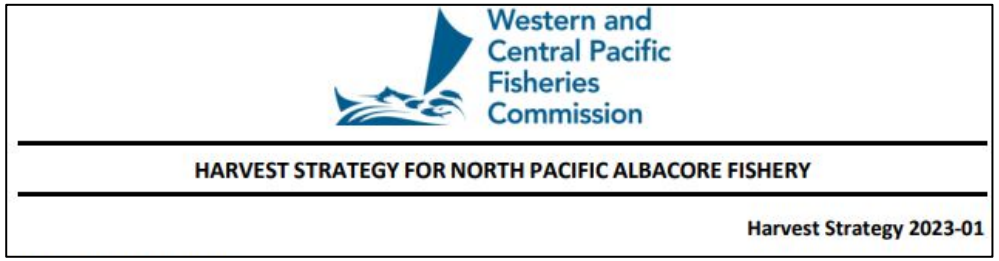
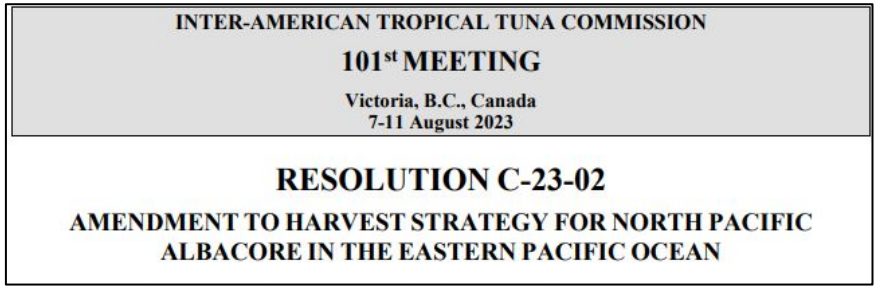
ISC Albacore Working Group Science Advice on Exceptional Circumstances and Translating Fishing Intensity into Catch and Effort

International Scientific Committee for Tuna and
Tuna-like Species in the North Pacific Ocean
Northern Committee
July 14-15, 2025
Toyama City, Japan

Requests for science advice

1. Criteria for identifying exceptional circumstances
2. Request for scientific advice for translating fishing intensity into catch and effort





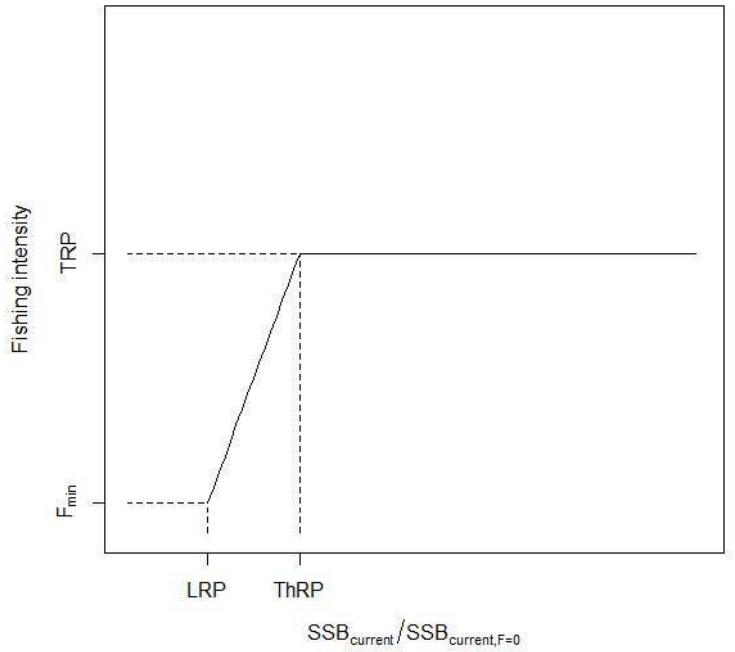
Criteria for Identifying Exceptional Circumstances

- The ISC24 Plenary reviewed and supported the criteria for exceptional circumstances for NPALB developed by the ALBWG.
- Most recent version of the criteria for identifying exceptional circumstances is available at ISC/25/ANNEX/04/Attachment 5.
- The IATTC Scientific Advisory Committee supported the work of the ALBWG by endorsing the criteria for identify exceptional circumstances at their 2025 meeting.
- The ALBWG plans to include exceptional circumstances analyses in the upcoming stock assessment process and will continue to review these criteria periodically.

Element	Indicator	Range	Evaluation Schedule
Stock and Fleet Dynamics	Depletion stock biomass ($SSB/SSB_{current, F=0}$)	In any year estimates fall outside the range of uncertainty simulated by the operating models (OMs) used in the most recent MSE (accepted by the ALBWG in 2021)	Benchmark stock assessment every 3 years
	Fishing intensity ($F_{\%SPR}$) where SPR is the spawning potential ratio		
	Changes in fleet dynamics	Any substantial differences from the structure and parameterization used in the OMs of the most recent MSE (accepted by the ALBWG in 2021)	As new evidence and research is presented and accepted by the ALBWG
	Biological parameters		
Application	Stock assessment	Stock assessment is not producible or estimates are unreliable	Benchmark stock assessment every 3 years
Implementation	Fishing intensity ($F_{\%SPR}$)	The fishing intensity is different from what is prescribed by the HCR, given the uncertainty range that was simulated by the most recent MSE (accepted by the ALBWG in 2021)	Benchmark stock assessment every 3 years
	Realized catch or effort	If a TAC/TAE is implemented and the realized catch or effort exceeds the TAC/TAE by greater than 20%	Benchmark stock assessment every 3 years

