An Update of CPUE Standardisation

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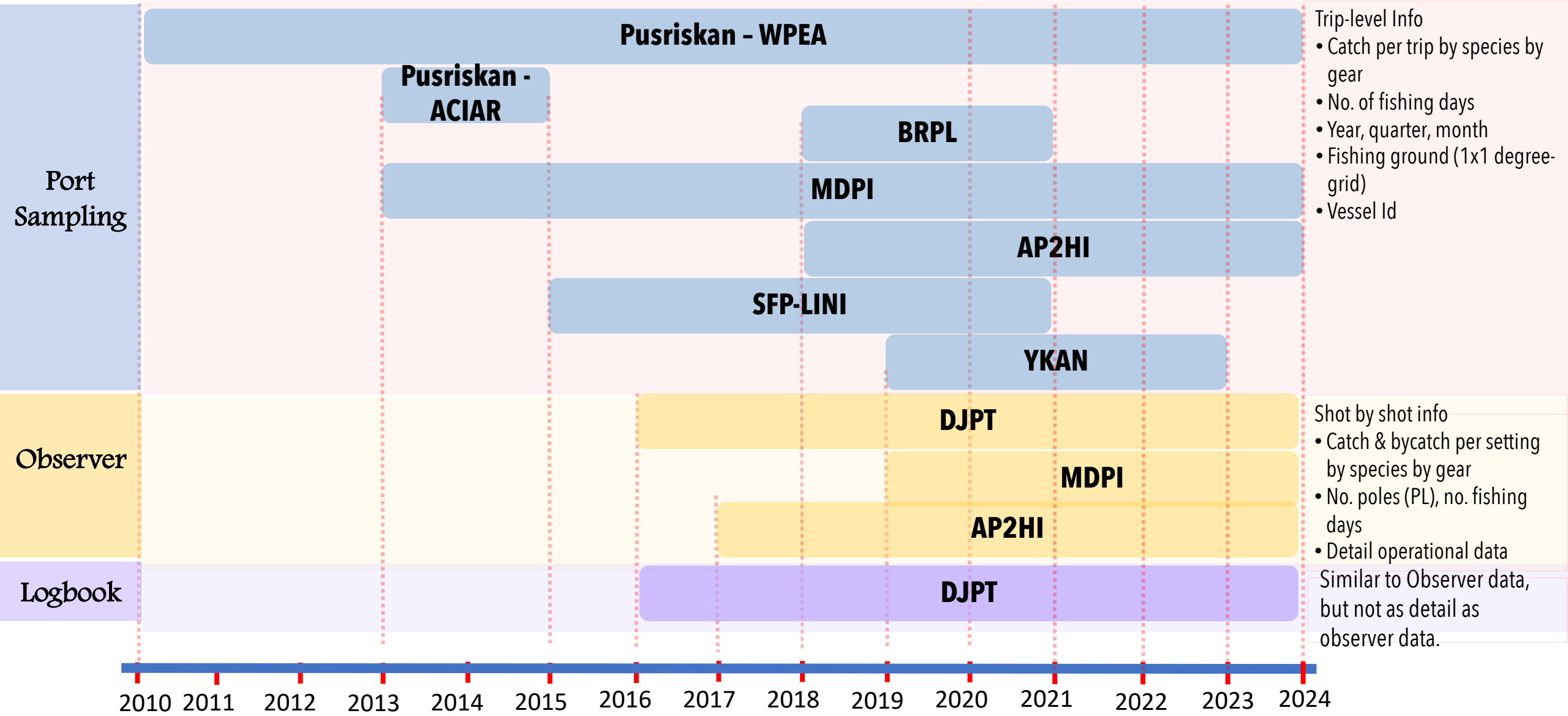
BRIN
BADAN RISET
DAN INOVASI NASIONAL

9th Technical Harvest Strategy Workshop
12-13 May 2026

KEMENTERIAN KELAUTAN DAN PERIKANAN

Data Available from Indonesia's Archipelagic Waters (FMAs 713, 714 and 715)



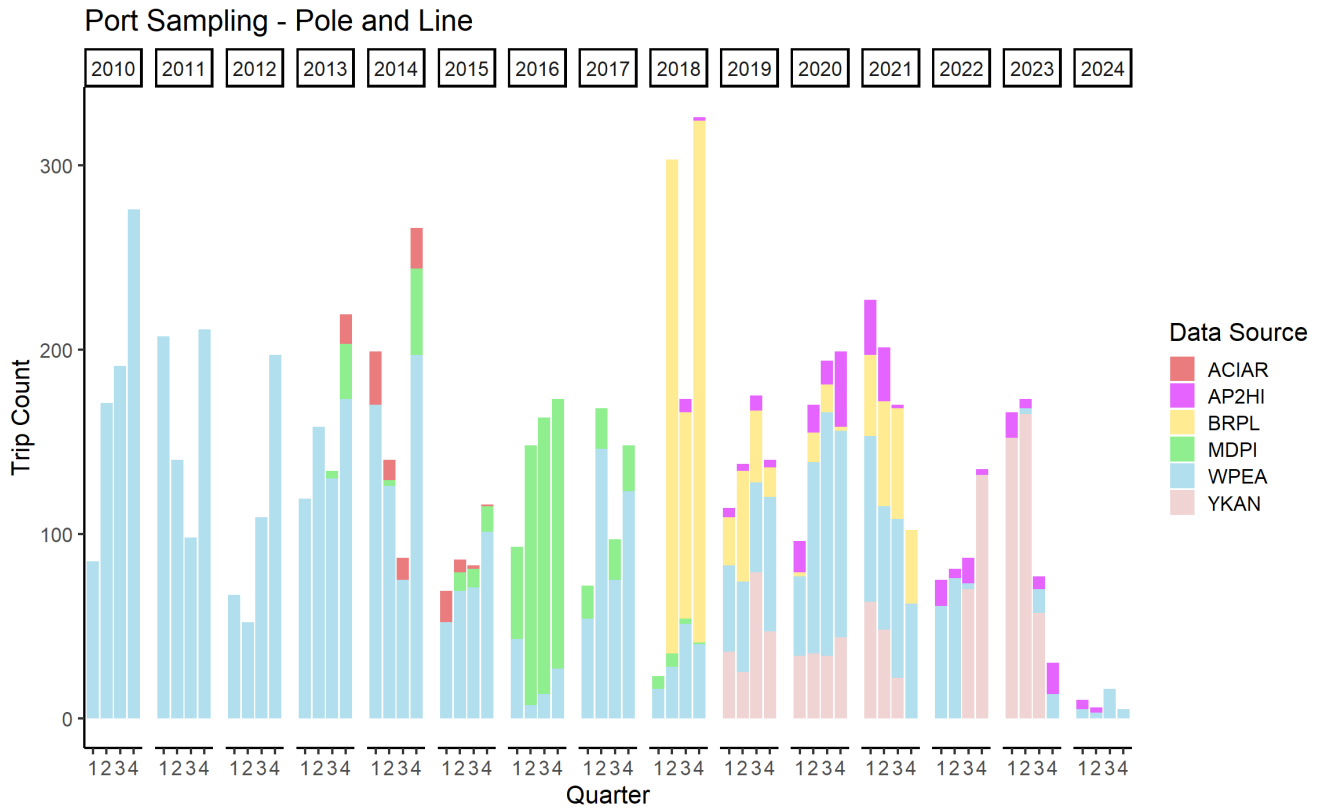
Data Summary

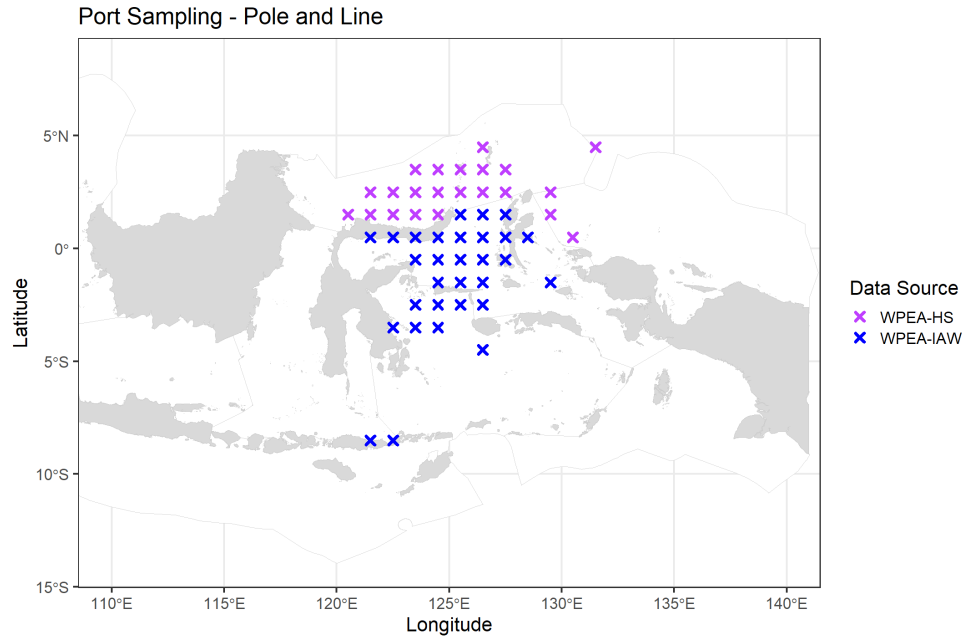
Data series name/source	Sampling period	Sampling freq.	FMA coverage	Fishing gear	Source of effort/catch data	Rel. abundance?	Size indices?	On-going?
Pusriskan - WPEA (Port Sampling)	2010 – 2024	Daily	713 - 715	LL, HL, PS, PL, GL, TL, TLH	Effort(gt, days at sea, fishing days), Catch(per landing per species)	BET, SKY, YFT, OTH	√	√
Pusriskan - ACIAR (Port Sampling)	2013 – 2015	Daily	713 - 715	HL, PL	Effort (days at sea), Catch (per landing per species)	BET, SKY, YFT, OTH	√	X
BRPL (Port Sampling)	2018 – 2020	Daily	713 - 715	PS, TL, HL, PL, LL	Effort(days at sea, fishing days, setting per trip, hooks), Catch(per landing per species)	BET, SKY, YFT, OTH	N/A	√
MDPI (Port Sampling)	2012 – 2024	Daily	713 - 715	HL, PL	Effort(gt, days at sea, fishing days), Catch(per landing per species)	BET, SKY, YFT, OTH	√	√
AP2HI (Port Sampling)	2018 – 2024	Daily	713 - 715	HL, PL	Effort(gt, days at sea, fishing days), Catch(per landing per species)	BET, SKY, YFT, OTH	√	√
SFP (Port Sampling)	2015 – 2021	Daily	713 - 715	HL	Effort(gt, days at sea, fishing days), Catch(per landing per species)	BET, SKY, YFT, OTH	√	√
YKAN (Port Sampling)	2019 – 2023	Daily	713 - 715	PL, HL, TL, PS, GL	Effort(gt, days at sea, fishing days, setting per trip), Catch(per landing per species)	BET, SKY, YFT, OTH	√	√
DJPT (Observer)	2016 – 2024	Setting	713 - 715	HL, PS, PL, LL, TL	Effort(gt, fishing days, hooks), Catch(per setting per species)	BET, SKY, YFT, OTH	√	√
MDPI (Observer)	2019 – 2023	Setting	713 - 715	TL, HL	Effort(gt, fishing days), Catch(per setting per species)	BET, SKY, YFT, OTH	√	√
AP2HI (Observer)	2017 – 2024	Setting	713 - 715	PL	Effort(gt, fishing days, hooks), Catch(per setting per species)	BET, SKY, YFT, OTH	√	√
DJPT (Logbook)	2015 – 2024	Setting	713 - 715	PS, PL, HL, TL, LL	Effort(gt, fishing days, hooks), Catch(per setting per species)	BET, SKY, YFT, OTH	√	√
YKAN (Logbook/CODRS)	2021 – 2023	Setting	713-715	LL	Effort(gt, fishing days, hooks), Catch(per setting per species)	BET, SKY, YFT, OTH	√	√

