

# Purse Seine Fisheries in Thailand

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# Outline

1. Introduction
2. Catch and effort statistics
3. Biological information
4. Status of pelagic fish stock
5. Existing management strategies

# **1. Introduction**



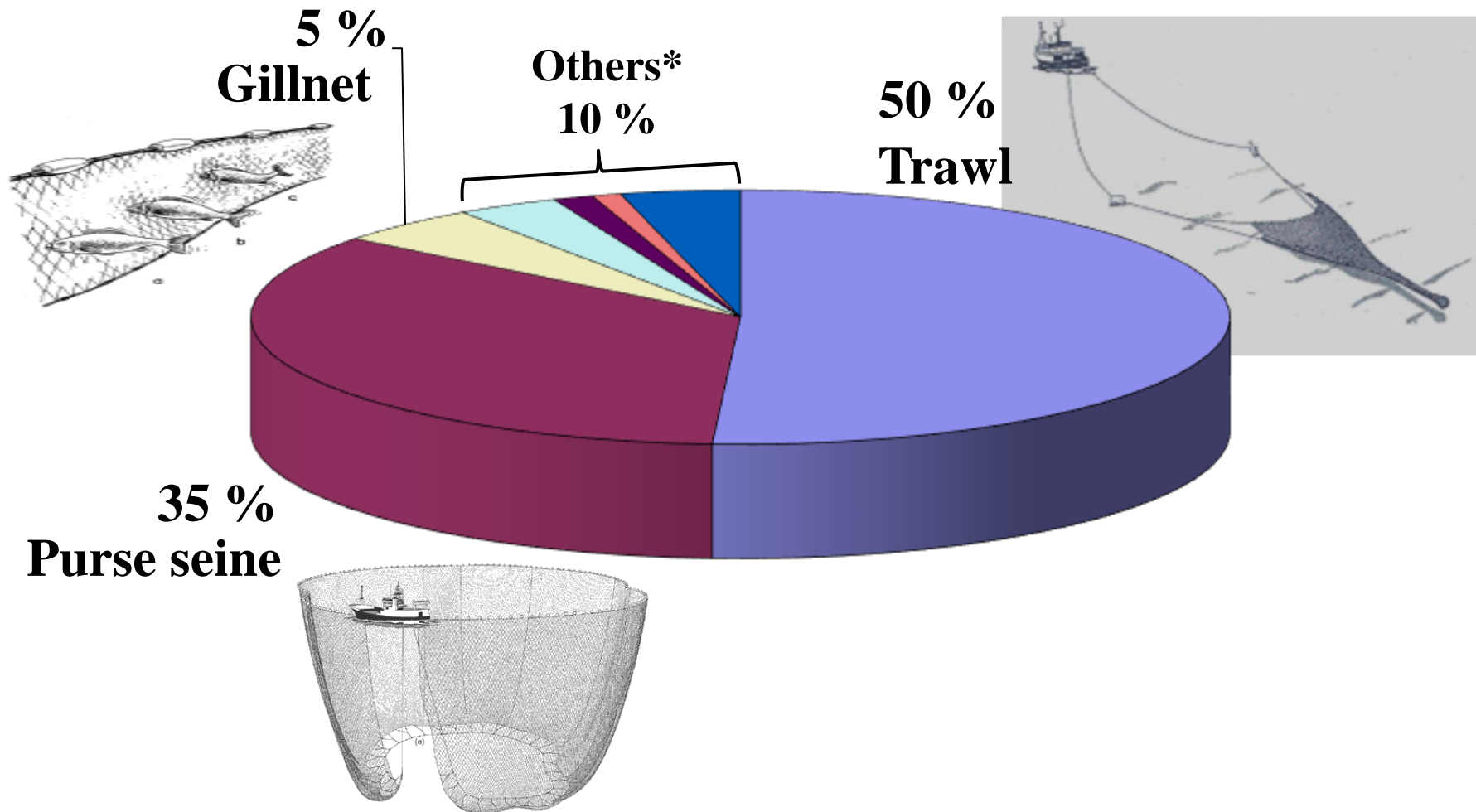
# Thailand

- 23 coastal provinces
- Coastline: 2,614 km along Gulf of Thailand (GOT) and Andaman Sea (ANS)
- Total EEZ: 420,280 km<sup>2</sup>