Scientific advice for translating fishing intensity

- Fishing Intensity ($F_{\%SPR}$):
  - $F_{\%SPR}$ fishing intensity associated with a specific spawning potential ratio (SPR)
  - Overall stock status and fishing impact on relative SSB
  - NPALB harvest strategies use $F_{\%SPR}$ in TRP and HCRs
- Catch and/or effort are traditionally used to manage fisheries
- ALBWG conducted analyses to relate fleet-specific $F_{\%SPR}$ to catch and effort (**ISC/24/ALBWG-01/07** and **ISC/25/ALBWG-01/09**)
  - Cross-correlation using Pearson's correlation coefficient was performed on the measures of catch, effort, and $F_{\%SPR}$
  - Effort and/or catch variables used as explanatory variables in a series of generalized linear models (GLMs) to explain the changes in SPR
  - Results should be interpreted with caution
- ALBWG updated advice and recommendations
  - ***ISC/25/ANNEX/10*** *Scientific advice on interpreting fishing intensity from the north Pacific albacore tuna harvest strategies in terms of catch and effort management measures.V2*

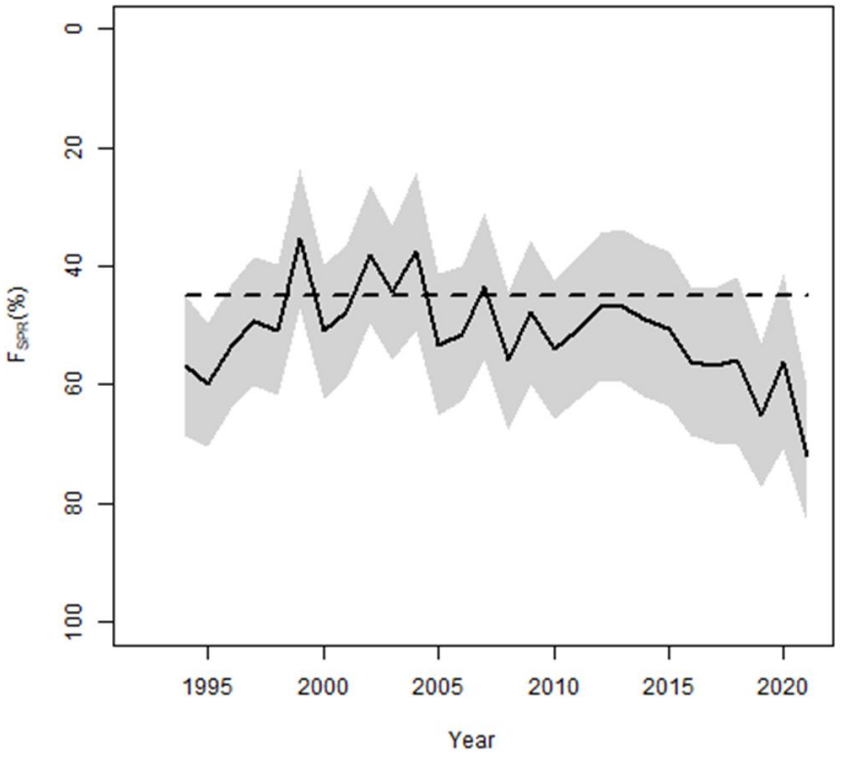


Scientific advice for translating fishing intensity

Recommendations from ISC24:

1. It should be noted that both RFMOs currently maintain fishing effort for NPO ALB ***at or below the average of 2002 – 2004 levels*** (e.g., WCPFC HS 2023-01) and that they have ***maintained the fishing impact on NPO ALB around or below the TRP of 45%$F_{\%SPR}$.***

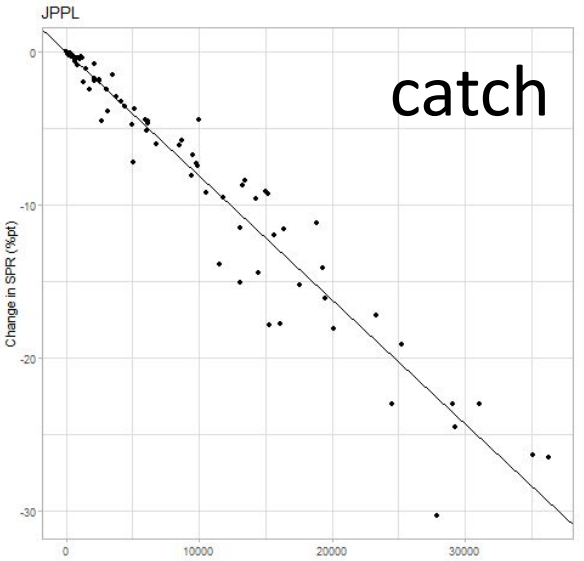
2. The ***ALBWG cautions*** that the fleet-specific catch and effort reduction per unit of SPR presented in the advice document [see Figs. 1, 2 in ISC/25/ANNEX/10] were calculated based on the historical (1994 – 2021) conditions in the 2023 assessment and will likely change if stock conditions (i.e., recruitment and/or selectivity or availability patterns) change in the future **The ALBWG therefore recommends that the relationships will need to be reevaluated with updated stock assessments and if reference points are exceeded for the stock (i.e., if the SSB falls below the ThRP or LRP for NPALB (30%$SSB_{current,F=0}$ and 14%$SSB_{current,F=0}$) or if exceptional circumstances are identified.**