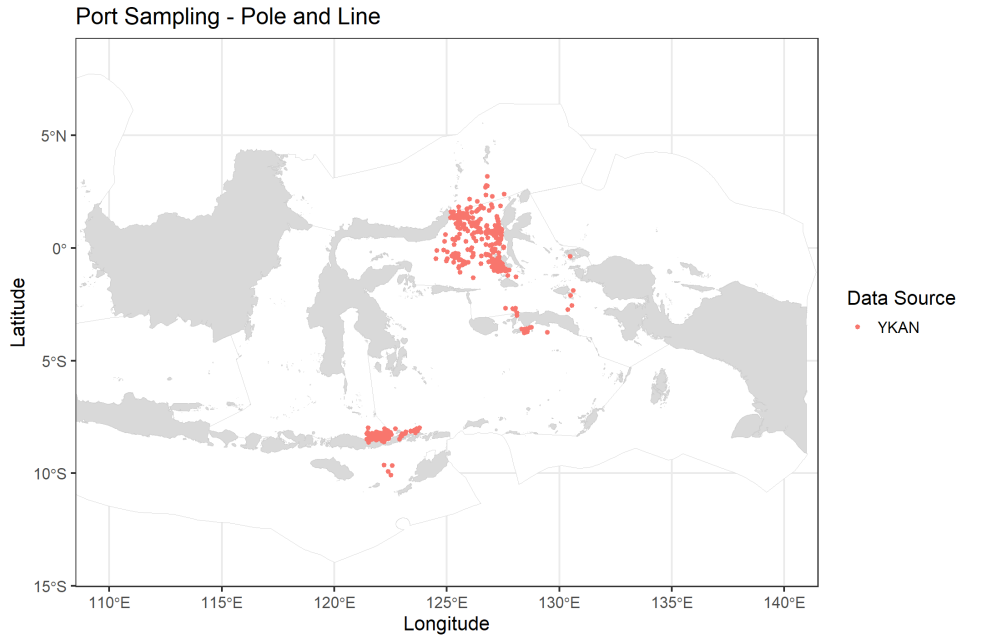
1. Pole and Line – SKJ

1.1. PL - Port Sampling
1.2. PL - Observer
1.3. PL - Logbook

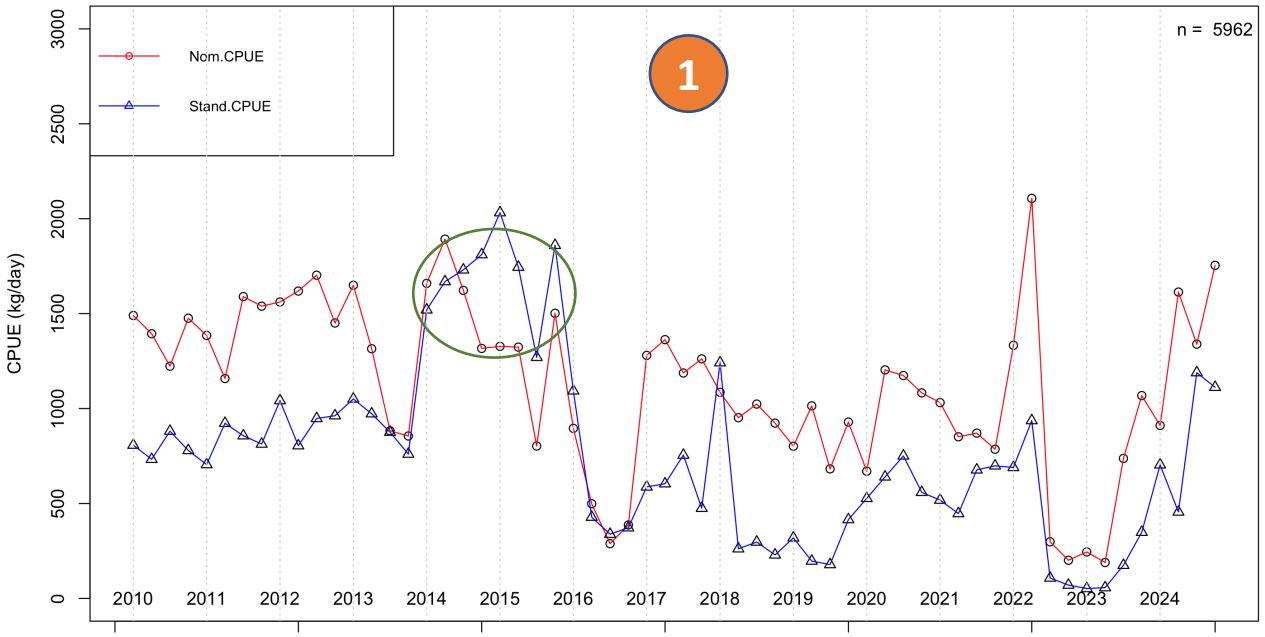
1.1. PL - Port Sampling

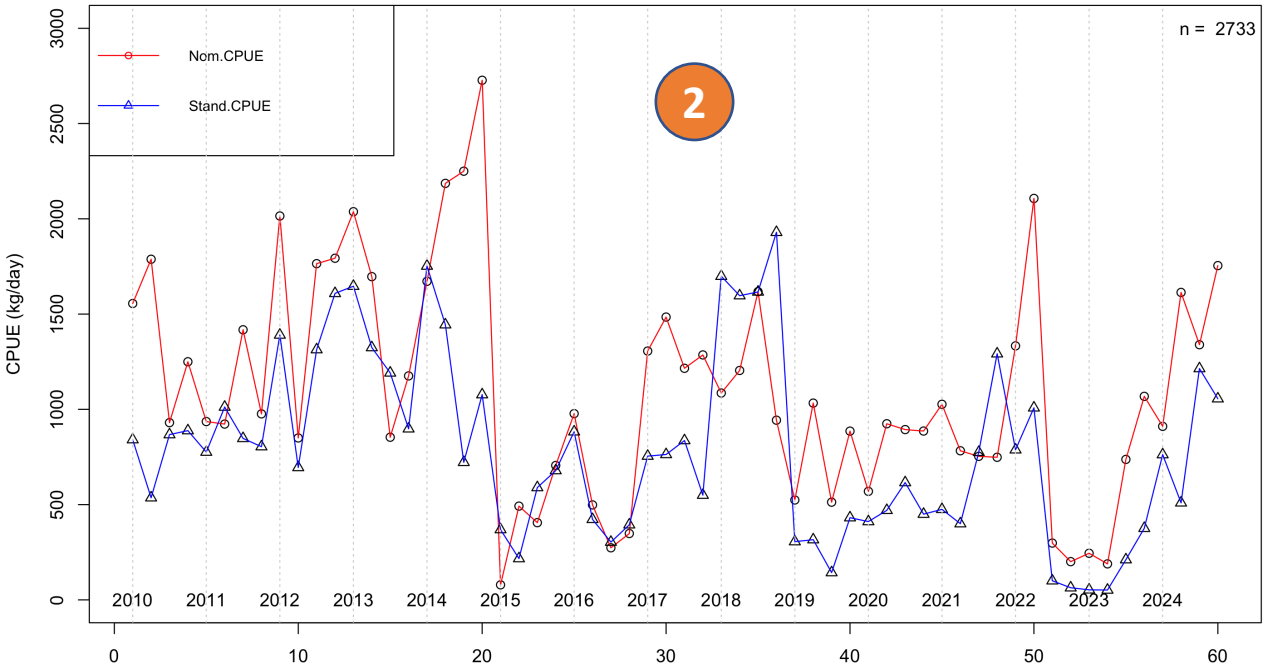


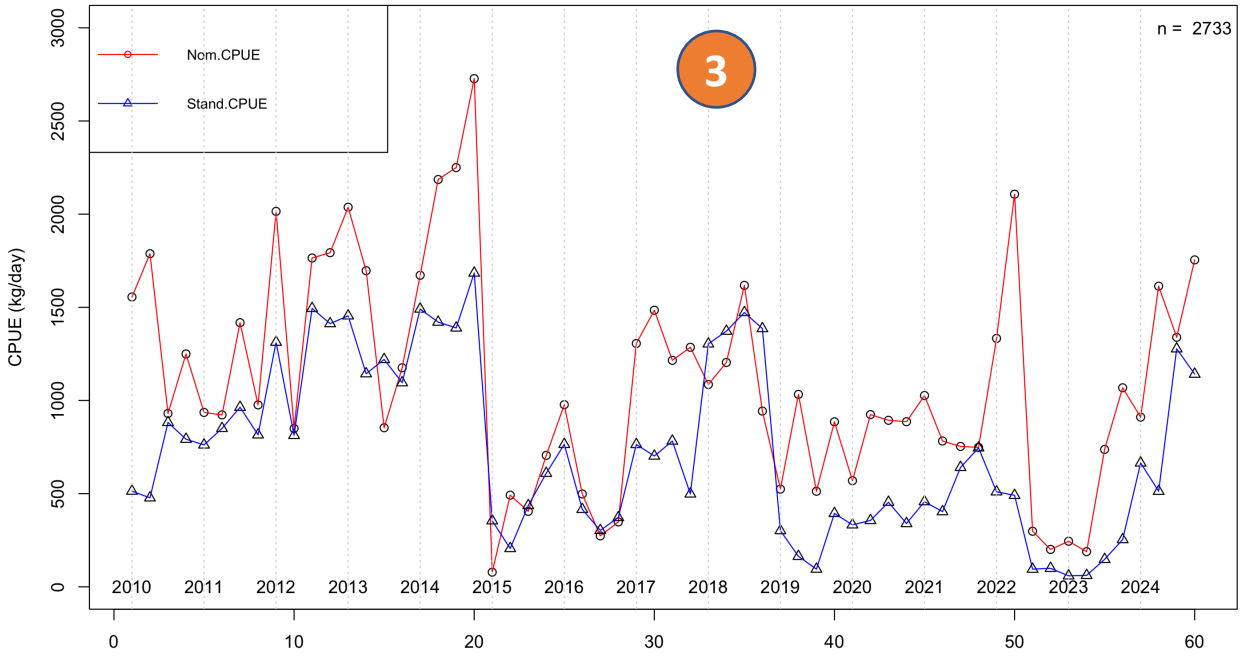




1.1. PL - Port Sampling – SKJ (Relative Stand.CPUE)







1 Family: gaussian, Link function: identity

log(skj_kg) ~ as.factor(year_arrive) + as.factor(month_arrive) + as.factor(kab_kota) + s(vessel_id, bs = "re")

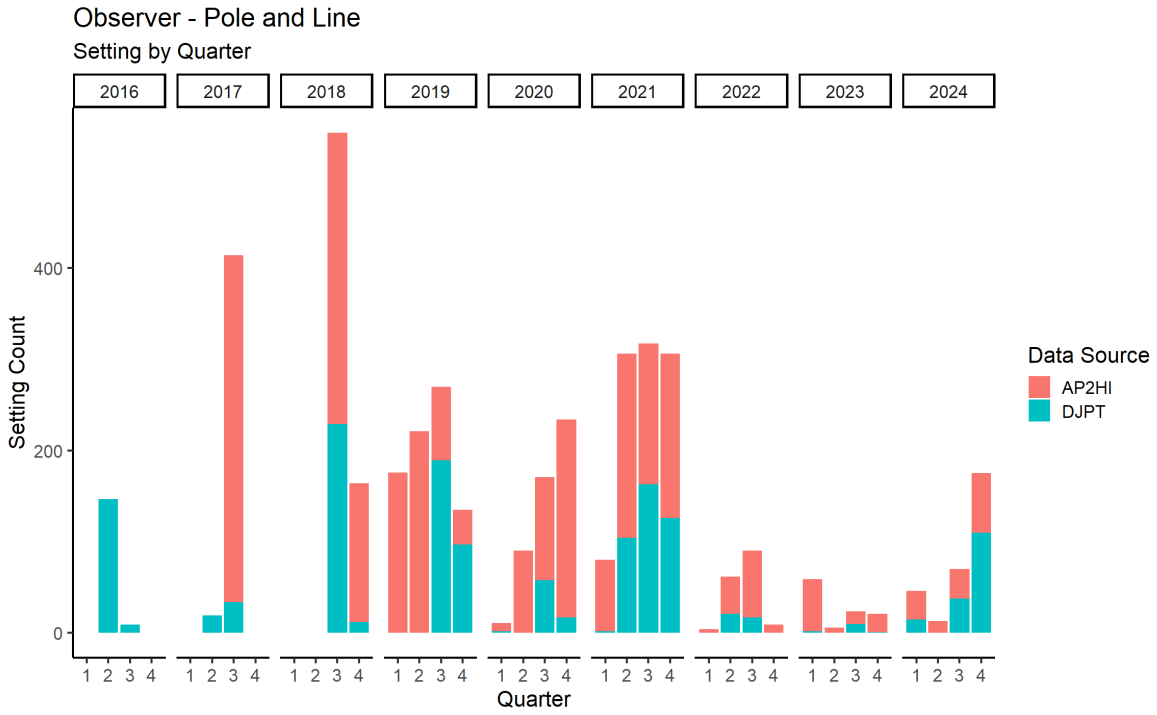
Deviance explained = 72%

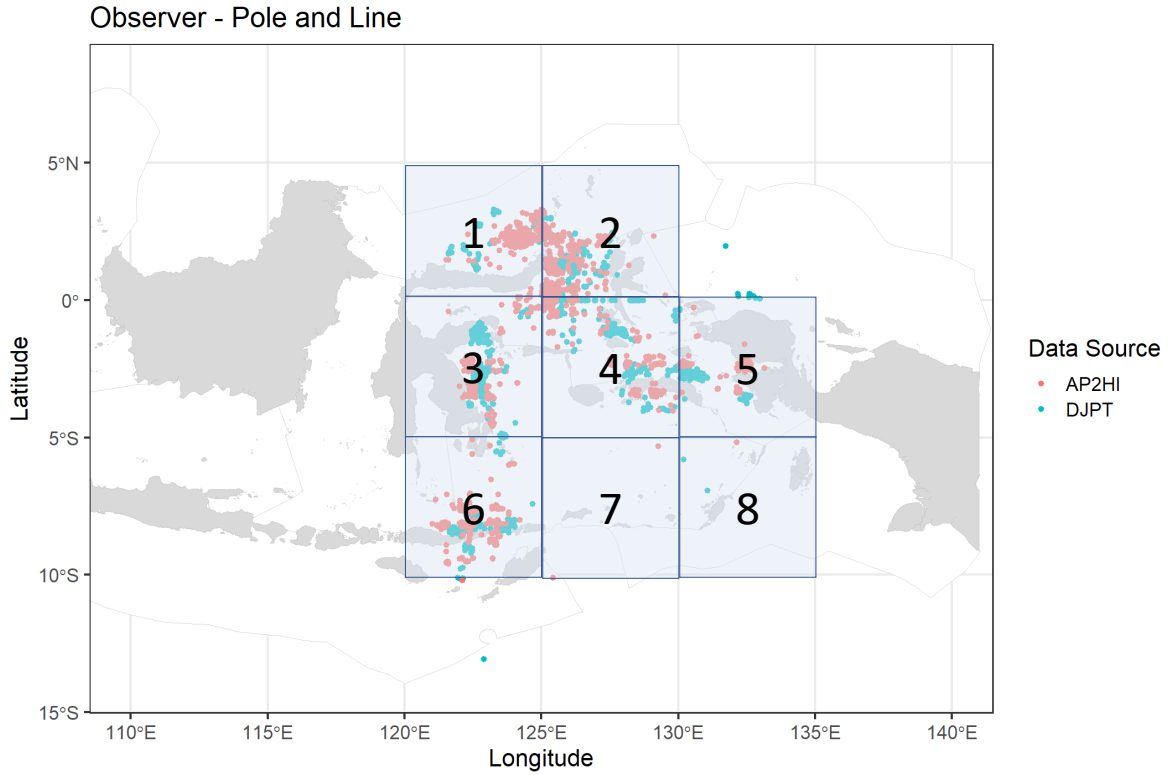
2 Model 1 + GT
Deviance explained = 76.5%