## Marine capture fisheries in Thailand

- Landing: > 1.1 million t of catch in 2016
- Involving 0.68 million people

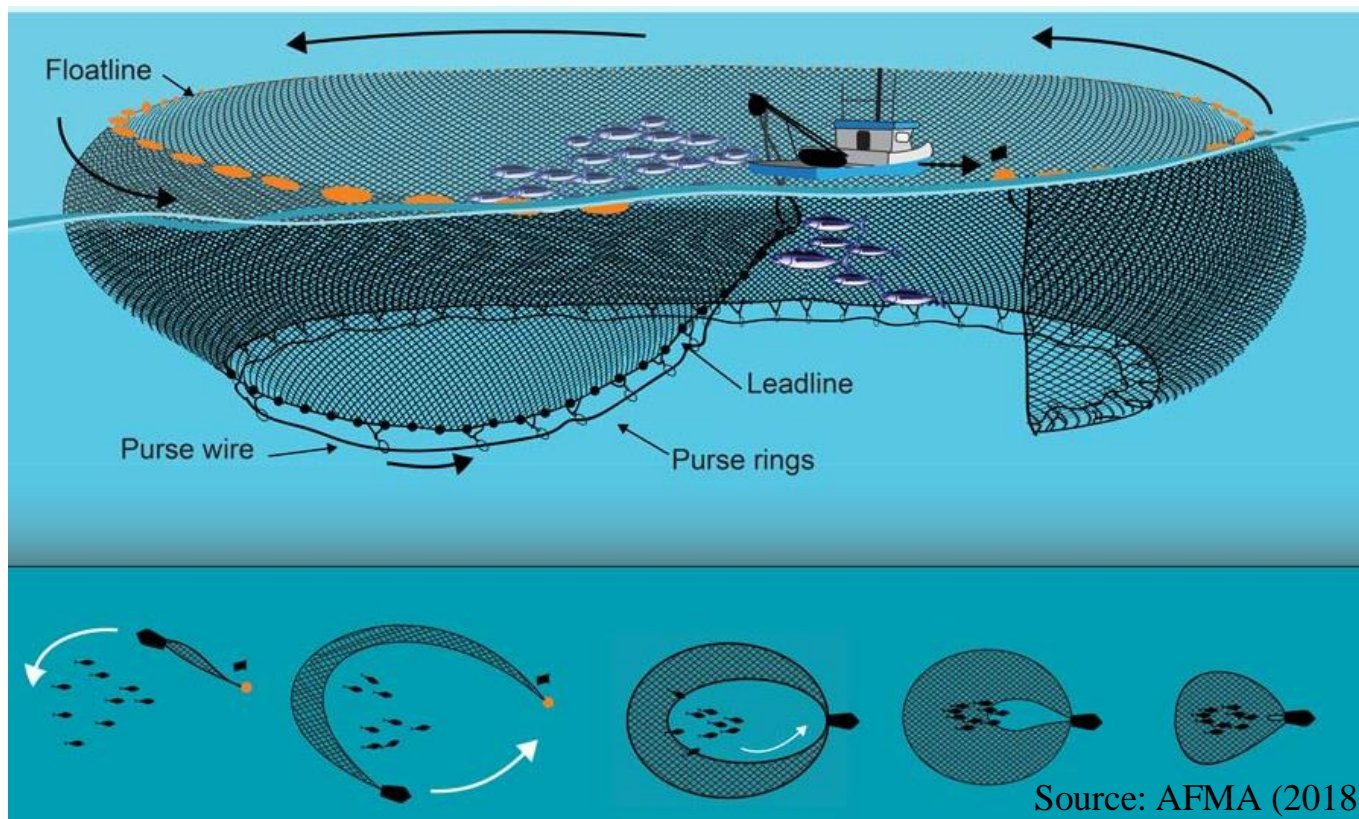
# Capture production of Thailand by fishing gear in 2016



\*Consist of falling net, push net, lift net, traps, hook and line, etc

# Purse seine fishing in Thailand

- Thai purse seine (TPS)
- Anchovy purse seine (APS)





# TPS (*Uan dum* = Black seine)



- Net: PA (polyamide) with black colour
- Length of float-line: 400-1,800 m
- Net depth: 60-110 m
- Mesh size:  $\geq 25$  mm

- Fishing techniques can be divided into 3 operation types
  - Free school (FS)
  - Light luring (LL)
  - Fish aggregating device (FAD)
- Catch: Indo-Pacific mackerel, Indian mackerel, sardine, scads, bonitos, black pomfret and ponyfish



# APS



- Net: PA (knotless) with green or brown colour
- Length of float-line: 250-450 m
- Net depth: 15-80 m
- Mesh size:  $> 6$  mm

- 2 types of anchovy purse seiners
  - Fishing boat without boiler
  - Fishing boat with boiler
- Catch: anchovies