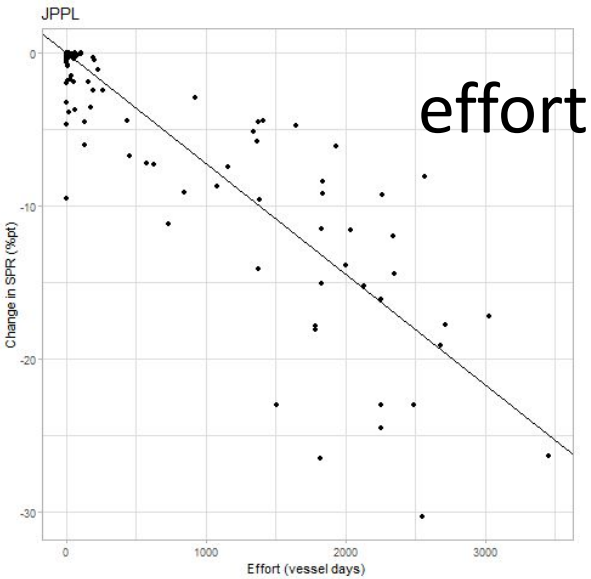


Scientific advice for translating fishing intensity

Recommendations from ISC24:

3. All fleet groups exhibited strong relationships between catch and SPRs and **the ALBWG therefore recommends that changes in fishing intensity required by the NPALB harvest strategy can potentially be translated into catch reductions for all fleet groups**.
4. The relationships between effort and SPRs were found to be fleet-specific and tended to be more variable and often less correlated than catch and SPR. However, the fleet groups using surface gears (i.e., JPPL and EPPOSF) exhibited moderately strong relationships between effort and SPRs. In addition, it should be noted that the WCPFC has adopted a management procedure for WCPO SKJ in the WCPO (WCPFC CCM 2022-01) and the JPPL fishery, which targets primarily SKJ, is managed using effort controls under that management procedure CMM. **The ALBWG therefore recommends that changes in fishing intensity required by the NPALB harvest strategy can potentially be translated into changes in effort for the management of surface fleet groups, JPPL and EPOSF.**

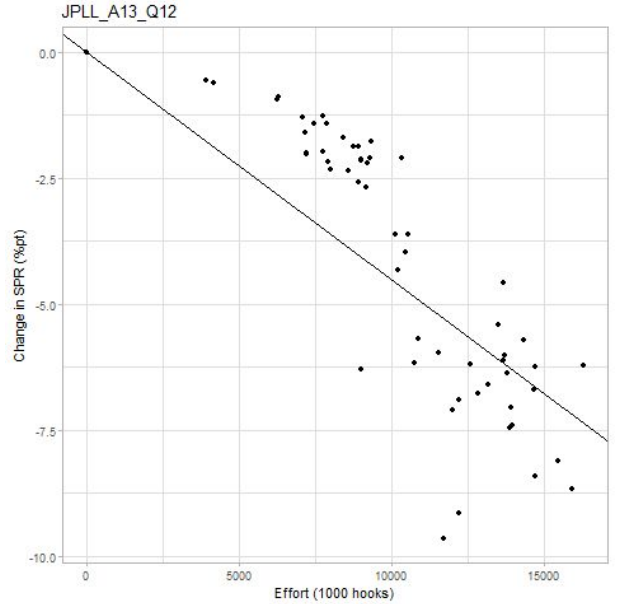


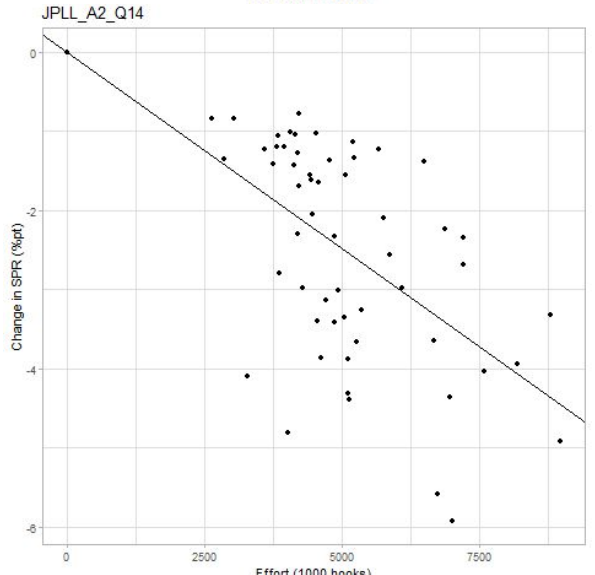


Scientific advice for translating fishing intensity

Additional recommendations 2025:

5. Additional analysis identified two JPLL fleets potentially targeting NPALB (JPLL_A13_Q12 and JPLL_A2_Q14), which had highly negative correlations between SPR, and both catch and effort [see Fig. 3 in ISC/25/ANNEX/10]. **The ALBWG recommends that these two NPALB-targeting JPLL fleets may be able to be managed using effort or catch controls. However, the increased variability in the relationships between effort and SPRs, relative to catch, should be taken into account.**





Scientific advice for translating fishing intensity

Additional recommendations 2025:

6. The **ALBWG recommends that RFMOs adopt rules to allocate a proportion of the total fishing intensity resulting from the harvest strategy harvest control rule to each of the countries or fleets before fleet specific fishing intensities can be translated into catch and effort.** As an example, an approach may be for the RFMOs to specify a historical or current time period. The ALBWG can then calculate the mean percentage share of the SPR for each fleet or country during that period. Once the allocation guidelines are provided the ALBWG can provide options for estimating the fleet-specific SPRs such that the desired total SPR values were met, while the share of benefits for each fleet or country were maintained at the desired levels. These fleet specific SPRs could then in turn be converted into catch and/or effort levels, as needed. An alternative example may be for the RFMOs to specify the exact amounts and/or shares of catch and/or effort for each fleet or country and potentially recalculate the exact amounts after every stock assessment.

Table 1. Fleet groups used in this study with reference to the fleets in the 2023 stock assessment.

Fleet Group	Fleet Group Name	Fleet ID in 2023 assessment	Units of Effort	Fleet Group Description
1	JPLL	F1 to F20	Hooks, Vessels, Days	Japan longline; all areas; all seasons
2	JPPL	F21 to F24	Vessels, Days, Poledays, Avg poles, SKJ catch	Japan pole-and-line; all areas; all seasons
3	USLL	F26 & F27	Hooks, Vessels, Sets	US longline; all areas; all seasons
4	TWLL	F28 & F29	Hooks, Vessels, Days	Taiwan longline; all areas; all seasons
5	KRLL	F30	Hooks	Korea longline; all areas; all seasons
6	CNLL	F31 & F32	Hooks	China longline; all areas; all seasons
7	VUOTHLL	F33	Hooks	Vanuatu & Others longline; all areas & seasons
8	EPOSF	F34	Vessels, Days	EPO Surface fleet (primarily US and Canada); all seasons
9	MISC	F35	NA	Miscellaneous fleets from Japan, Taiwan, & Korea