3 Model 2 + GT - vessel_id
Deviance explained = 56.5%

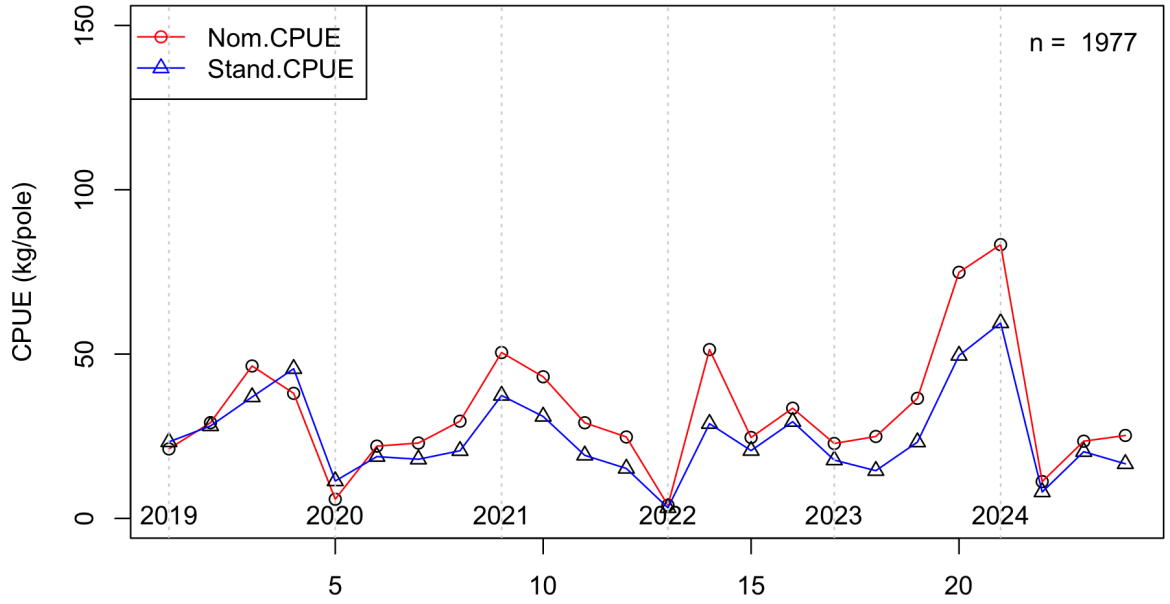
	df	AIC
Model 1	318	16248
Model 2	209	7709
Model 3	42	9053

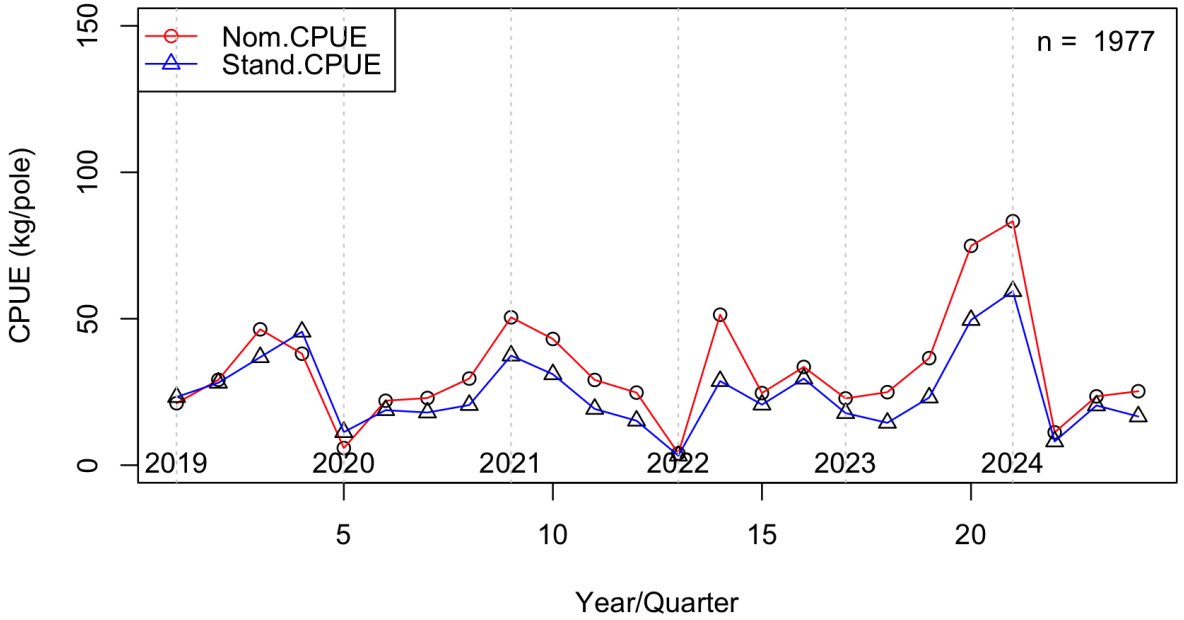
1.2. PL – Observer

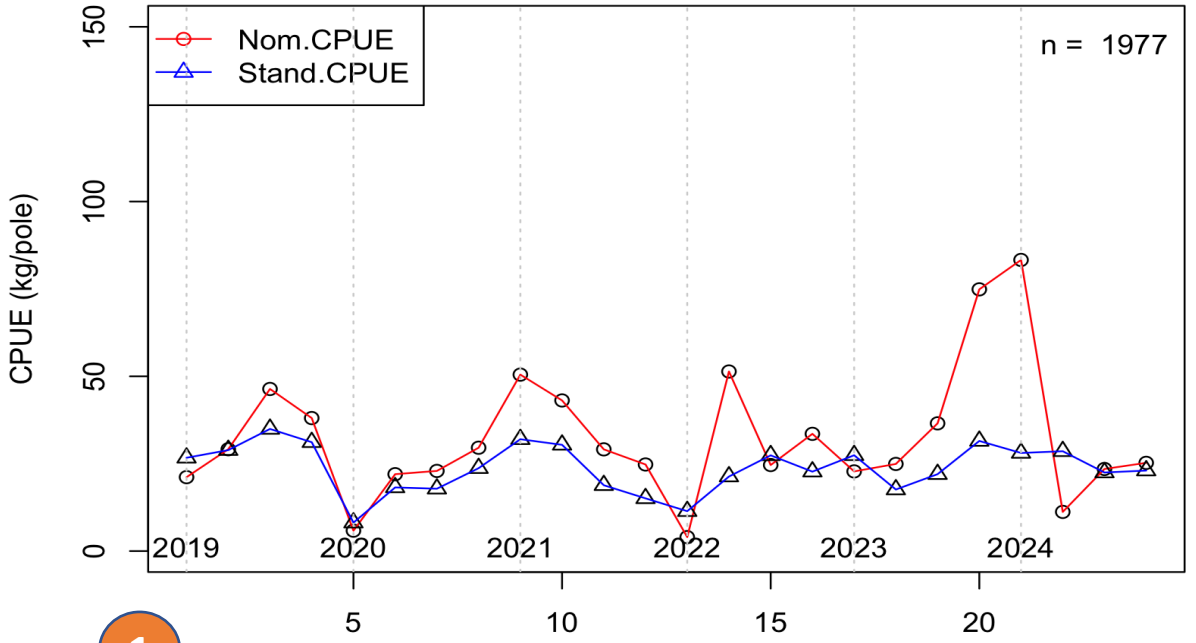




1.2. PL – Observer (cont'd)







1

Family: Tweedie(p=1.723)
Link function: log

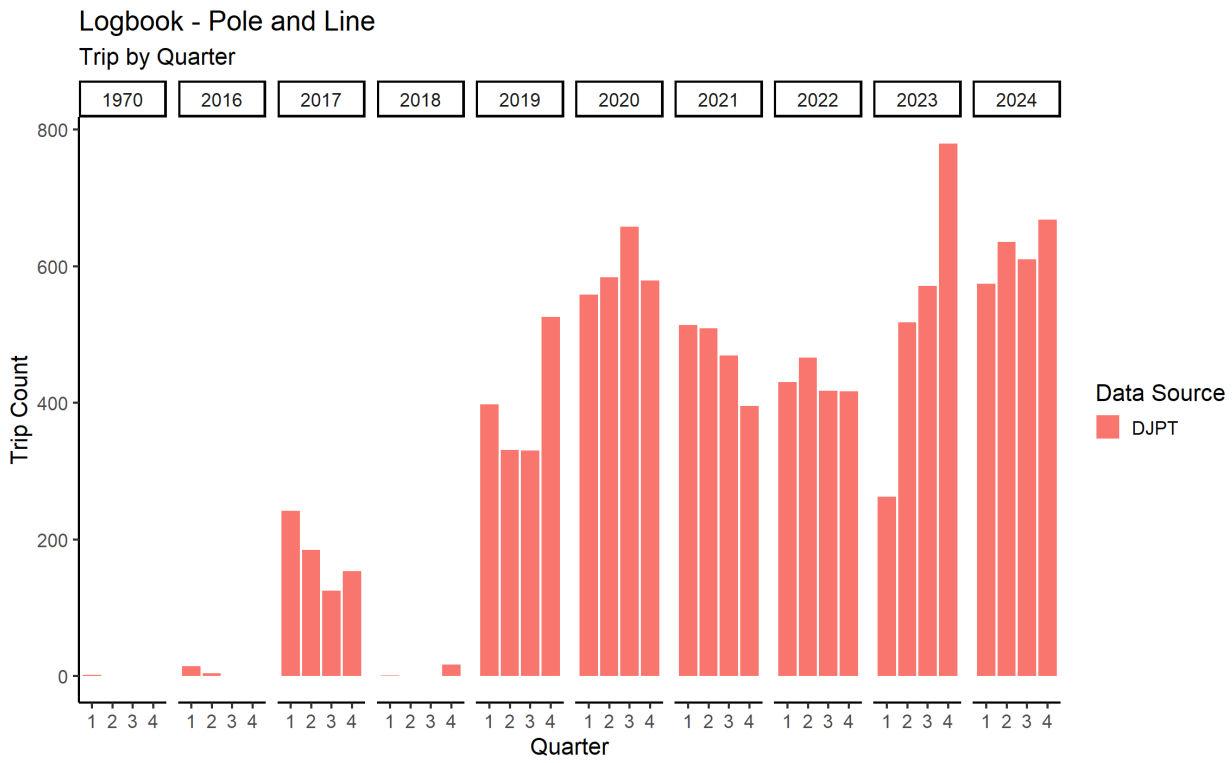
Formula:
skj_kg ~ as.factor(year_setting) + as.factor(month_setting) +
as.factor(area) + s(vessel_id, bs = "re")