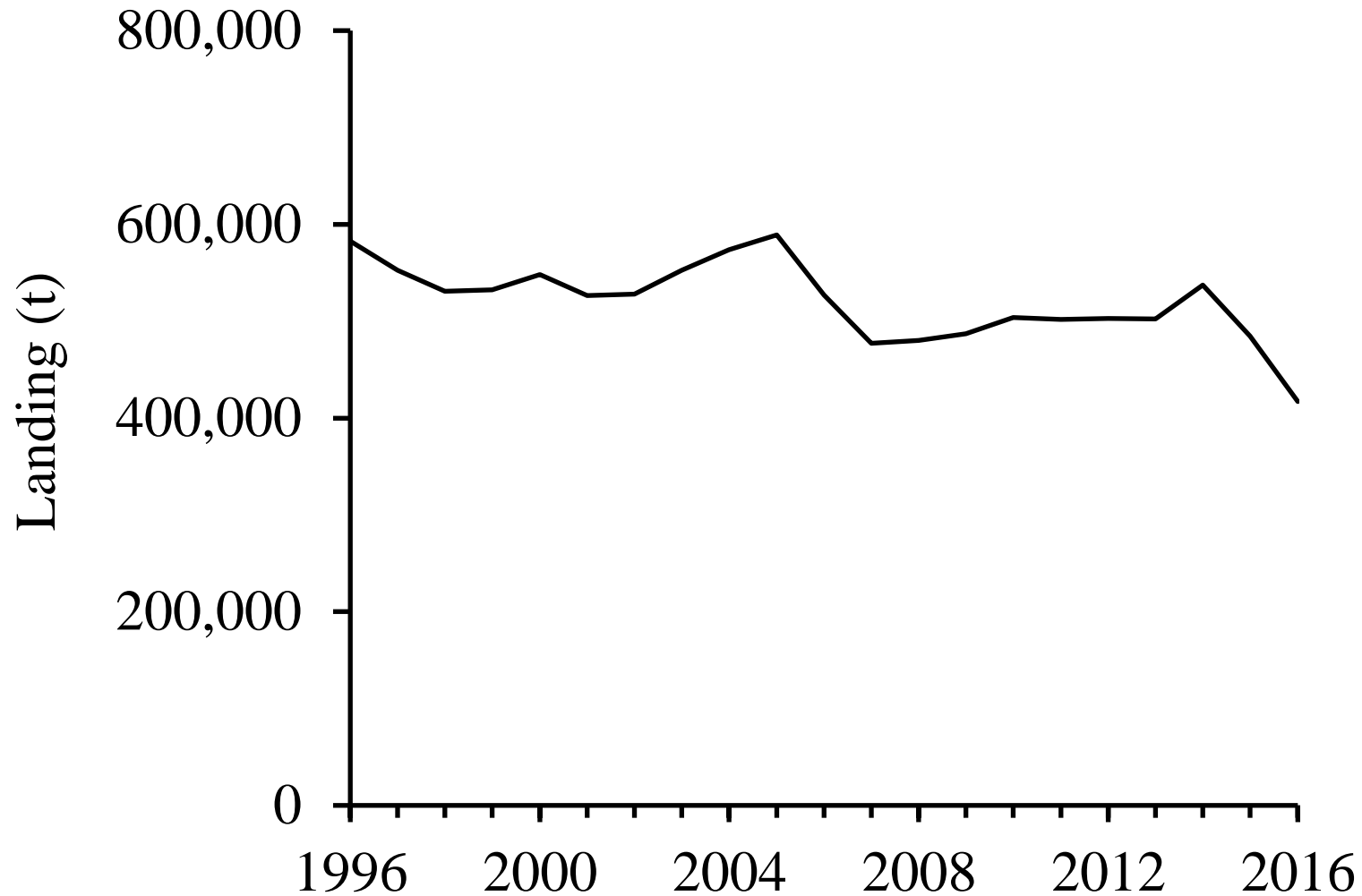


# Fishing areas

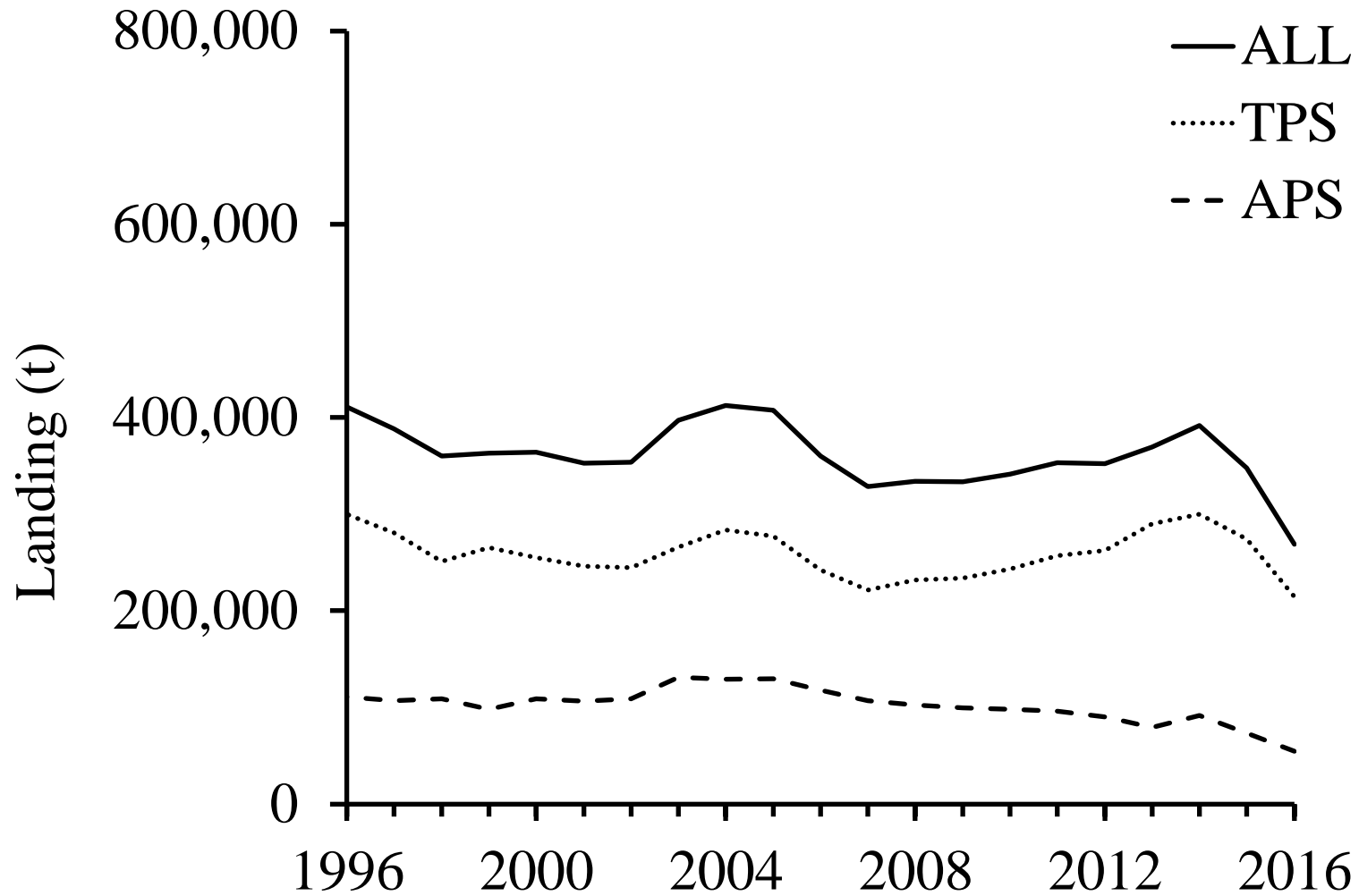
- Main fishing grounds are located in GOT and ANS
- Depth of fishing grounds for both Thai and anchovy purse seines is  $< 100$  m

