:

- Streamline and facilitate informed management decisions;
- Improve transparency and accessibility of harvest management decisions;
- Set and confirm clear, distinct targets and limits;
- Define explicit intended responses to changes in stock status;
- Lay the foundation for developing well-defined fisheries management plans that are grounded in sound science; and
- Promote sustainability.

Proven Tool for Effective Fisheries Management

Harvest Control Rules are a well-established and proven tool in fisheries management. The best managed and most productive fisheries in the world rely on a combination of Limit and Target Reference Points in concert with well-defined Harvest Control Rules to manage their fisheries!

Our Smart Fishing Vision and Goals:

Vision: The world's oceans are healthy, well-managed and full of life, providing valuable resources for the welfare of humanity.

2020 Goals: The responsible management and trade of four key fishery populations results in recovering and resilient marine eco-systems, improved livelihoods for coastal communities and strengthened food security for the Planet.

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Why we are here
To stop the degradation of the planet's natural environment and to build a future in which humans live in harmony with nature.

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For more information

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