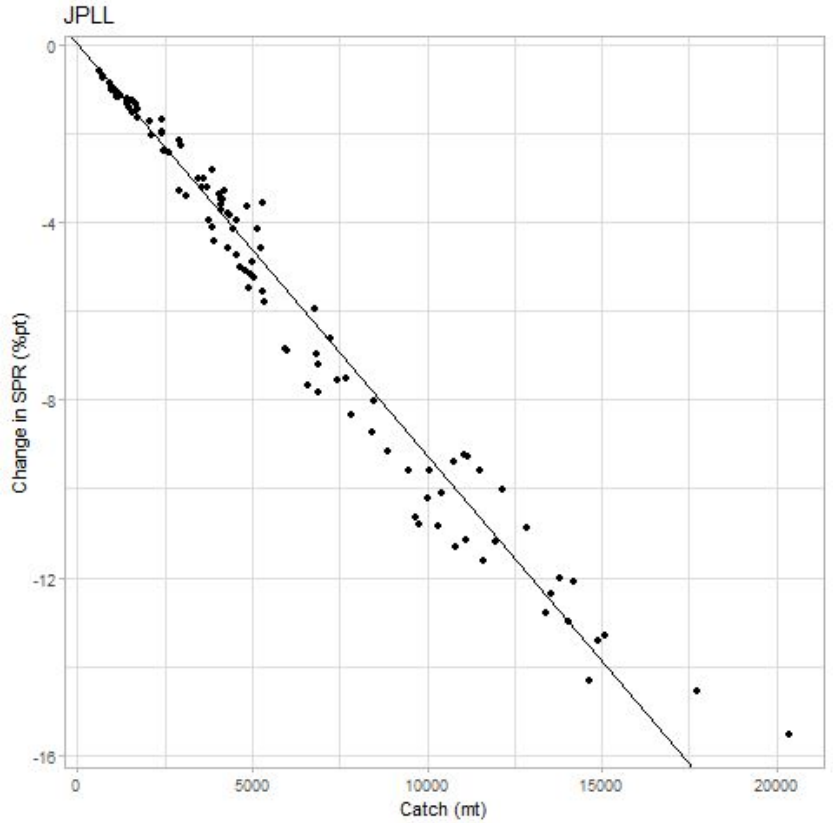
Thank you

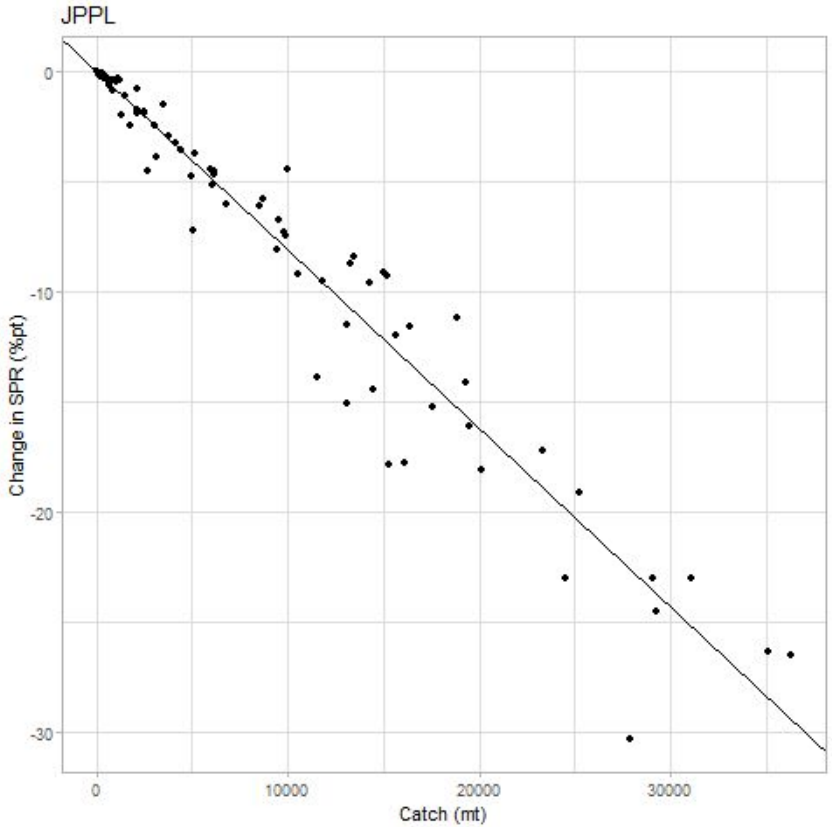
Questions

Extra Slides

Scientific advice for translating fishing intensity

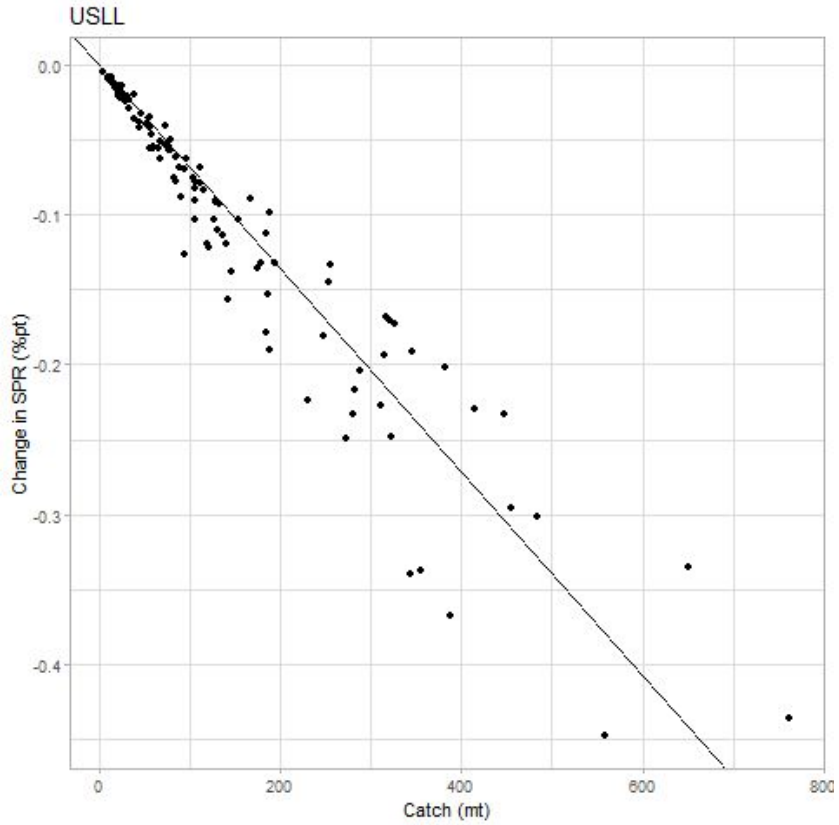
- $F_{\%SPR}$ ~ Catch