## **2. Catch and effort statistics**

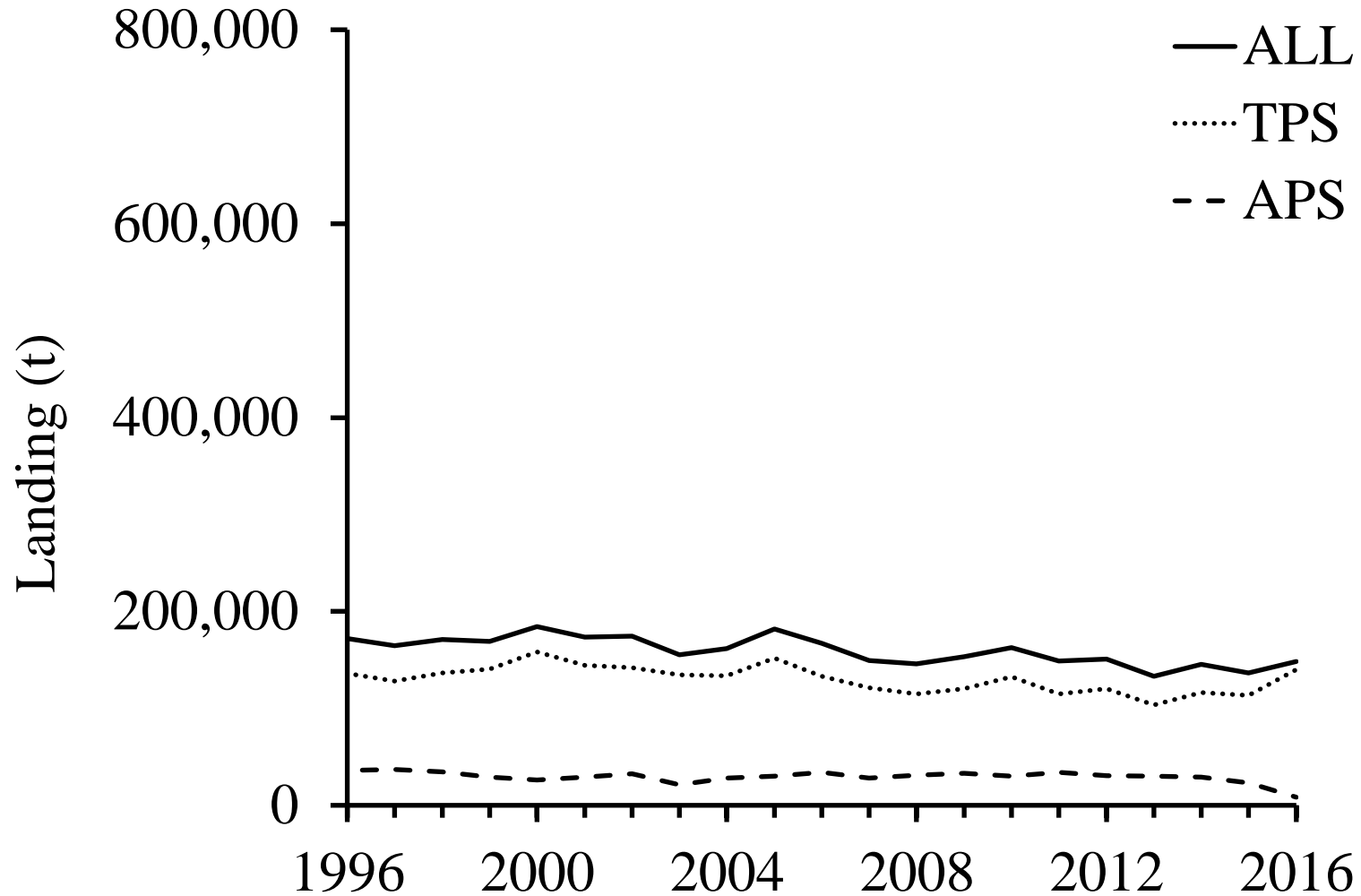
# Total landing (t) by all purse seiners



