Non-entangling FADs: research to support management

ISSF Research and Management Outcomes

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WFCPFC – FAD Design

Focus: reducing the entanglement of non-target animals and impact of FADs on ecosystem

Results:

- Biodegradable FADs – research ongoing
  - Hawaii – coconut husk large diameter rope and small square mesh
  - Maldives – cotton, cotton+sisal, cotton+linen+ sisal
- Other mitigation strategies
  - Handling practices on deck
  - Live release of non-target catch from the net with satellite tagging to assess post-release survival rates

WFCPFC – FAD Design

Results continued:

- Design and test options to develop risk based FAD designs

WFCPFC – FAD Research

Observations:

- FAD DESIGNS
  - Non-entangling and biodegradable = precautionary

WFCPFC – Tuna Behaviour

Focus: Residence times and vertical migration on dFADs

Results:

- Tuna, sharks & bycatch near-continuous association with dFADs for weeks/months
  - BET & YFT relatively long residence times
  - SKJ & silky sharks shorter residence times
  - Rainbow runner and oceanic trigger fish intermediate residence times

WFCPFC – Tuna Behaviour

Results continued:

- Distinct 24hr patters (diel) with FAD associations; differences observed:
  - Between ocean areas and for target and non-target species
- Tuna and silky shark same pattern:
  - day time presence, depart early evening, returning ~3am
    - BET less presence in early evening, but coincides with departure of SKJ and YFT
- Difficult to mitigate BET, silky sharks or finfish based on diel behaviour

WFCPFC – Tuna Behaviour

Results continued:

- Acoustic tagging shows changes in vertical migration on dFADs
  - All species are at shallower depths during the night (deeper depths during the day)
  - Particularly evident pre-dawn hours - all species were at their shallowest depths
    - Suggests that shallowing the PS net depth is not likely to be a viable/practical solution for BET mortality on FADs

WFCPFC – Tuna Behaviour

Focus: Behaviour of SKJ, BET and YFT in multispecies aggregations associated with dFADs

Results:

- Spatial and temporal differences in schooling behaviour
  - Differences not sufficient such that modifications to PS fishing practices would mitigate capture of juvenile BET and YFT

WFCPFC – FAD Research

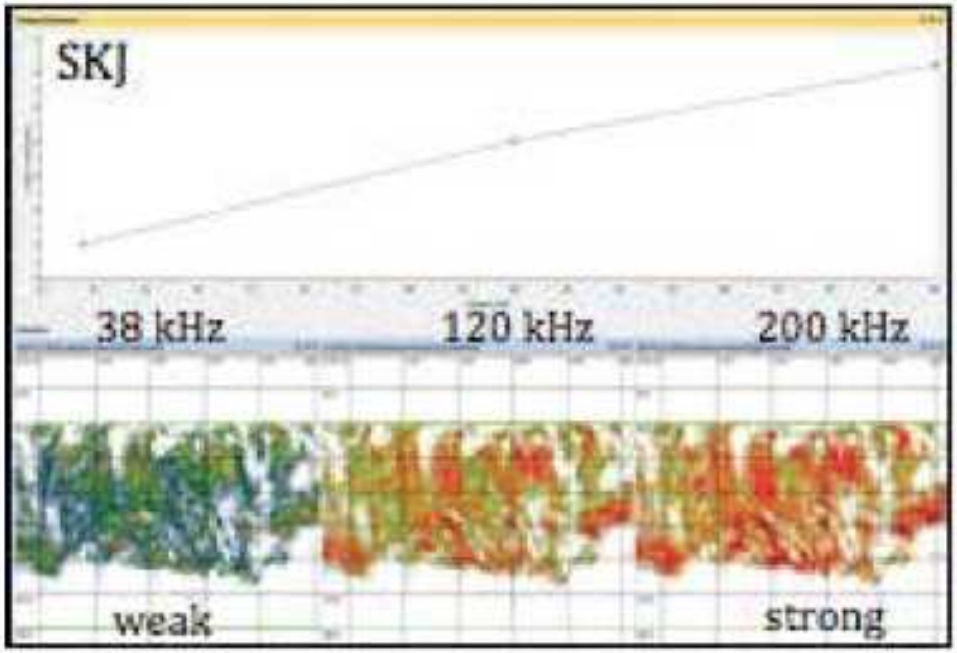
Observations:

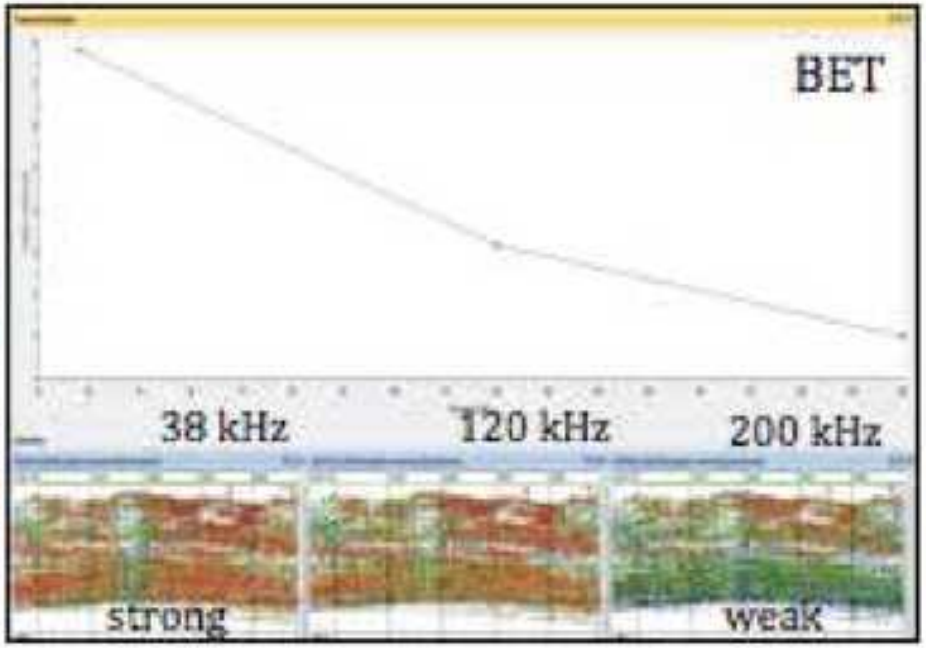
- TUNA BEHAVIOUR
  - Expand the focus on acoustic tagging research as a priority for skipjack, yellowfin and bigeye tuna, in addition to include non-target species.

WFCPFC – Acoustic FADs

Focus: Differentiate tuna from non-target species by identifying the size and species under FADs

Results:



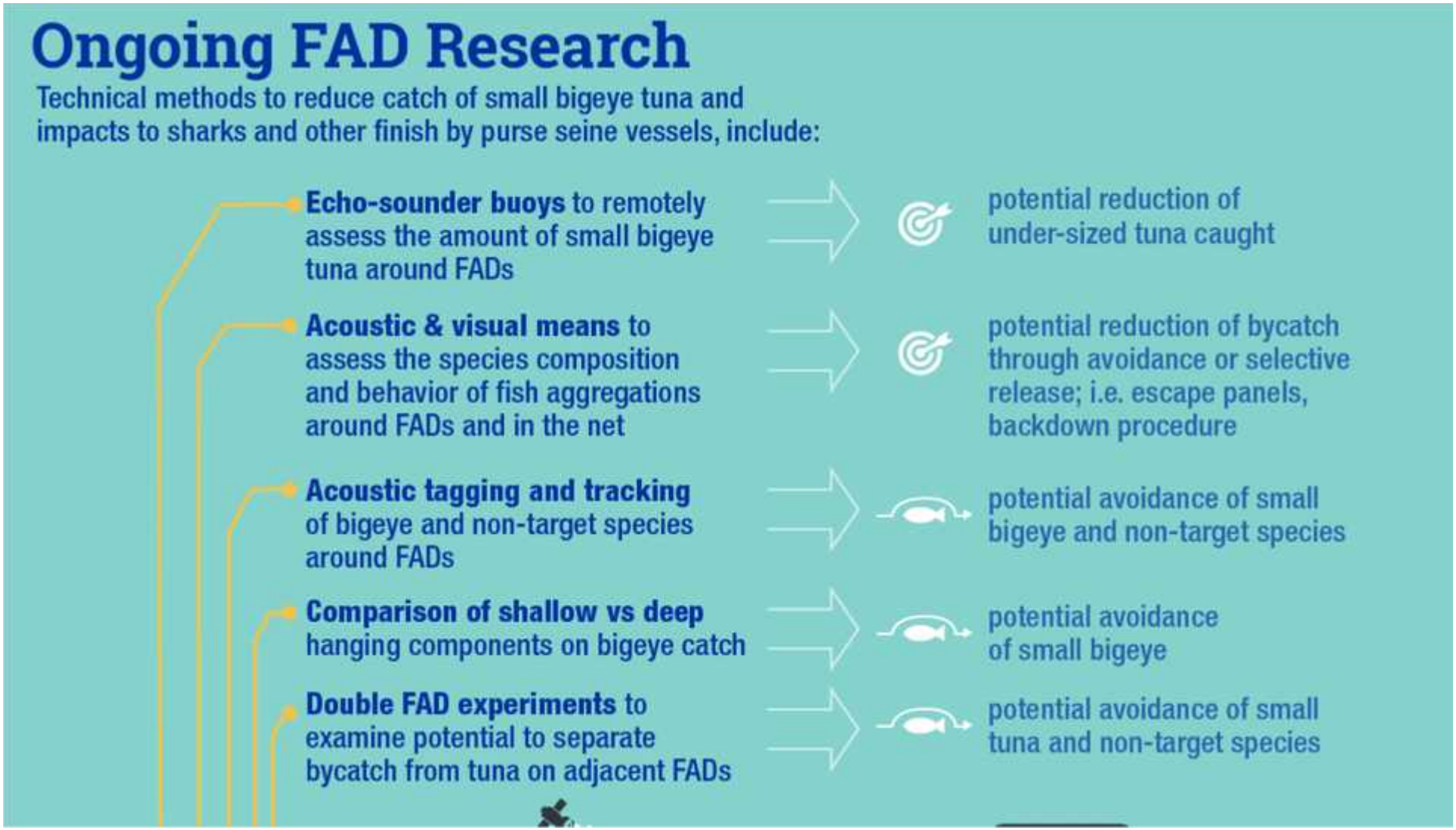


WFCPFC – FAD Research

Observations:

- ACOUSTIC FADs
  - Differentiate YFT from BET
  - Target strength frequency measurement required for YFT
    - Need single species schools = difficult for YFT
  - Determine how fishing technology and increases in FAD-related effort creep influence PS CPUE and fleet dynamics

ISSF FAD Research



WFCPFC – FAD Research

Summary of Observations:

- FAD DESIGNS
  - Precautionary approach is the adoption of non-engagement and biodegradable FAD designs to minimise the impact on bycatch and the ecosystem.
- TUNA BEHAVIOUR
  - Expand the focus on acoustic tagging research as a priority for skipjack, yellowfin and bigeye tuna, in addition to include non-target species.

WFCPFC – FAD Research

Summary of Observations:

- ACOUSTIC FADs
  - Differentiate YFT from BET
  - Target strength frequency measurement required for YFT
    - Need single species schools = difficult for YFT
  - Impact of fishing technology on effort creep influence PS CPUE and fleet dynamics plus treatment of supply/tender vessels of PS efficiency