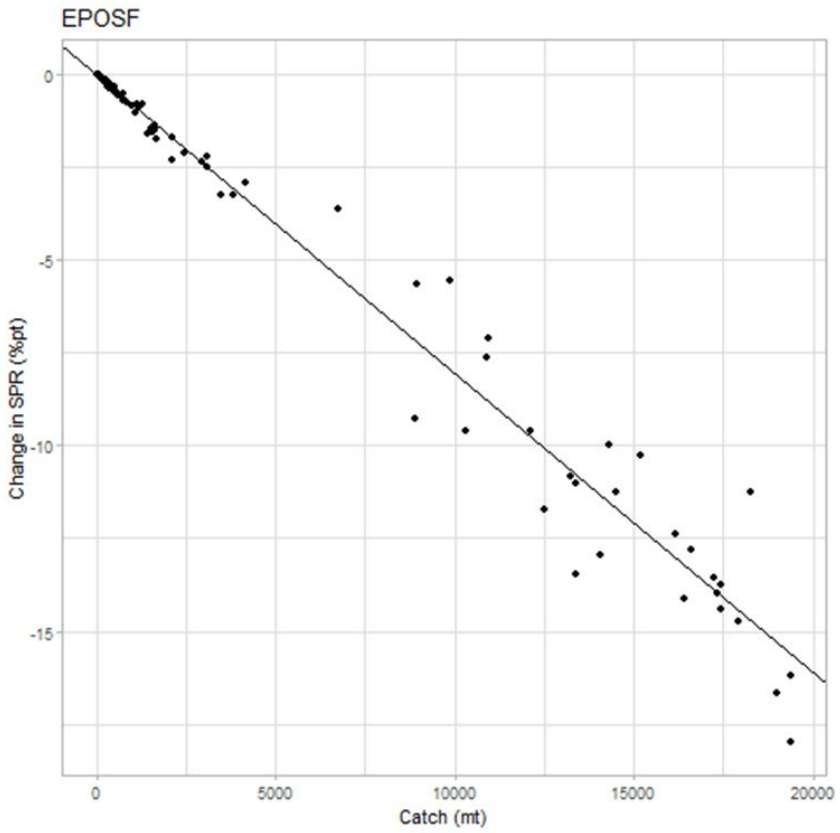




Scientific advice for translating fishing intensity

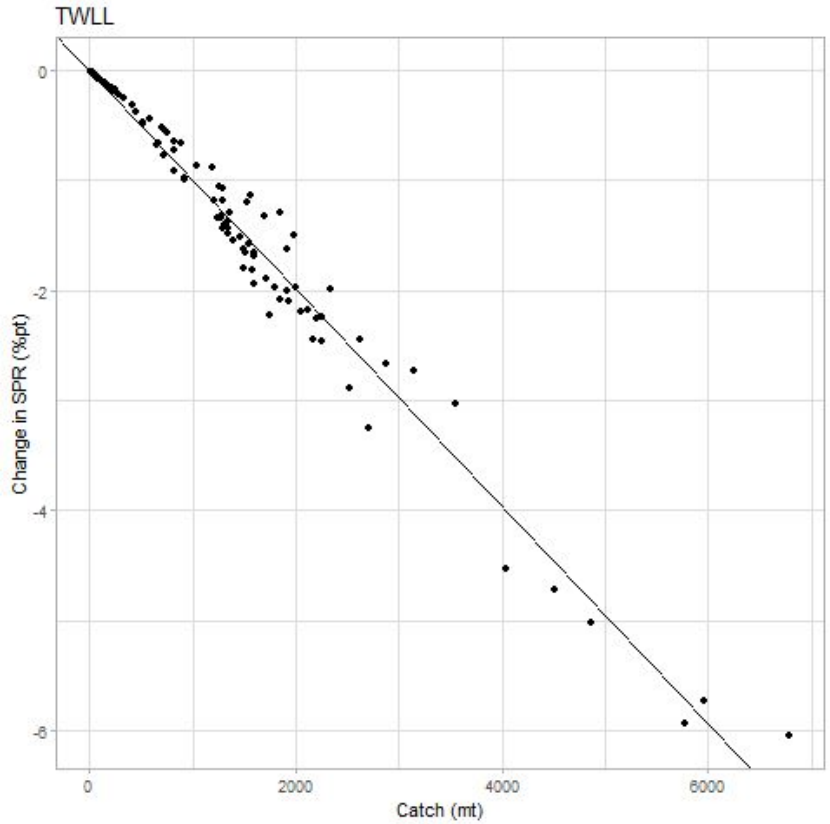
- $F_{\%SPR}$ ~ Catch

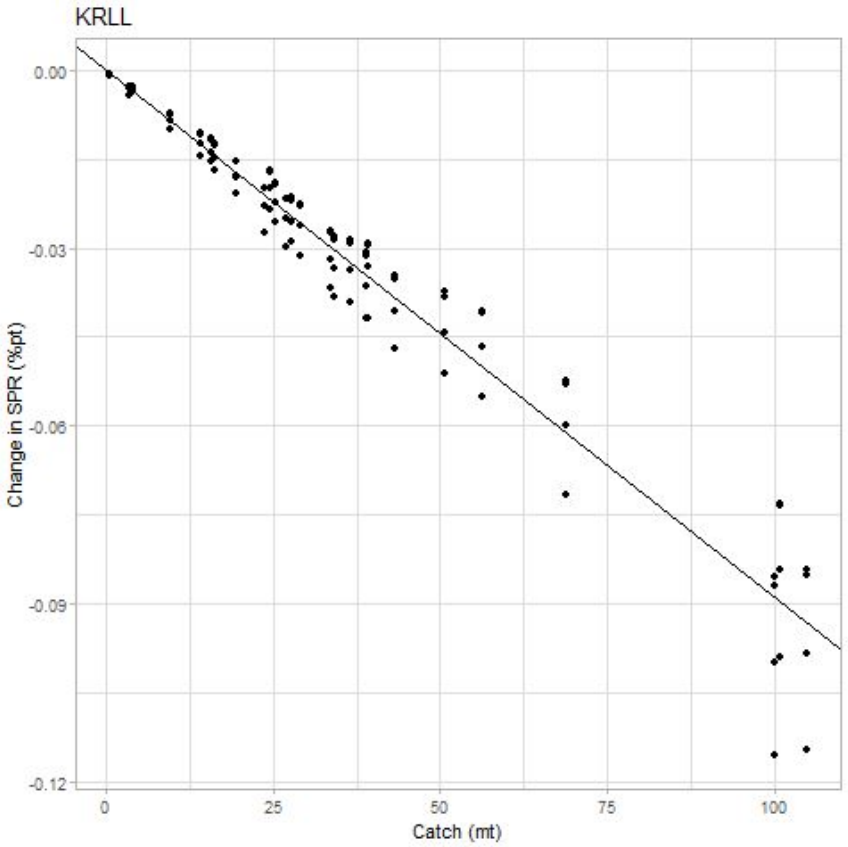




Scientific advice for translating fishing intensity

