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**International Seafood Sustainability Foundation initiatives to develop and test bycatch
mitigation options for tropical purse seine fisheries**

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International Seafood Sustainability Foundation initiatives to develop and test bycatch mitigation options for tropical purse seine fisheries

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1. Abstract

The International Seafood Sustainability Foundation³ (ISSF) is developing a research program to develop and test technical options to reduce bycatch resulting from industrial tuna fisheries. The initial emphasis will address ways to reduce the incidental mortality of bigeye tuna of undesirable size, oceanic sharks and marine turtles in tropical purse seine fisheries. The ISSF will implement field studies through the full charter of a dedicated purse seine vessel or vessels operating in the Pacific, Atlantic and Indian Oceans over a 24 month schedule. Overall project guidance will be provided by the ISSF Scientific Advisory Committee. A Purse Seine Research Vessel Steering Committee will develop the specific projects to be conducted while considering practical input from skippers and industry representatives gained from regional workshops convened by the ISSF.

2. Background

The ISSF is a global partnership among scientists, the tuna industry and the World Wildlife Fund (WWF) whose stated mission is to undertake science-based initiatives for the long-term conservation and sustainable use of tuna stocks, reducing bycatch and promoting ecosystem health. The organization has highlighted six main areas of focus:

- Control and Reduce Fishing Capacity
- Mitigate Bycatch
- Eliminate IUU Fishing
- Expand Data Support
- Advance Performance in Monitoring, Control & Surveillance
- Improve Overall Tuna Stock Health

Participating companies of ISSF include many of the world's largest tuna processing and trading companies that represent a major proportion of global tuna production. The organization supports a science-based approach to addressing these issues and has assembled scientific advisors representing experience from all major tuna RFMOs. ISSF President, Susan Jackson is supported by Dr Victor Restrepo, serving as Chairman of the ISSF Scientific Advisory Committee (SAC). The ISSF SAC consists of Drs Meryl Williams (Vice Chair), Robin Allen (former director, IATTC), Laurent Dagorn (Senior Scientist, IRD stationed in Seychelles), Rick Deriso, (Chief Scientist, IATTC), John Hampton (Program Leader, SPC), Gerald Scott (NOAA Fisheries, Senior Advisor) and Dale Squires (NOAA Fisheries, Economist).

3. The development of a Research Plan

The ISSF has identified the mitigation of bycatch in tuna purse seine fisheries as a priority area of concern. Folded into the need to reduce bycatch is the issue of minimizing wastage of small tuna that are inadvertently harvested and discarded as well as the incidental take of juvenile bigeye tuna in floating object sets targeting skipjack and yellowfin. In order to begin the process of identifying and mitigation techniques, the ISSF has organized two international meetings within the last year.

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³ <http://www.iss-foundation.org/home>

The first meeting was jointly hosted by ISSF and the AZTI- Tecnalia laboratory, in Sukarrieta, Bizkaia, Spain, 24-27 November 2009. The objective of the meeting was to gather tuna scientists, technicians, fishing gear experts, acousticians, biologists and purse seine captains to discuss technical solutions to reducing bycatch resulting from purse seine effort on floating objects, such as FADs (anchored and drifting) and natural drift objects. A summary of this meeting is included in the materials available to SC6 as WCPFC-SC6-2010/FT-IP-1.

The meeting succeeded in presenting a number of options for bycatch reduction in purse seine fisheries and obtained a great deal of useful information from the fishing industry, mainly the Spanish Basque fleet. However, options were not prioritized or ranked for testing or funding. The results of this meeting were seen as a partial outcome to be completed more fully with additional regional meetings in different oceans that would fold in experience and opinions from other fleets and fishing communities. ISSF will conduct additional workshops with skippers in all oceans in order to continue to refine these outcomes.

The ISSF coordinated a second bycatch workshop in conjunction with the Kobe II Bycatch Workshop (K2B) held in Brisbane, Australia June 23-25, 2010. The ISSF meeting complemented K2B by providing information on bycatch related research on tuna purse seine fisheries and plans to move forward in the testing of additional research⁴. Invited speakers presented information summarizing global purse seine fisheries and fleets, purse seine bycatch information and plans for further research including the ISSF plans for field research.

4. ISSF proposal to use a Dedicated Vessel

It is not possible to properly test technical approaches to bycatch mitigation of purse seine operations using commercial vessel fishing operations. Scientists need to be able to manipulate all spatial, temporal and operational aspects of the set and be able to manipulate and enumerate the catch without regard for its commercial value. This will require full chartering of fully operational purse seine vessels with crew experienced in FAD fishing and particular fishing grounds. Experiments will need to be conducted in all oceans as well to examine the influence of environment, localized productivity and thermal structure on bycatch levels and behavior.

The ISSF plans to do this through the full chartering of a dedicated purse seine vessel or vessels operating in the Indian, Atlantic, Eastern Pacific and Western Pacific Oceans. Scientific merit will dictate which projects will be endorsed and the scientific projects will dictate fishing operations. A dedicated research platform with full commercial expertise will allow experimental operations that vessels would not otherwise conduct for fear of low catches or reduced profitability. Building on the experience established in solving the tuna-dolphin interaction problems of the EPO, the program will put vessel captains together with scientists to generate testable and economically viable ideas that can be practically tested on the chartered vessel.

⁴ TAKING STOCK, Workshop on Bycatch Research in Tuna Purse Seine Fisheries, Brisbane, Australia, 26 June 2010.

5. The ISSF Research Plan

The overall project guidance will be provided by the ISSF SAC. A Purse Seine Research Vessel Steering Committee will develop the specific projects to be conducted. This Committee is made up by experts in various fields from different regions: Drs Javier Ariz (IEO, Spain), Diego Bernal (UMASS, USA), Richard Brill (VIMS, USA), Laurent Dagorn (IRD, Seychelles; Committee Chair), Martin Hall (IATTC), Kim Holland (U Hawaii, USA), David Itano (U Hawaii, USA), Gala Moreno (AZTI, Spain), Hiroaki Okamoto (NRIFSF, Japan), Jacques Sacchi (IFREMER, France), and Kurt Schaefer (IATTC). Conditional on the availability of funds, it is envisioned that the Committee will invite regional experts to participate in the research cruises.

Individual projects will be developed to address three main types of bycatch issues:

- Bigeye tuna of undesirable size
- Sharks (primarily silky and oceanic white tip sharks)
- Marine turtles

In addition to the above, the project may also address other issues to taking advantage of the special conditions that a dedicated charter offers. For example, visual systems for fish measurements, etc.

The research techniques that will be conducted can be broadly categorized as follows:

- In-situ discrimination (acoustics, ROVs, cameras)
- Understanding fish behavior
- Attraction to various stimuli
- Selective devices
- Changes in net characteristics
- Changes in fishing operations
- Measuring post-release survival

The project aims to charter commercial purse seine vessels (and support vessels) or a total of 24 months, spread over three years, to work in the Pacific (50% of the time), Atlantic (25%) and Indian (25%) Oceans. Initial cost estimates are 12 million US\$ as follows:

Vessel charters (24 mo): \$6.0 M
Management: \$0.75 M
Equipment: \$1.25 M
Research funding: \$2.0 M
Communication/Education: \$2.0 M

In coming up with these estimates, it was assumed that the chartered vessels will operate with 50% fishing efficiency, compared with commercial operations, and that the price of the catch will be used to offset charter costs.

An important component of the budget is for communications and education, including multimedia educational materials and skipper training workshops.