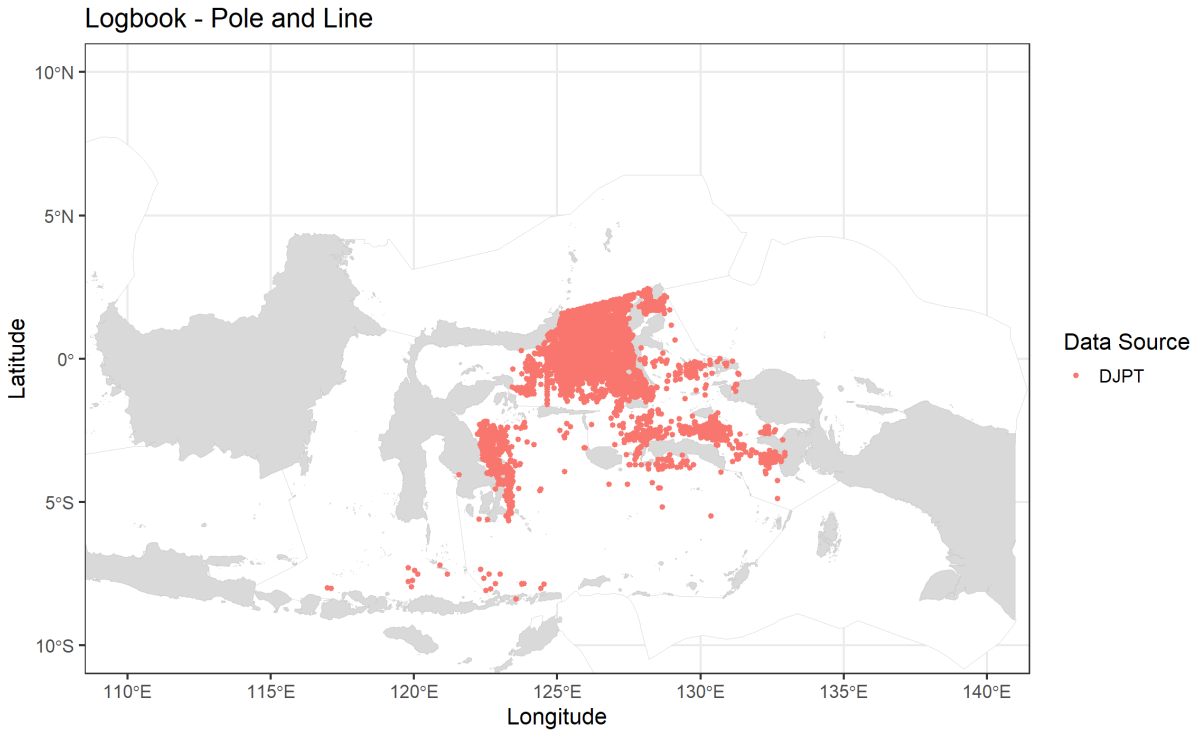
Deviance explained 27.8%

2 Model 1 + GT
Deviance explained = 27.9%

3 Model 2 + GT - vessel_id
Deviance explained = 15.4%

1.3. PL – Logbook



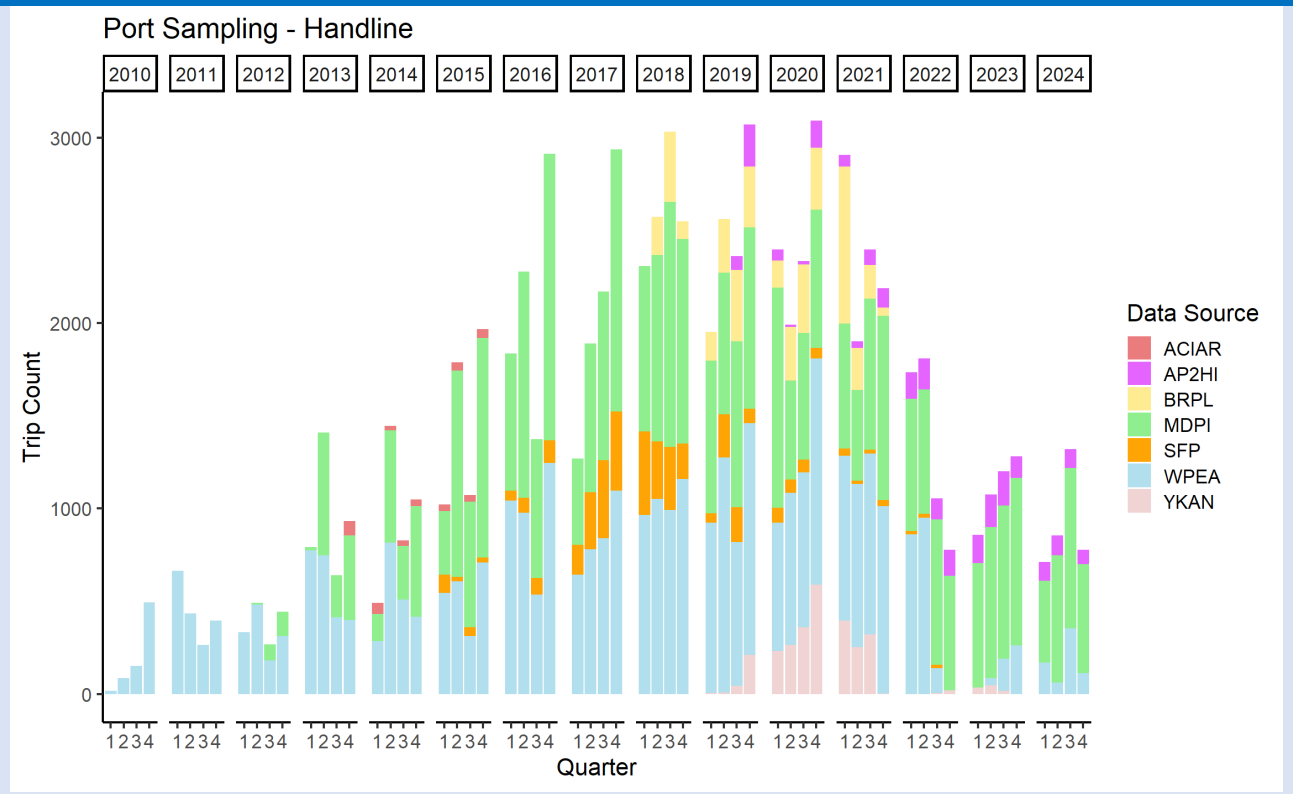


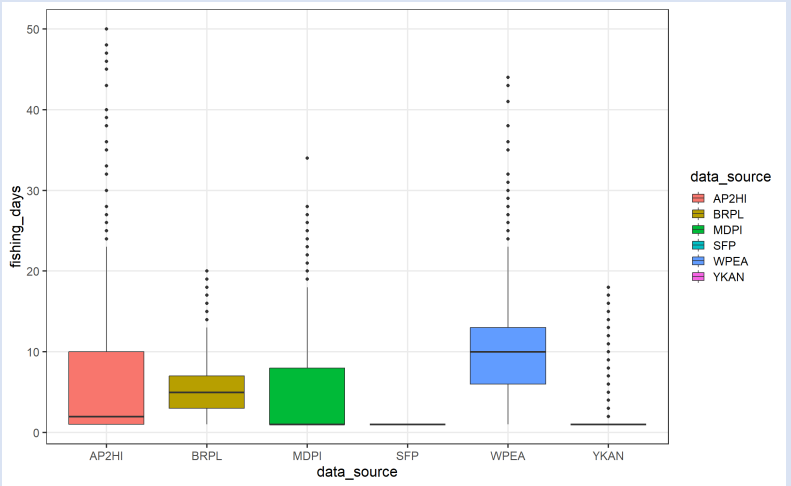
- Data on the Number of poles is available in 2023 Logbook.
- However, only available for one year.

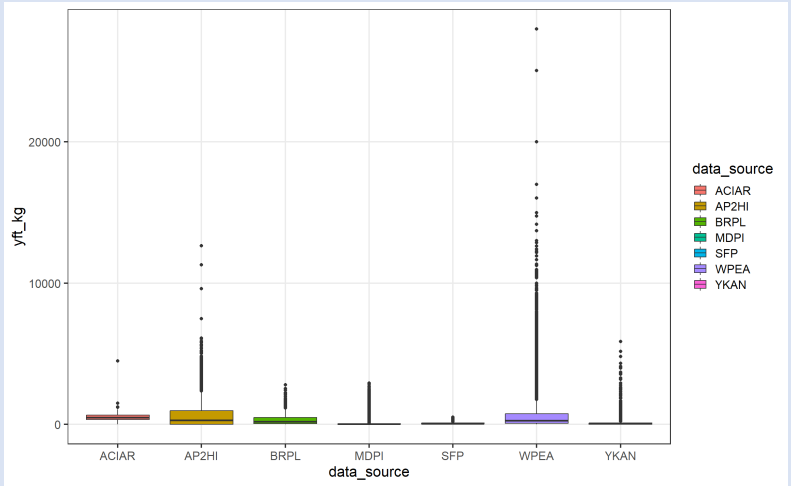
2. Handline – YFT

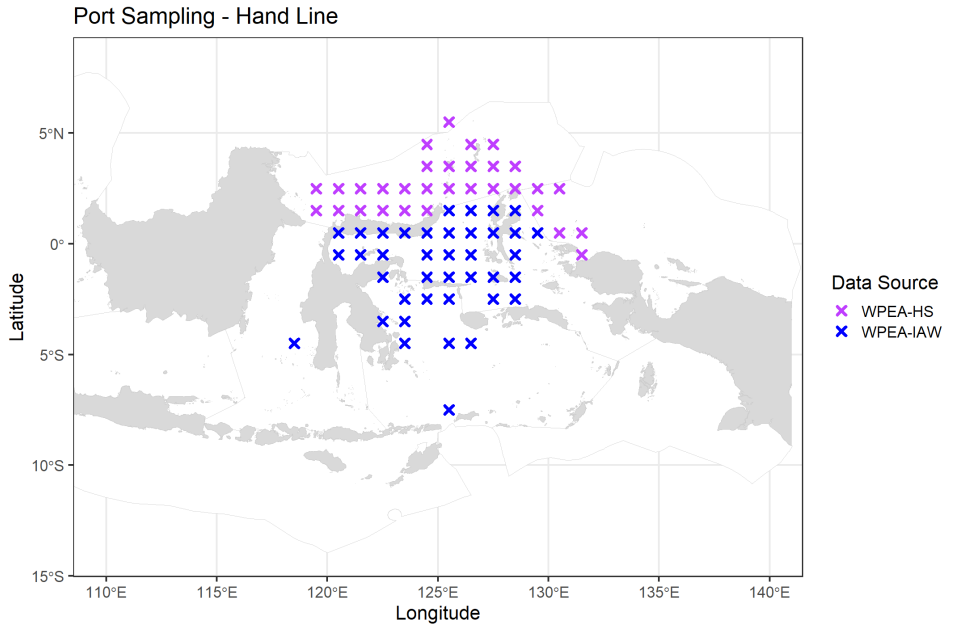
2.1. HL - Port Sampling
2.2. HL - Observer
2.3. HL - Logbook