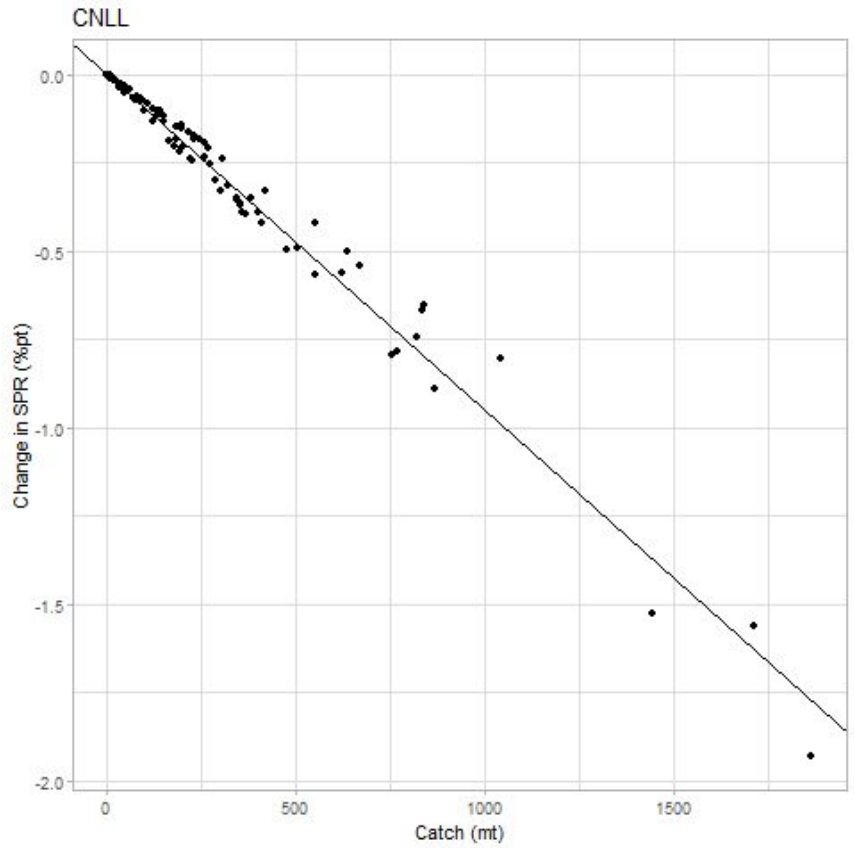
- $F_{\%SPR}$ ~ Catch

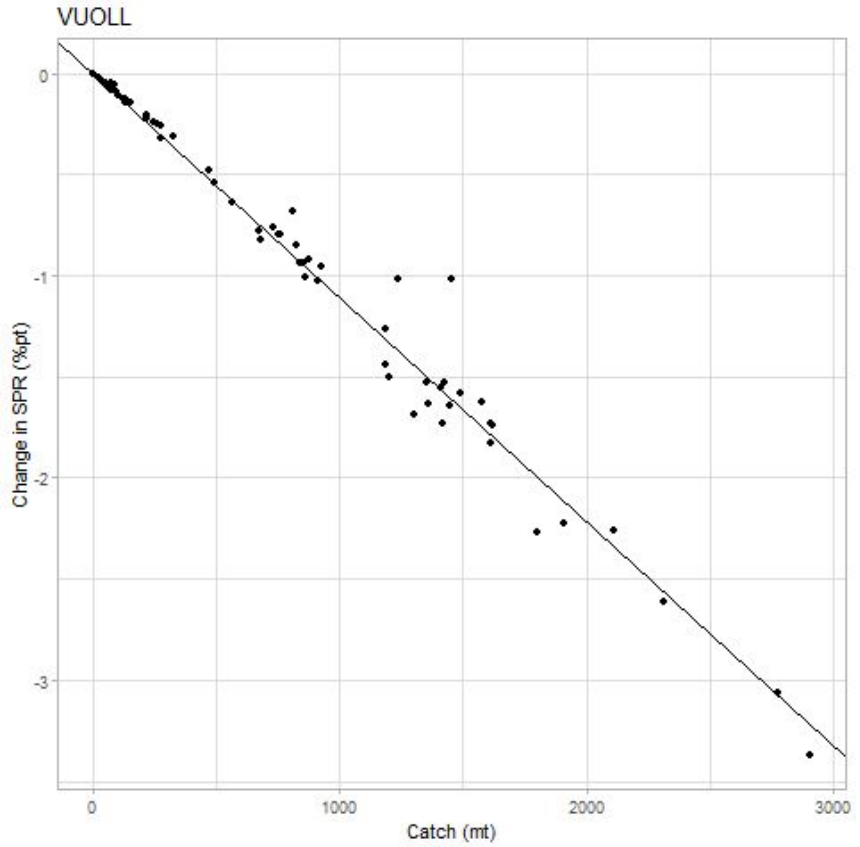




Scientific advice for translating fishing intensity

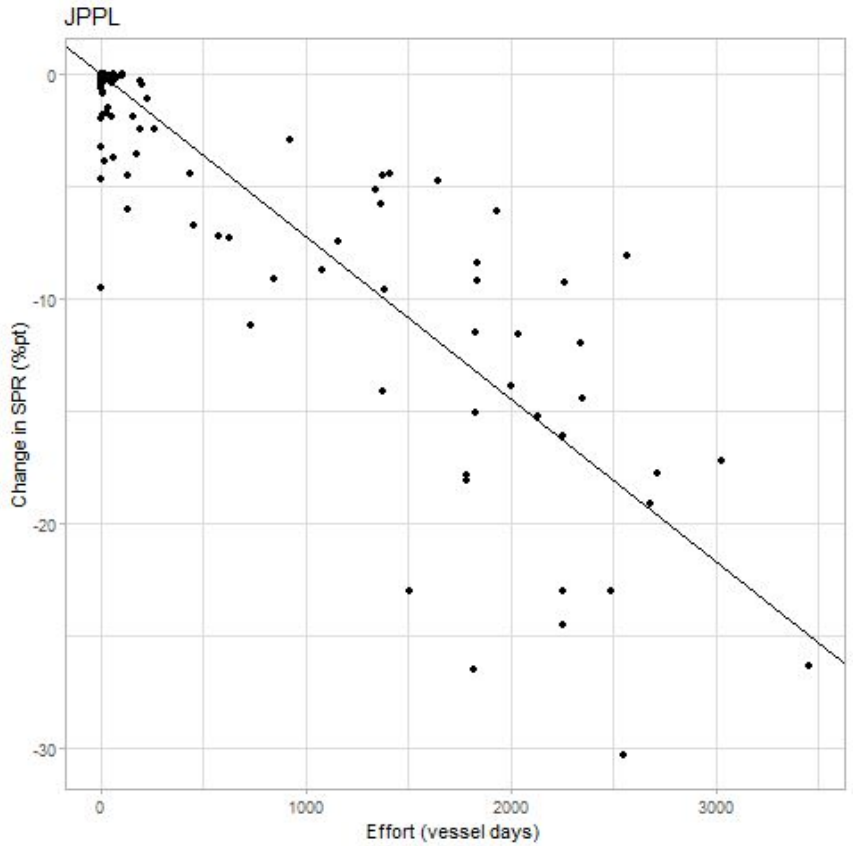
- $F_{\%SPR}$ ~ Catch

