



#BycatchProject

Overview of Scientific Research Cruises: 2011-2014

Since 2011, ISSF has sponsored a series of cruises for scientific researchers to work with fishers to find methods to mitigate bycatch and better understand how fish behave around FADs. These globally coordinated cruises covered the Indian and Pacific Oceans and lasted anywhere from 11 days to two and a half months. The research team worked to gain scientific inputs to initiate improvements within the tuna purse seine fishery to reduce the environmental impact of fishing for tuna with FADs. Each cruise accomplished a series of tasks to test improved gear designs and study the behavior of tuna and non-targeted species gathering at FADs. Researchers also tracked the survival of sharks released after being caught.

Approach

- ➔ Review of best practices & bycatch data
- ➔ Independent committee of international researchers & scientists identify areas of study
- ➔ Researchers test new ideas onboard fishing vessels
- ➔ Best practices, new techniques and enhanced technologies are compiled, published
- ➔ ISSF works with tuna processors to implement standards
- ➔ Scientists educate skippers through participatory workshops & remote learning tools

Scientific Study to Guide Development of Best Practices

The research cruises are designed to help reduce bycatch at four points in the fishing expedition: before arriving at a FAD, before setting the net, release from the net, and when fish are on the deck.

- **Identify and mitigate bycatch before arriving at a FAD**

- Instrumented bouy
- Non-Entangling FADs

- **Avoid bycatch before setting a net**

- Pre-estimation of catch (e.g., composition by species, size, quantity)
- Natural behavior of fish (e.g., temporal/spatial segregation, excursions)
- Double FADs
- Attraction of sharks, non-target fish away from FADs or net

- **Release bycatch from the net**

- Natural behavior of fish in the net
- Behavioral manipulations
- Modification of gear to foster selectivity

- **Release bycatch from the deck**

- Best practices for handling and releasing sharks onboard
- Survival and condition of released sharks

Scientific Research Cruises

The cruises, which are led by independent researchers and scientists, test new ideas in real-world conditions and identify best practices, new techniques, and enhanced technologies that will minimize the environmental impact of fishing operations on non-targeted marine life.

Ocean Region	Dates	Duration	Areas of Study Included
Eastern Pacific Ocean	May-July, 2011	73 Days	Test alternative non-entangling FAD designs, Accuracy of pre-set catch estimation/Technological aids; Natural behavior of tuna at FADs; Shark incidental capture and survival of released animals
West Indian Ocean	June, 2011	11 Days	Natural behavior of tuna and non-target species at FADs; Experiments to attract sharks away from FADs; Assess the impacts of different designs of FADs (entanglement)
West Indian Ocean	April-May, 2012	39 Days	Natural behavior of tuna and non-target species at FADs; Abundance and species composition of fish at FADs; Shark incidental capture and survival of released animals; Assess the impacts of different designs of FADs (entanglement); Test the use of double FADs to segregate species; Test electronic monitoring of catch; Vertical and horizontal separation; Temporal targeting; Accuracy of pre-set estimations of catch accuracy/technological aids; Bycatch release experiments
Western & Central Pacific Ocean	May-June, 2012	6 Weeks	Natural behavior of tuna and non-target species at FADs; Abundance and species composition of fish at FADs; Shark incidental capture and survival of released animals; Assess the impacts of different designs of FADs (entanglement); Test the use of double FADs to segregate species; Test electronic monitoring of catch; Vertical and horizontal separation; Temporal targeting; Accuracy of pre-set estimations of catch accuracy/technological aids; Bycatch release experiments
Western & Central Pacific Ocean - 2	May-July, 2013	46 Days	Behaviour of tuna, sharks and other non-target species in the net; Vertical and horizontal separation of target and non-target species; Biological sampling of tuna and non-target species; Condition factors of FAD associated and free-swimming skipjack tuna; Opportunistic tagging of whale shark and assessment of release techniques

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Ocean Region	Dates	Duration	Areas of Study Included
Western & Central Pacific Ocean - 3	May, 2014	23 Days	Remote echo-sounder buoy species discrimination; Acoustic discrimination of tuna and non-target species and aggregation size; Accuracy of pre-set estimations of catch verified by spill sampling; Progress on the use of escape panels for sharks and non-target species; Behaviour of tuna, sharks and other non-target species in the net
SPC and ISSF Central Pacific Cruise	August, 2014	25 Days	Vertical behavior, residency and daily presence/absence patterns of tuna and non-target species (rainbow runner, ocean triggerfish, silky shark, oceanic whitetip shark, wahoo) at drifting FADs using coded acoustic tags; (data needed to better distinguish different species from echo sounder buoy data); Archival tagging of bigeye and yellowfin tuna to gain additional information on tuna behavior on and away from FADs