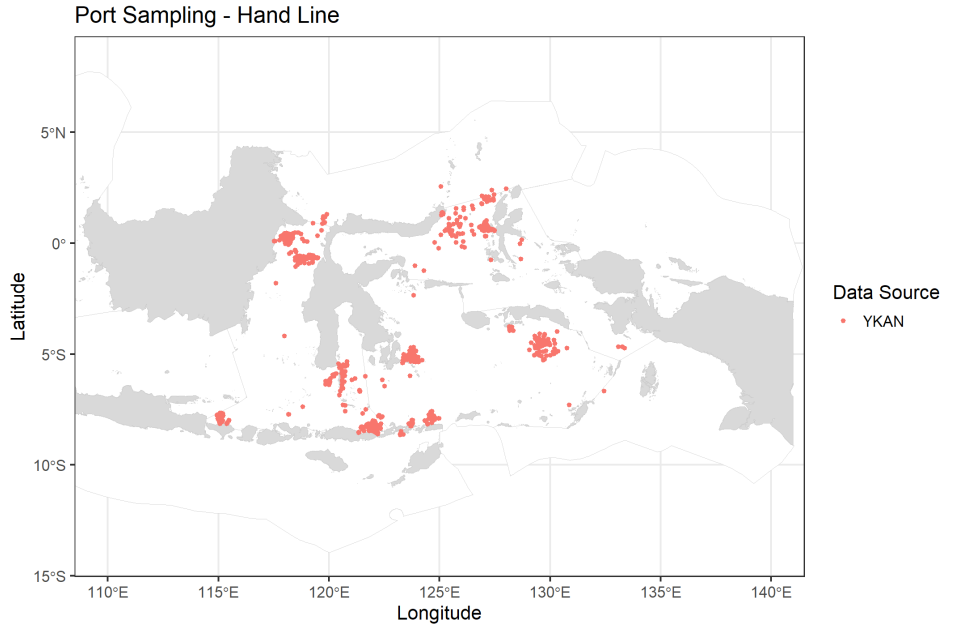
2.1. HL - Port Sampling



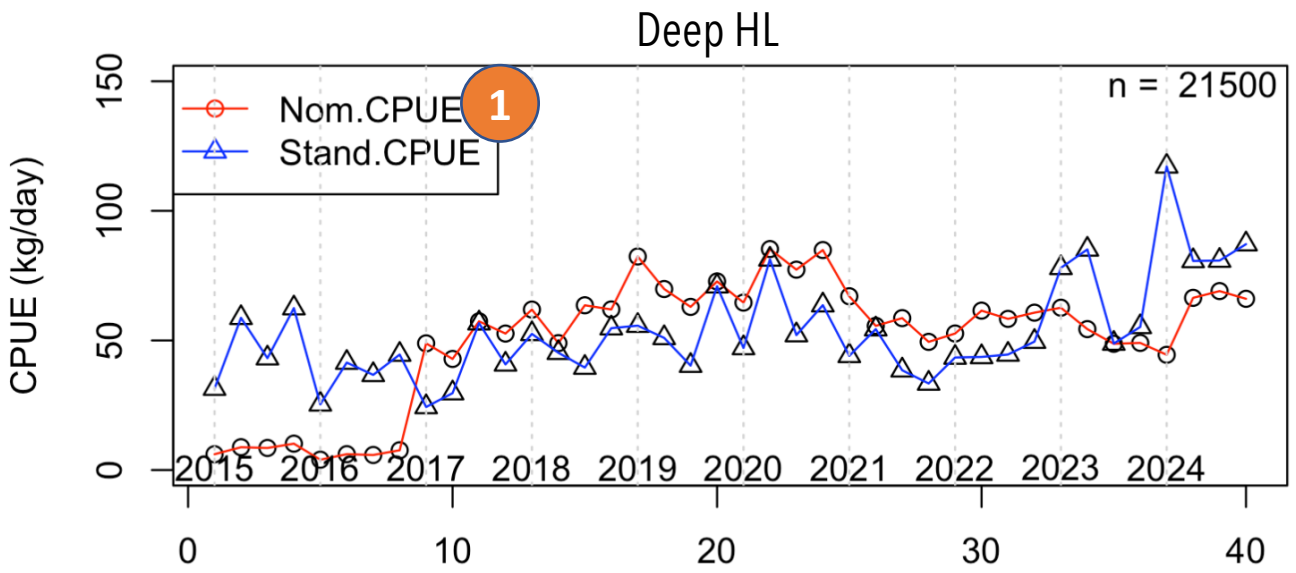








2.1. HL - Port Sampling

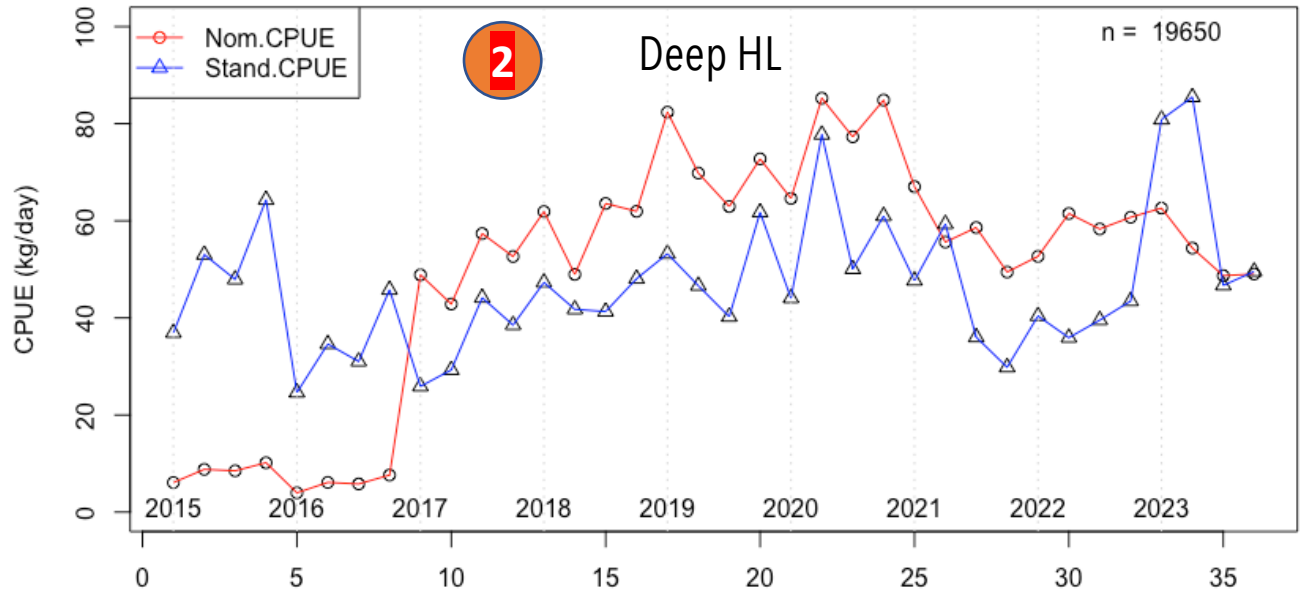


1

Family: Tweedie(p=1.854)
Link function: log

Formula:
yft_kg ~ as.factor(year_arrive) +as.factor(month_arrive) +
as.factor(kab_kota) + gt

Deviance explained = 78%



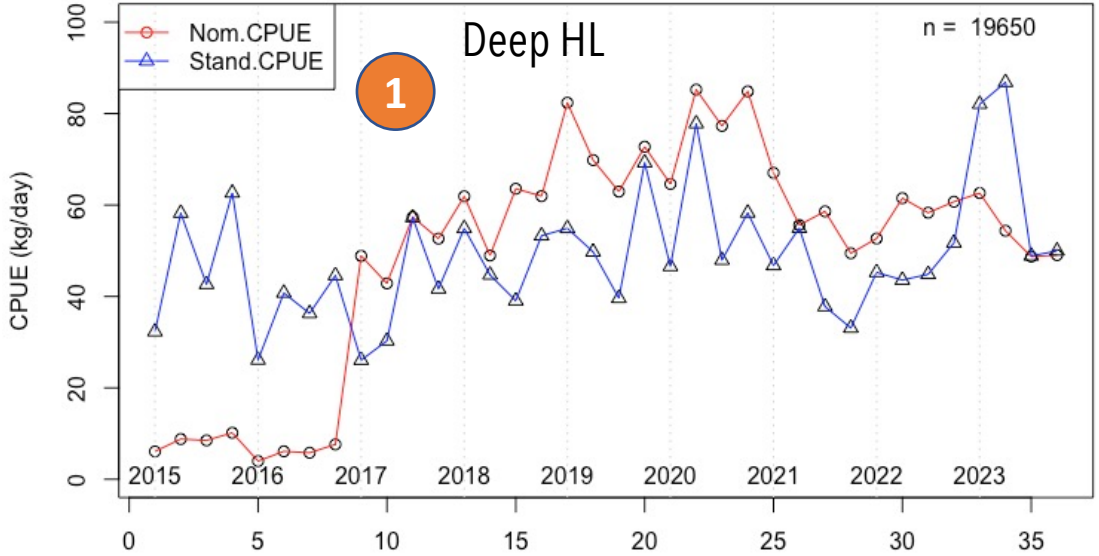
2

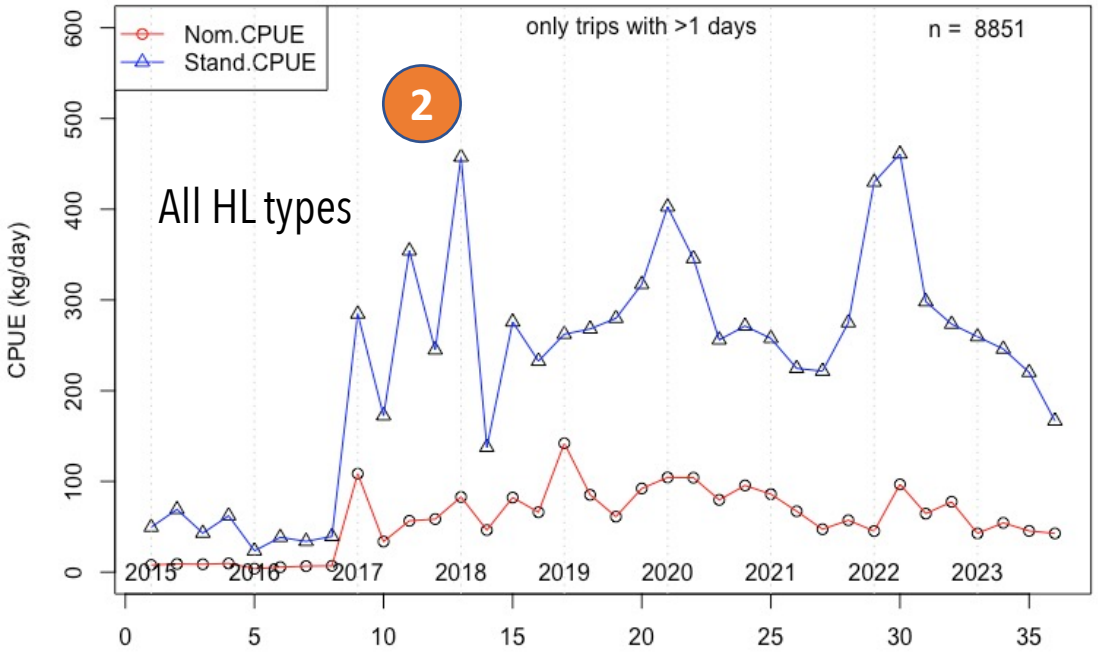
yft_kg ~ as.factor(year_arrive) + as.factor(month_arrive) +
as.factor(kab_kota) + s(vessel_id, bs = "re")

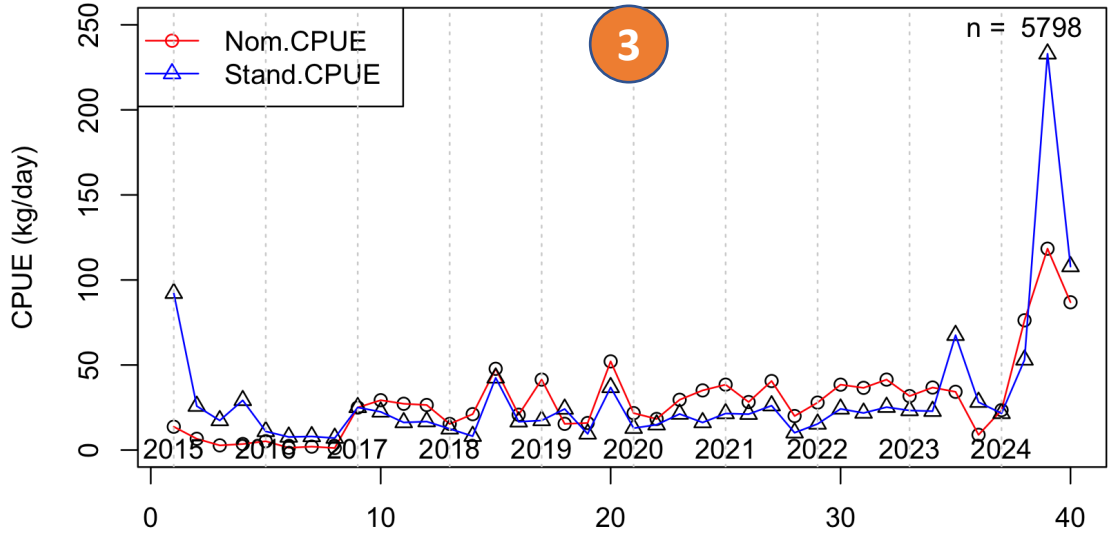
Deviance explained = 87.2%

~69% → 1 fishing days

2.1. HL - Port Sampling







1 Family: Tweedie(p=1.854)
Link function: log

Formula:
yft_kg ~ as.factor(year_arrive) +as.factor(month_arrive) + as.factor(kab_kota) + gt

Deviance explained = 78.7%

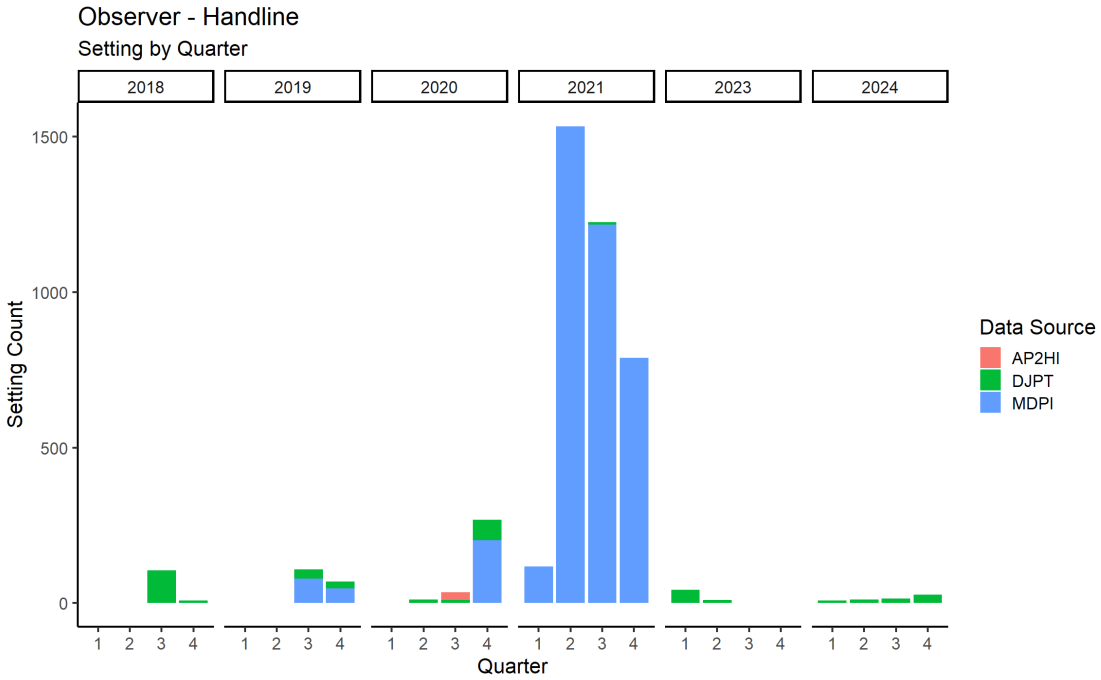
2 <u>All gear types but only trips with >1 days of fishing</u>
Model 1+ as.factor(gear.types)