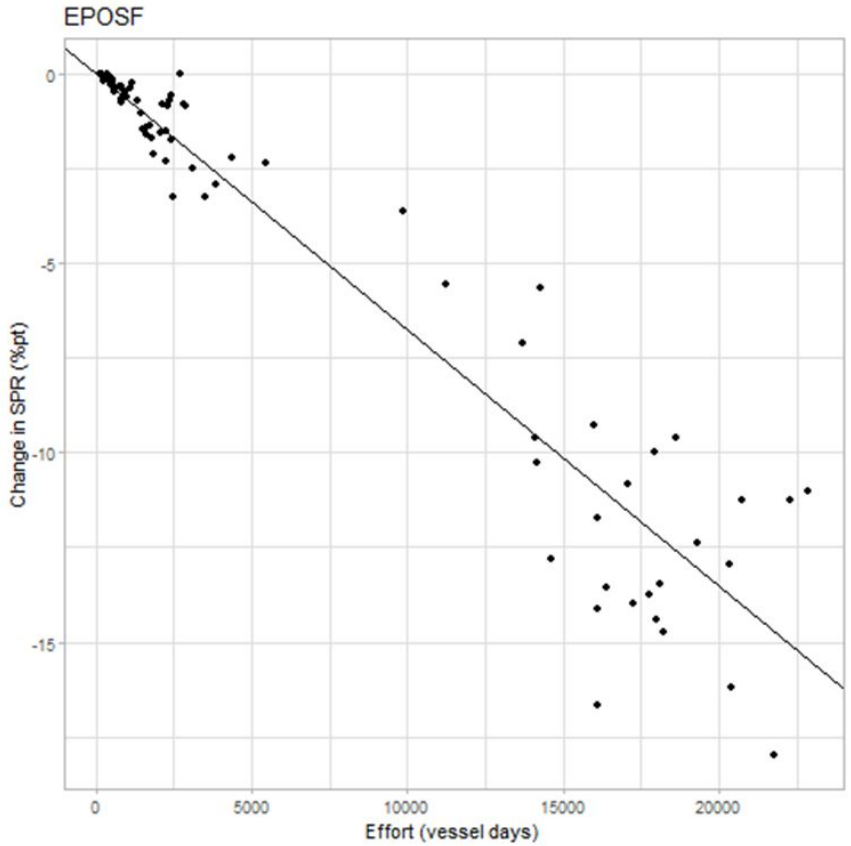




Scientific advice for translating fishing intensity

- $F_{\%SPR}$ ~ Effort (vessel days)





Scientific advice for translating fishing intensity

- $F_{\%SPR}$ ~ Effort (# of hooks)