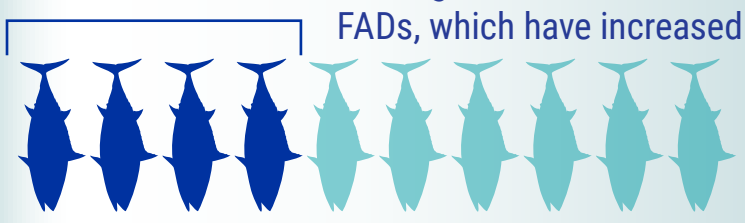
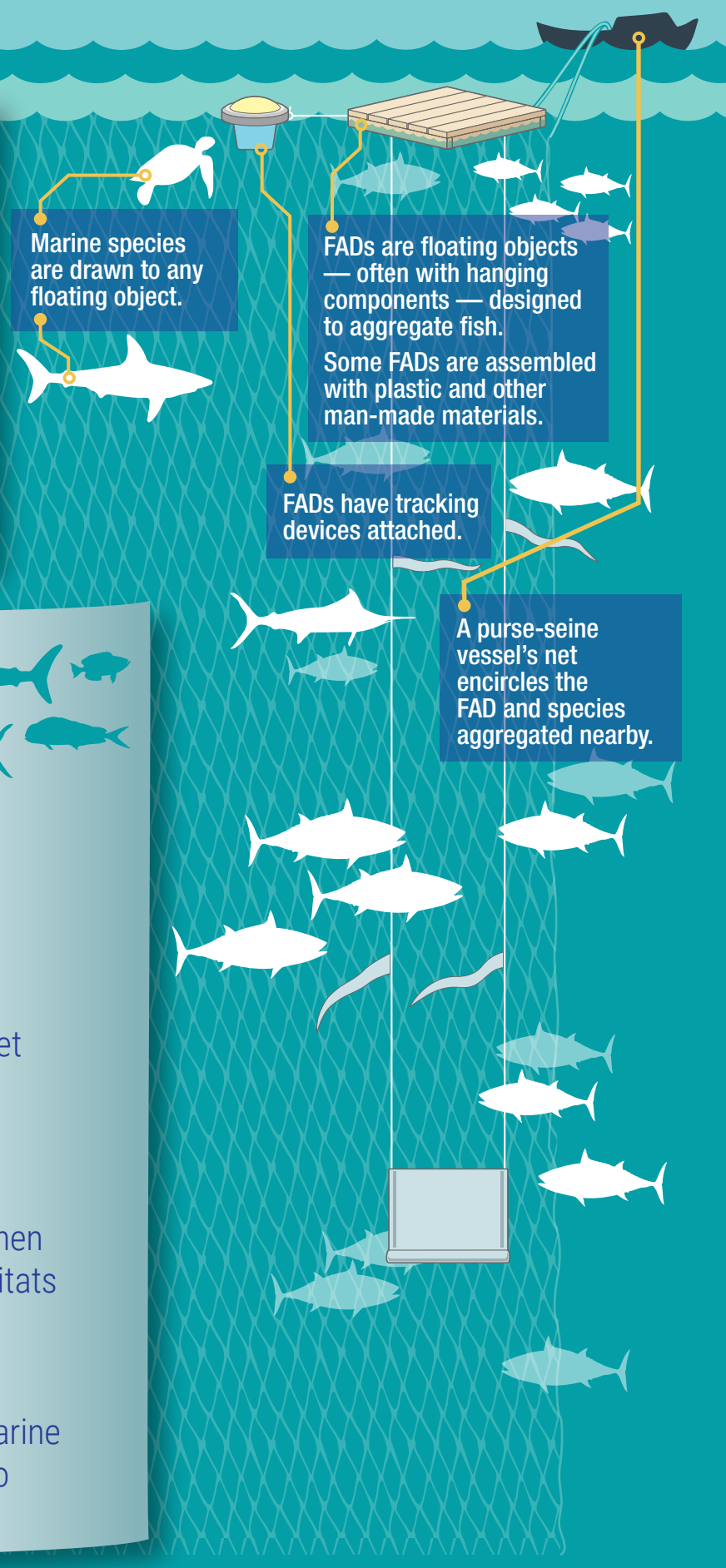
Addressing FAD Ecological Impacts