# Total landing (t) from GOT

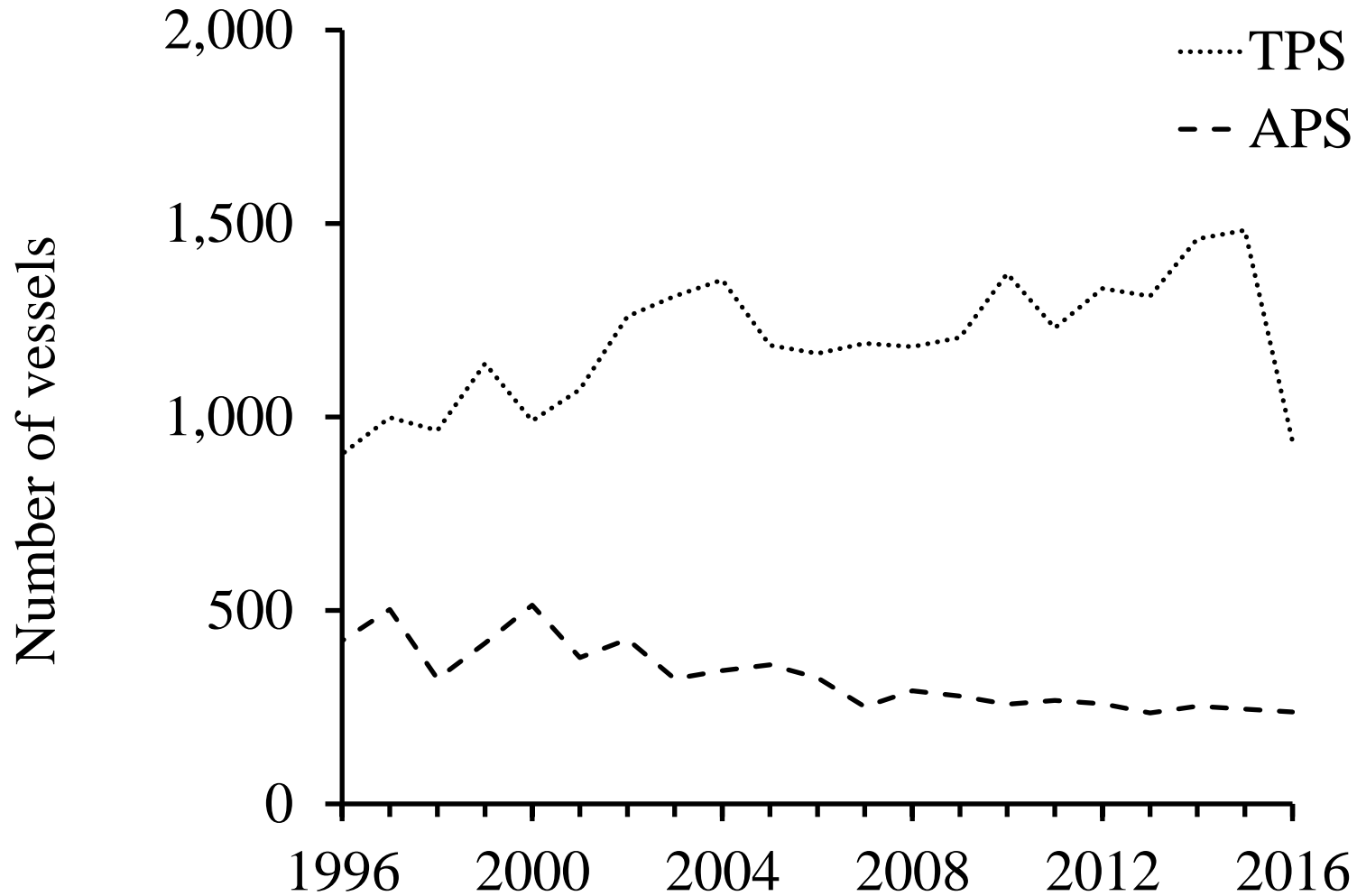


# Total landing (t) from ANS