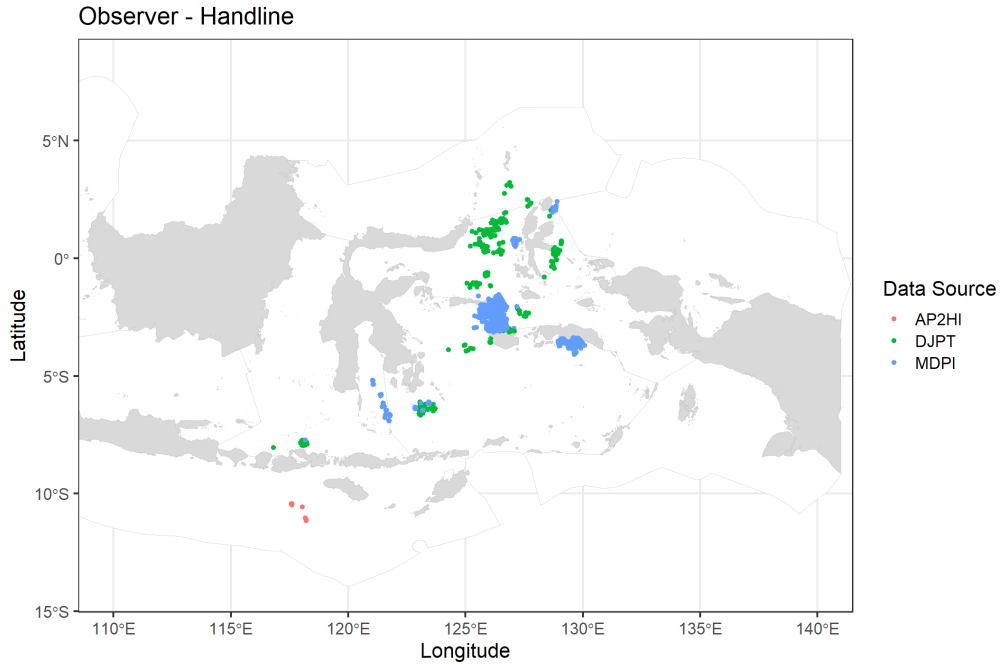
Deviance explained = 75.6%

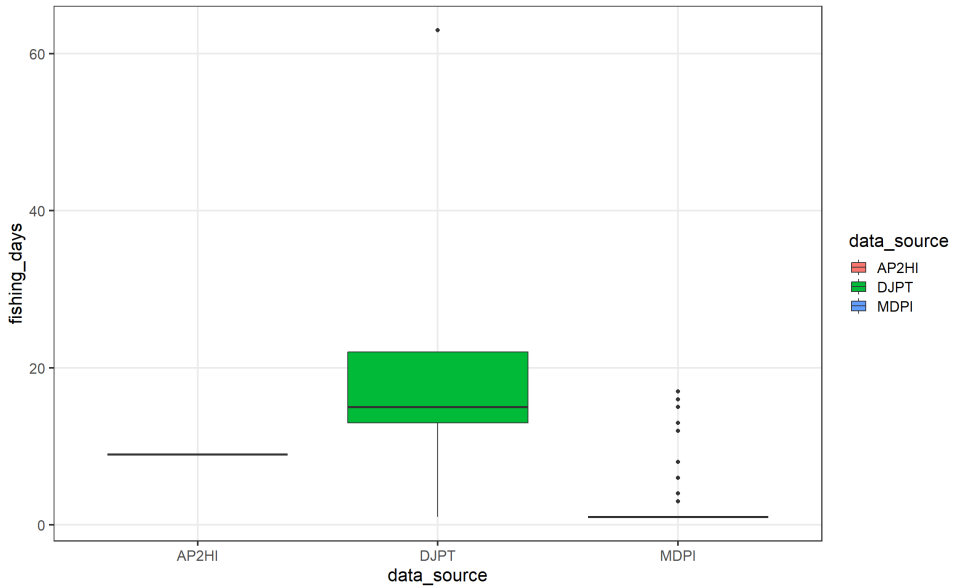
3 Family: Tweedie(p=1.878)

<u>Only for surface HL (sHL)</u>
= Model 1
Deviance explained = 50.4%

2.2. HL – Observer

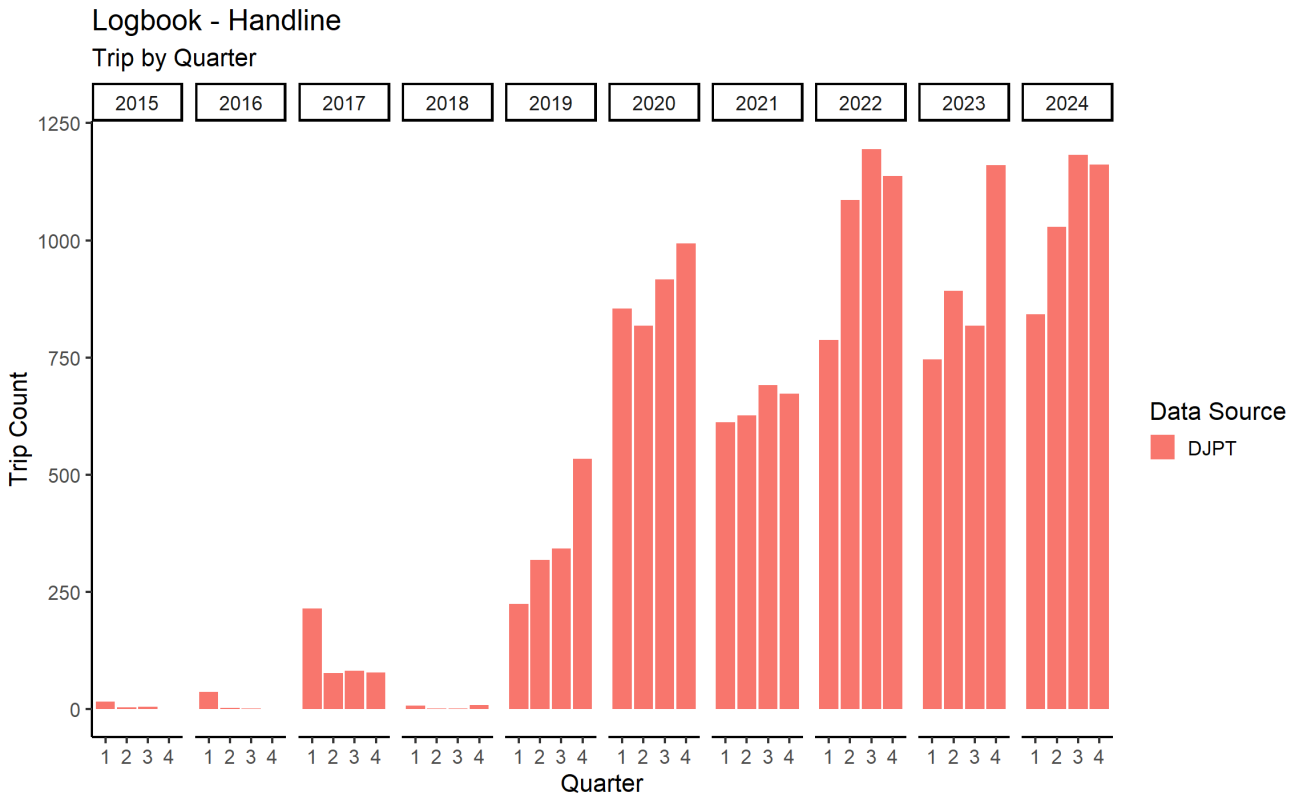


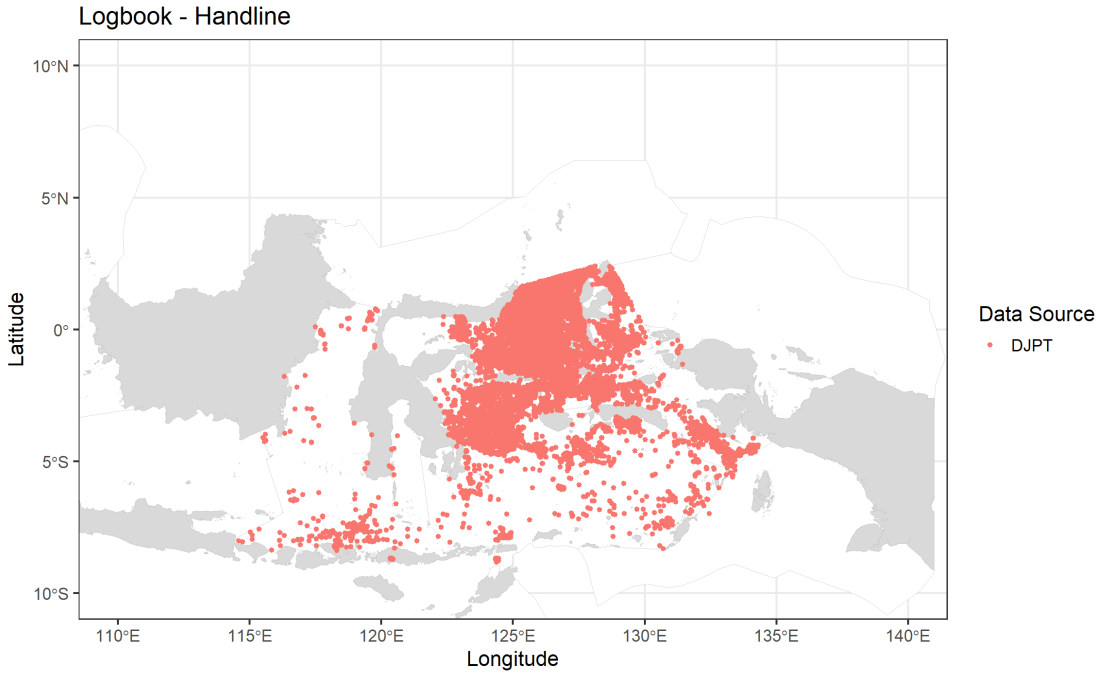




- Not enough temporal data, only data 2021 with 4 quarters.