Research & Best Practices to Reduce Bycatch and Ocean Debris

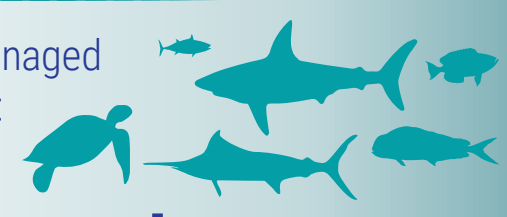
Although purse-seine fishers also set on free-swimming schools and use naturally occurring floating objects to catch tuna, they're relying more on artificial Fish Aggregating Devices (FADs).

Over 40% of the global tuna catch is made with FADs, which have increased in all oceans.





FADs, like other fishing gears, need to be managed to reduce their ecological impacts, including:



1. **The unintentional capture** of small tuna, which can contribute to overfishing[1]
2. **The unintentional capture/entanglement** of non-target species such as sharks and sea turtles[2] or other finfish and billfish (also known as bycatch)
3. **Damage and marine litter**,[3] when FAD structures are lost or abandoned, in fragile marine habitats like coral reefs
4. **Ghost fishing**,[4] the accidental capture of marine life by fishing gear lost or discarded at sea that continues to entangle animals

ISSF is investigating ways to lessen FAD fishing's impacts

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Ongoing Research

- **Echosounder buoys** to remotely assess the amount of bigeye and yellowfin tuna around FADs → Reduce bigeye and yellowfin catch in areas that need to reduce fishing pressure on those species
- **Acoustic and underwater observations** to assess behavior of fish aggregations around FADs and in the net → Potential reduction of bycatch through avoidance or selective release; i.e., escape panels, backdown procedure
- **Acoustic tagging and tracking** of bigeye and non-target species around FADs → Potential avoidance of small bigeye and non-target species
- **Double FAD experiments** to examine potential to separate bycatch from tuna on adjacent FADs → Potential avoidance of non-target species, with special focus on sharks before net is set
- **Large-scale testing** of biodegradable FADs with collaboration of fleets in Indian and Atlantic Oceans → Reduction of FAD-structure impact on ecosystem
- **Release sharks** from net during purse-seine fishing operations → Increase shark survival and avoid risks for crew on deck

Best Practices

- **Do not cover FAD surfaces with mesh** → Reduces turtle entanglement
- **Use non-meshed materials** such as ropes or canvas sheets for hanging components → Reduces shark entanglement
- **Use natural or biodegradable materials** such as bamboo, palm leaves or other vegetal fibers → Reduces ocean debris and damage on coastal ecosystems
- **Simplify FAD structure,** reducing size, volume and weight as much as possible → Reduces ocean debris and facilitates FAD retrieval
- **Avoid** setting on small tuna schools → Can reduce bycatch with little impact on total target catch
- **Focus on shark and mobulid ray release** efforts from the deck, in the first brails → Increases survival of released sharks

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[1]Restrepo, V. et al. (2017). A summary of bycatch issues and ISSF mitigation initiatives to date in purse seine fisheries, with emphasis on FADs. ISSF Technical Report 2017-06.

[2]Leroy, B. et al (2013). A critique of the ecosystem impacts of drifting and anchored FADs use by purse seine tuna fisheries in the Western and Central Pacific Ocean. Aquatic Living Resources 26: 49-61.

[3]Moreno, G. et al (2018). Workshop for the reduction of the impact of Fish Aggregating Devices structure on the ecosystem. ISSF Technical Report 2018-19A.

[4]Dagorn, L. et al (2012). Is it good or bad to fish with FADs? What are the real impacts of the use of drifting FADs on pelagic marine ecosystems? Fish and Fisheries.