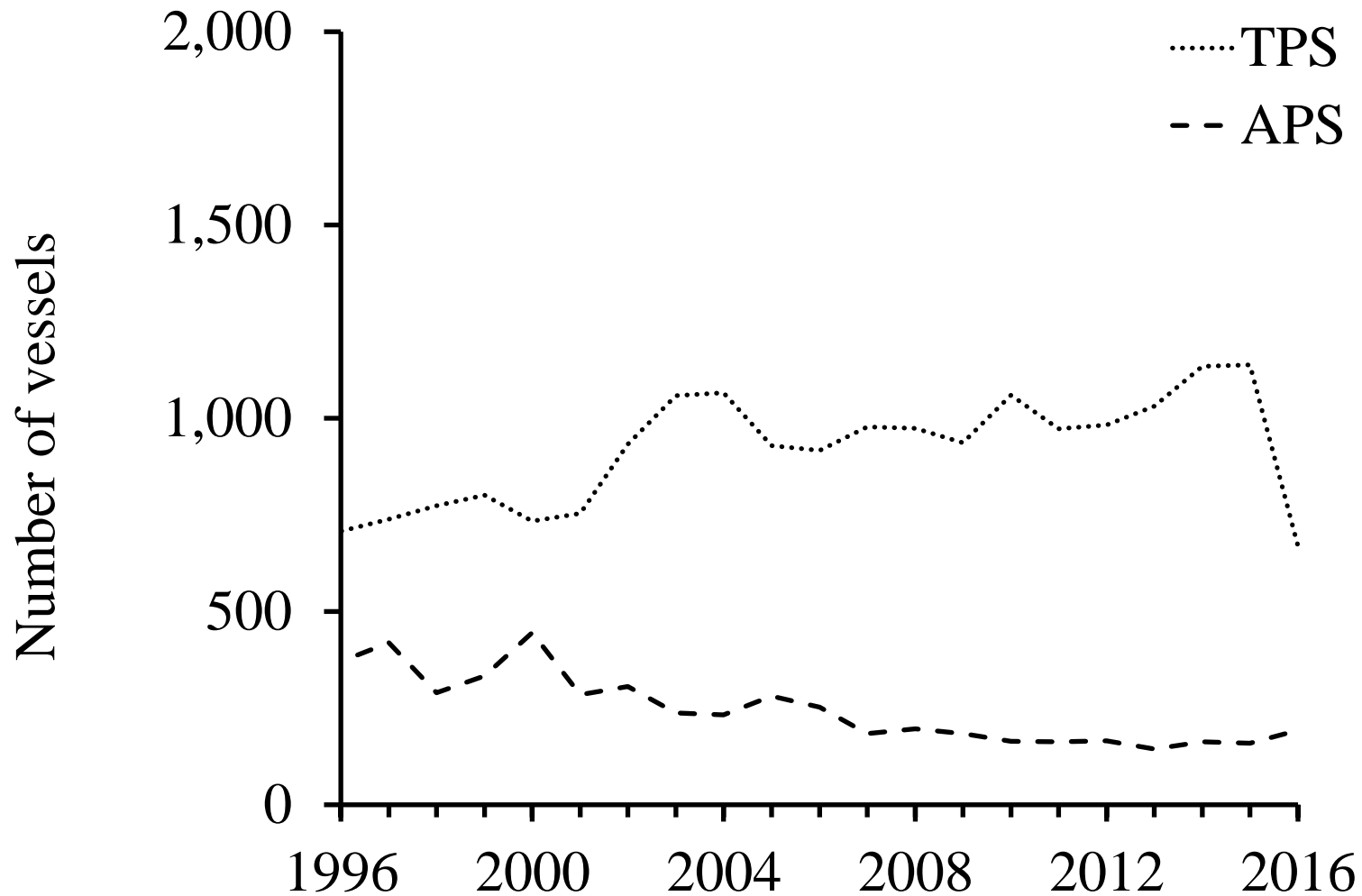




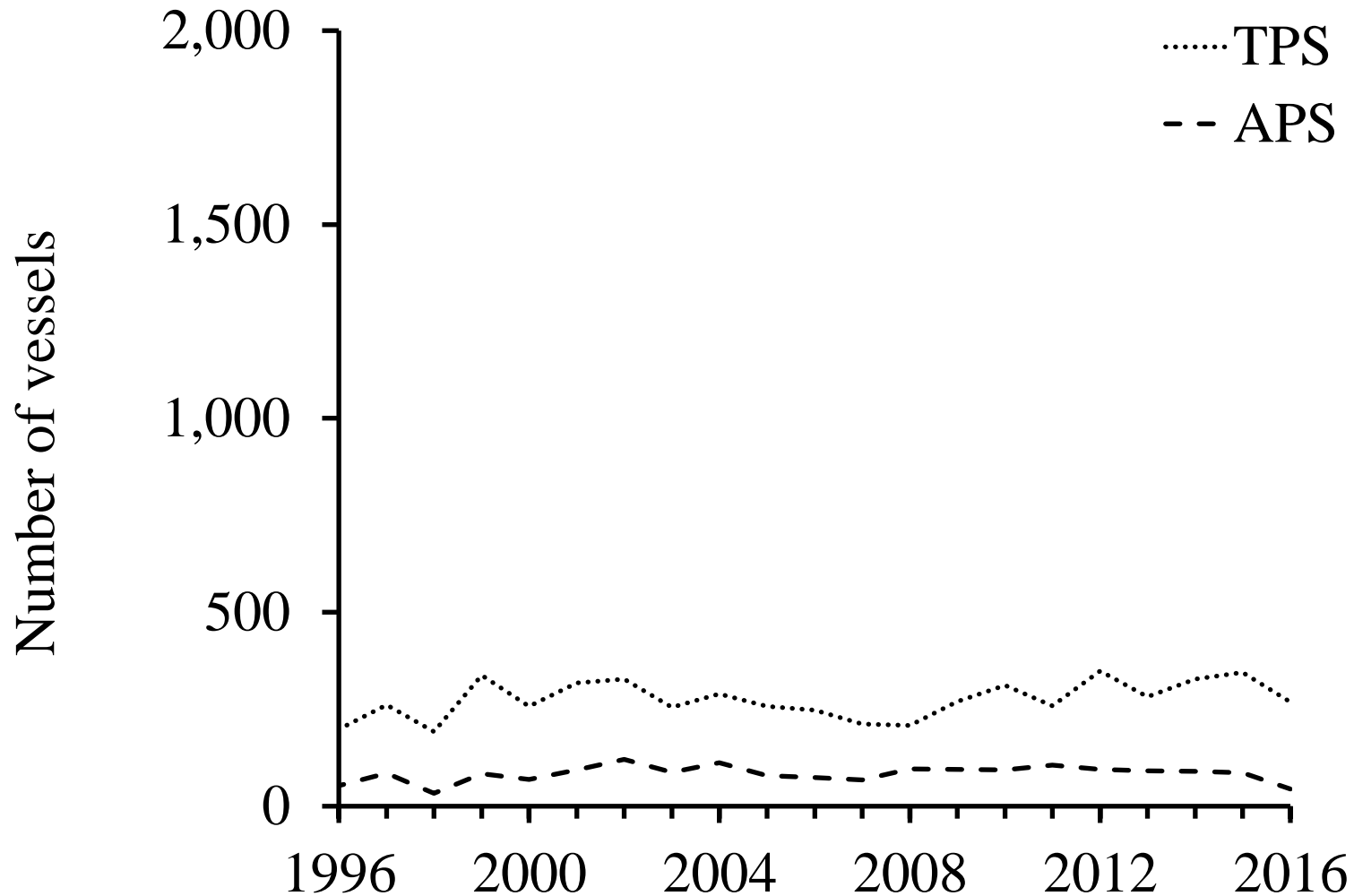
# Number of purse