2.3. HL – Logbook



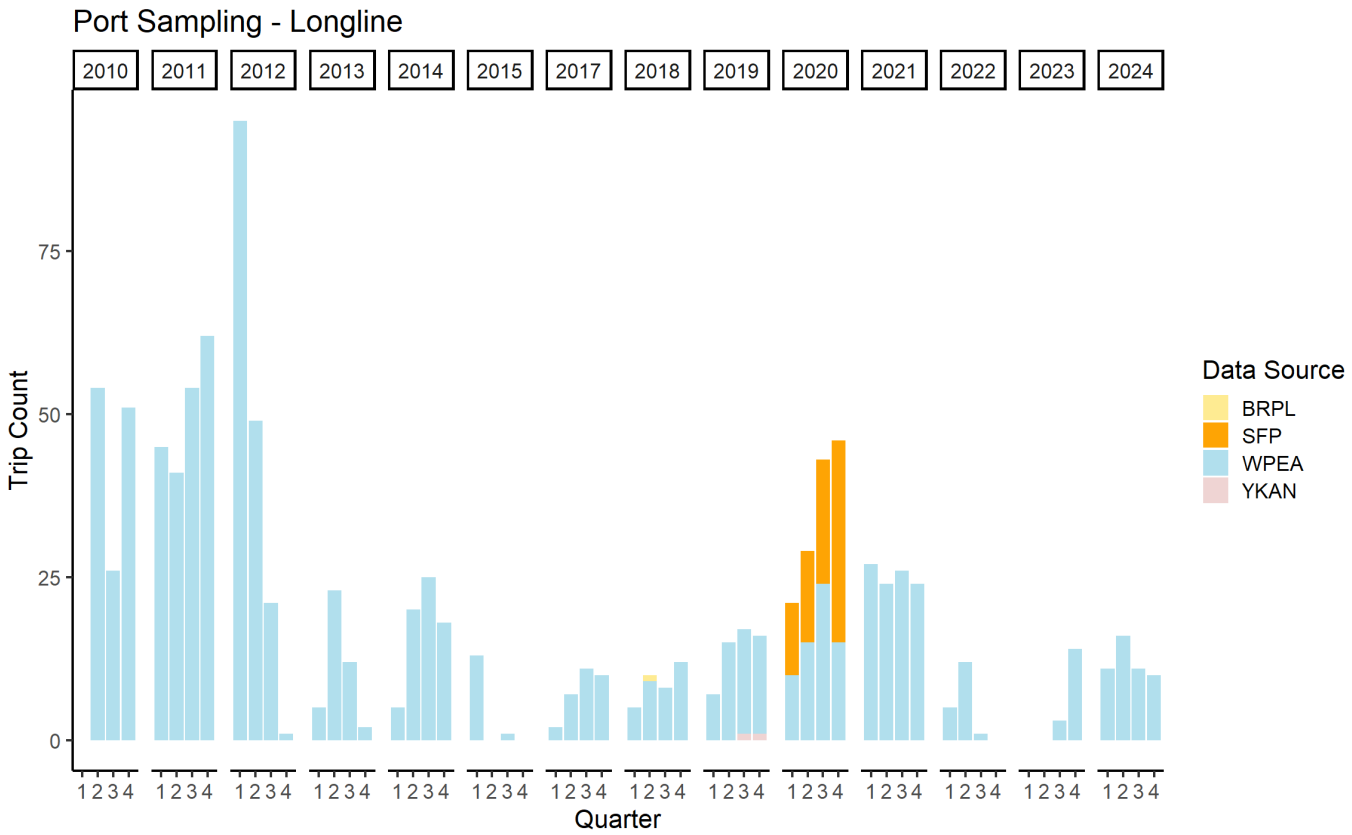


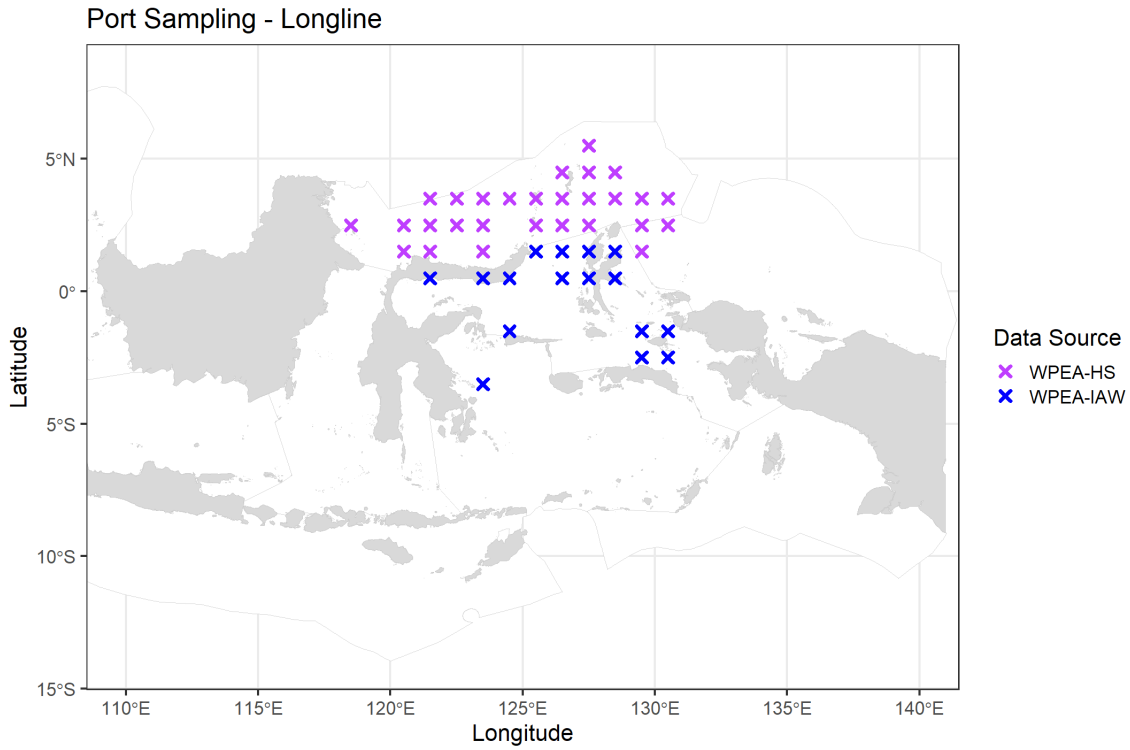
Effort need to be determined – other than No. of fishing days
Firstly, need to define the definition of one set in HL, and how the fishers record their setting data?

3. Longline – YFT

3.1. LL - Port Sampling
3.2. LL - Observer
3.3. LL - Logbook

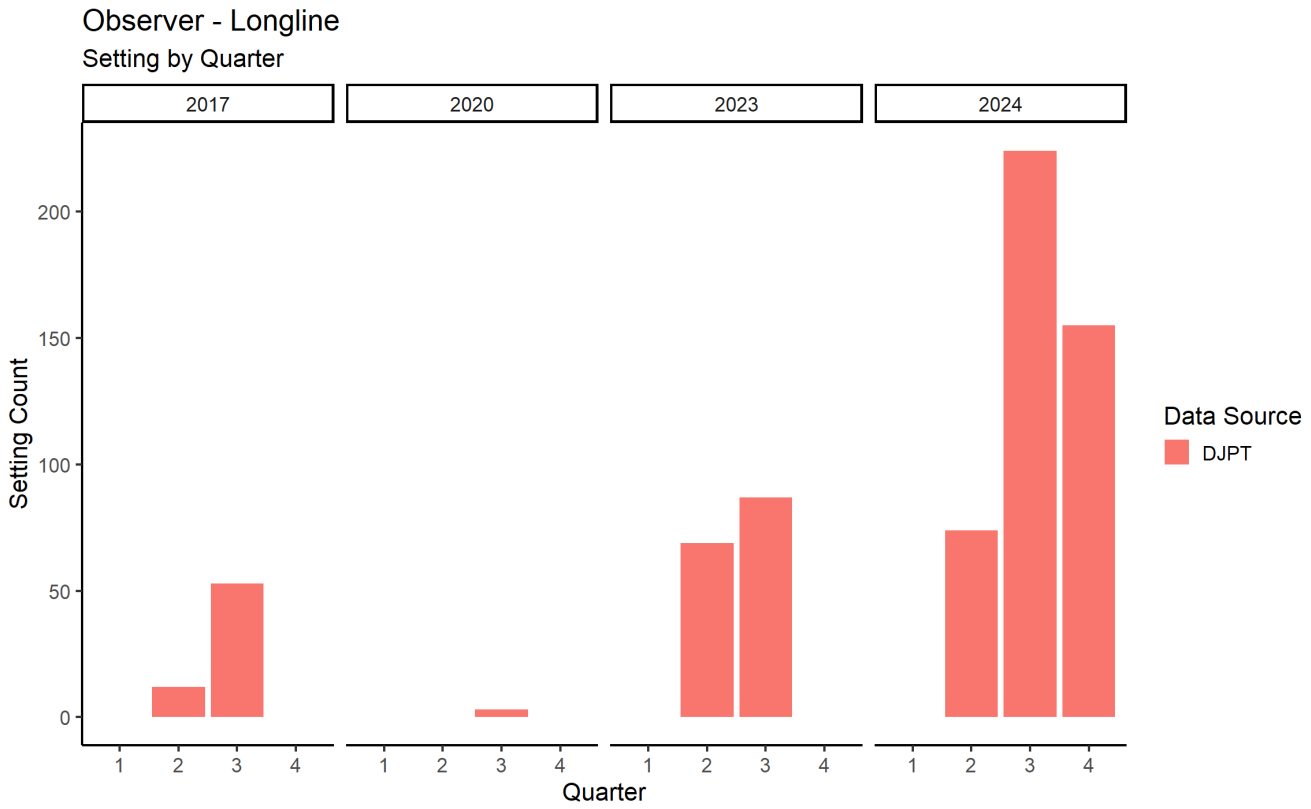
3.1. LL – Port Sampling

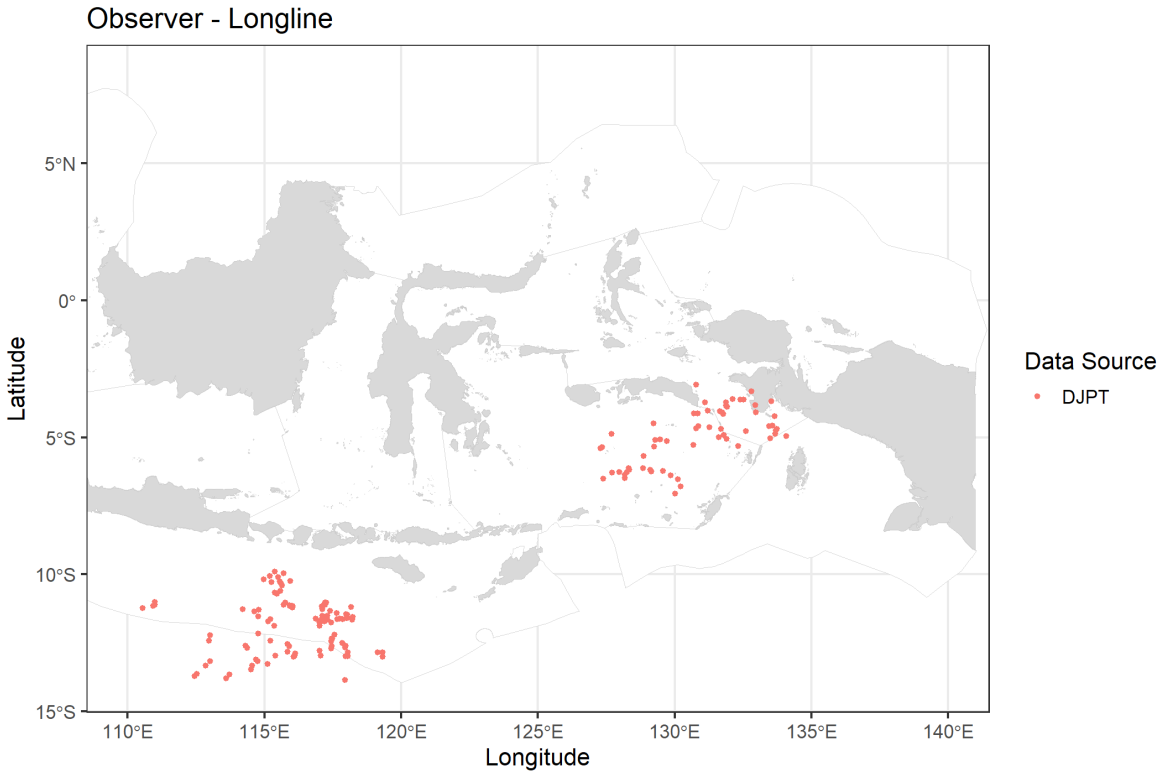




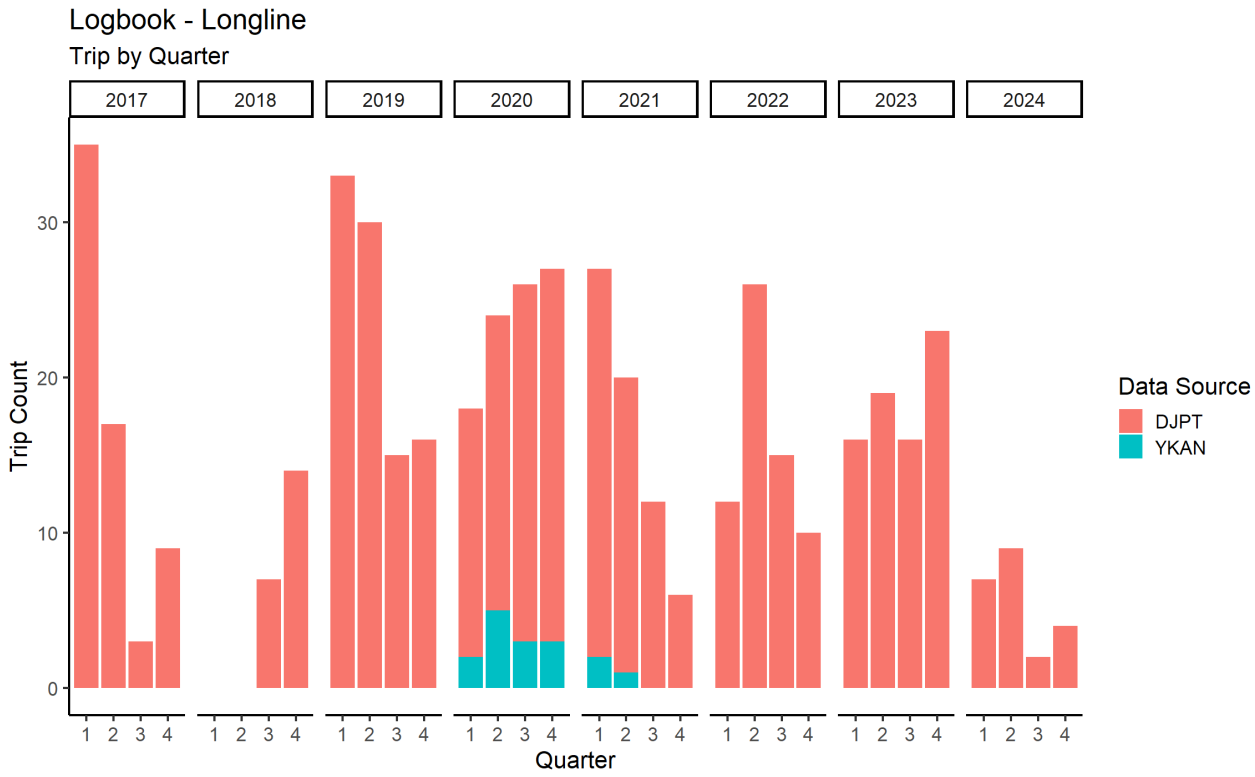
Mostly outside IAW

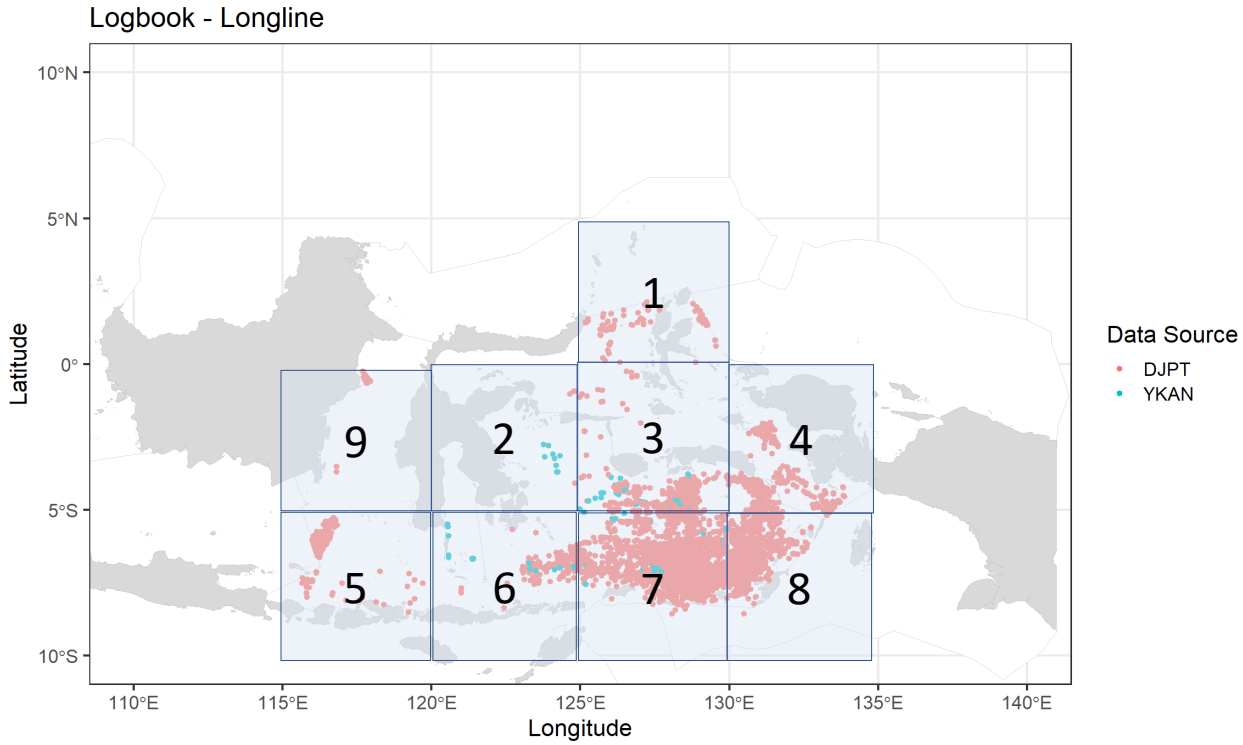
3.2. LL – Observer





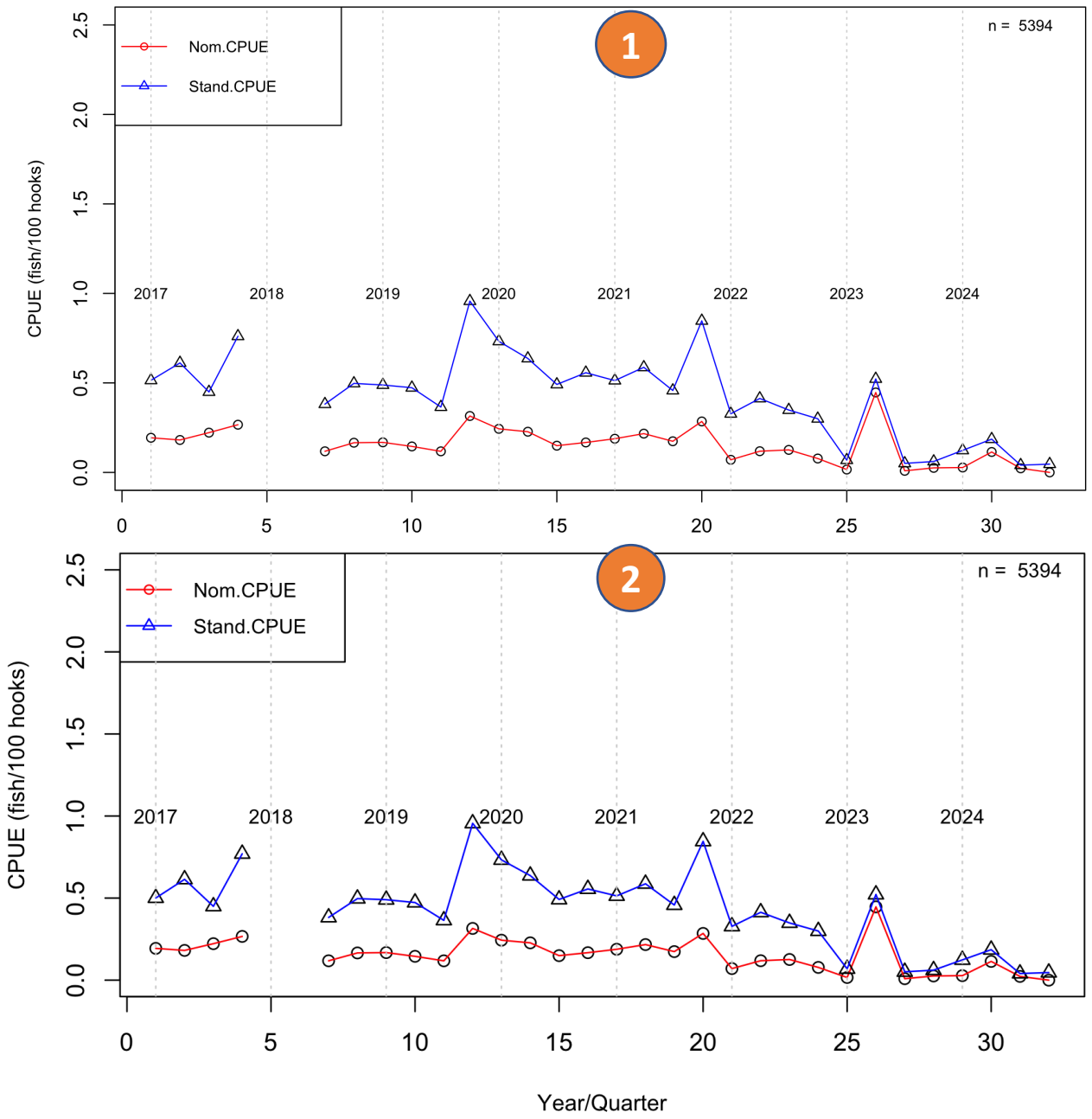
3.3. LL – Logbook

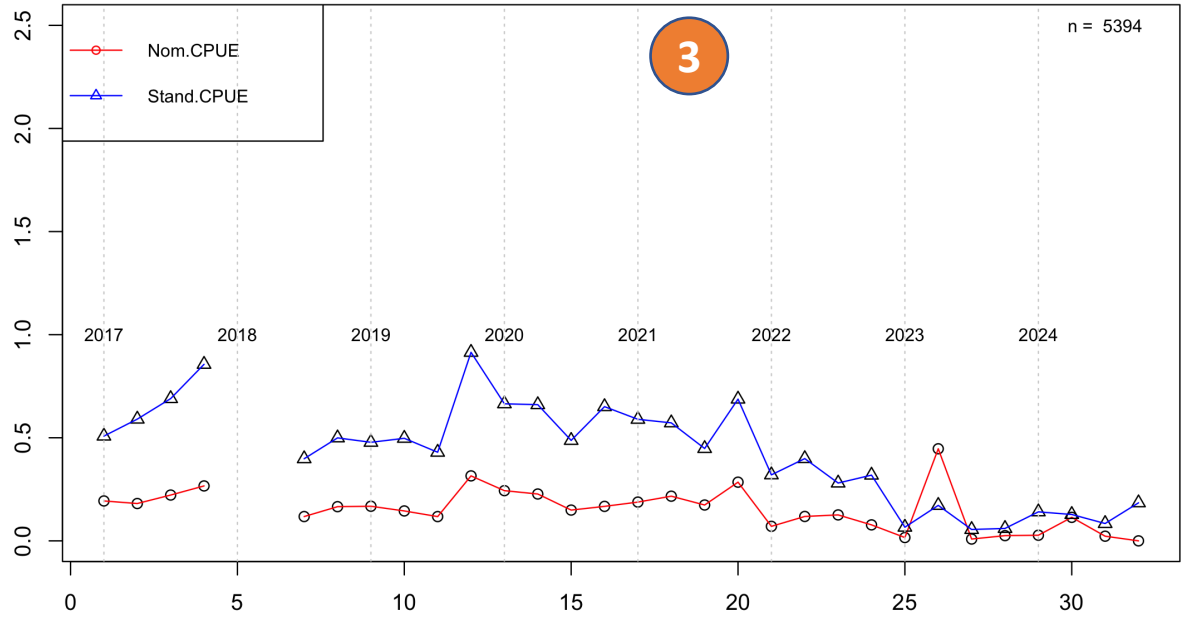




- n = 6107
- YFT catch per setting <= 20 fish
- No.of hooks per setting [400,3000]

3.3. LL – Logbook (Relative Stand.CPUE)





1 Family: Tweedie(p=1.143)
Link function: log

Formula:
yft_count ~ as.factor(year_setting) + as.factor(month_setting)
+ as.factor(area) + s(vessel_id, bs = "re")

Deviance explained : 49.3%

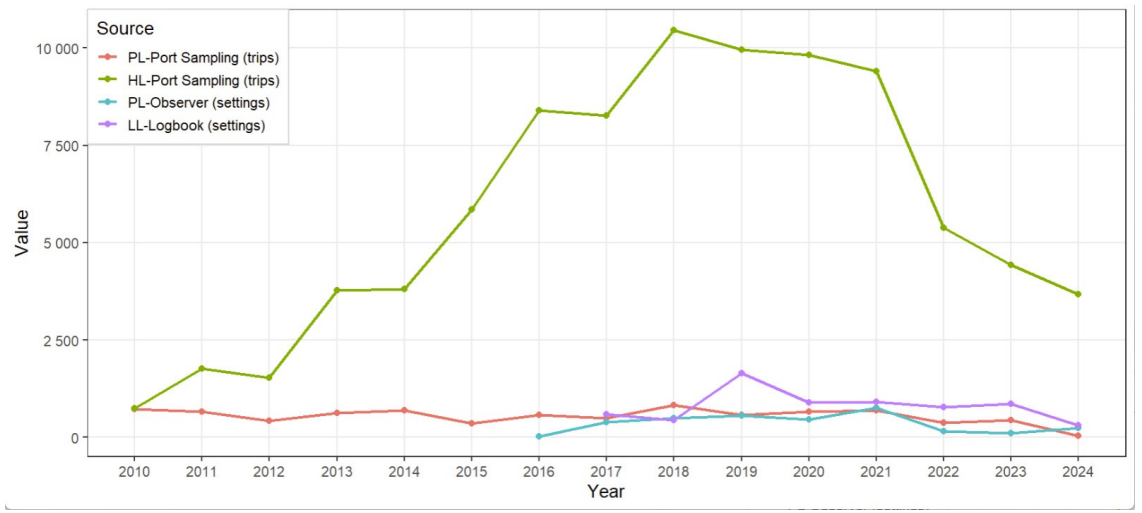
2 Model 1 + GT
Deviance explained = 49.4%

3 Model 2 + GT - vessel_id
Deviance explained = 25.2%

Skipjack – PL	Port Sampling	Observer	Logbook
Spatial & temporal coverage	✓	✓	
Relative abundance indices	✓ Deviance explained = 76.5%	✓ Deviance explained = 27.9%	X No. of poles only available for one year.

Yellowfin - HL	Port Sampling	Observer	Logbook
Spatial & temporal coverage		Not enough temporal data, only data 2021 with 4 quarters	
Relative abundance indices	✓ Deviance explained 78%	X	?

Yellowfin - LL	Port Sampling	Observer	Logbook
Spatial & temporal coverage	Mostly outside IAW	Not enough temporal data	✓
Relative abundance indices	X	X	✓ Deviance explained = 49.4%



Terima kasih