seine vessels



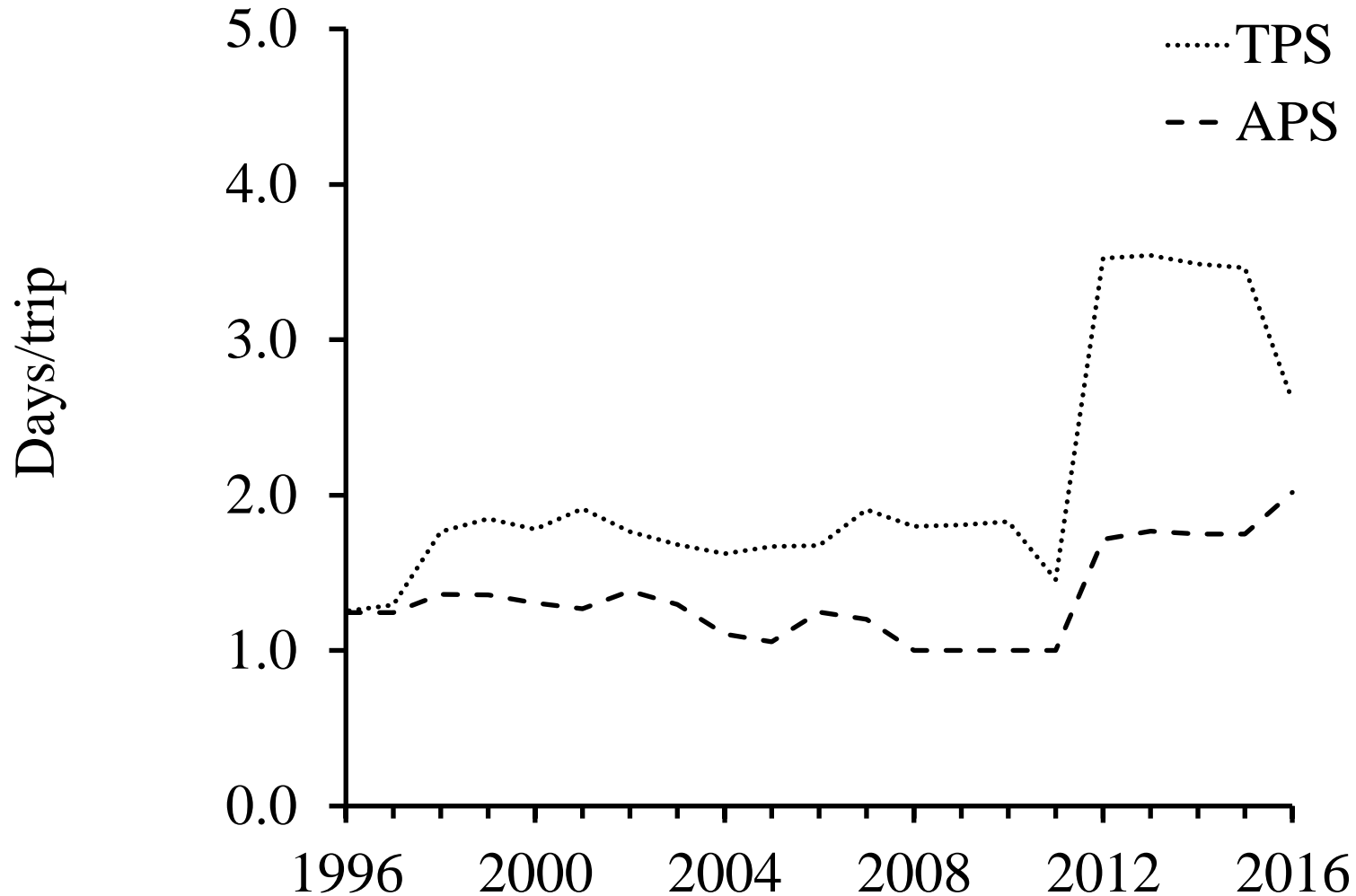
# Number of purse seine vessels in GOT



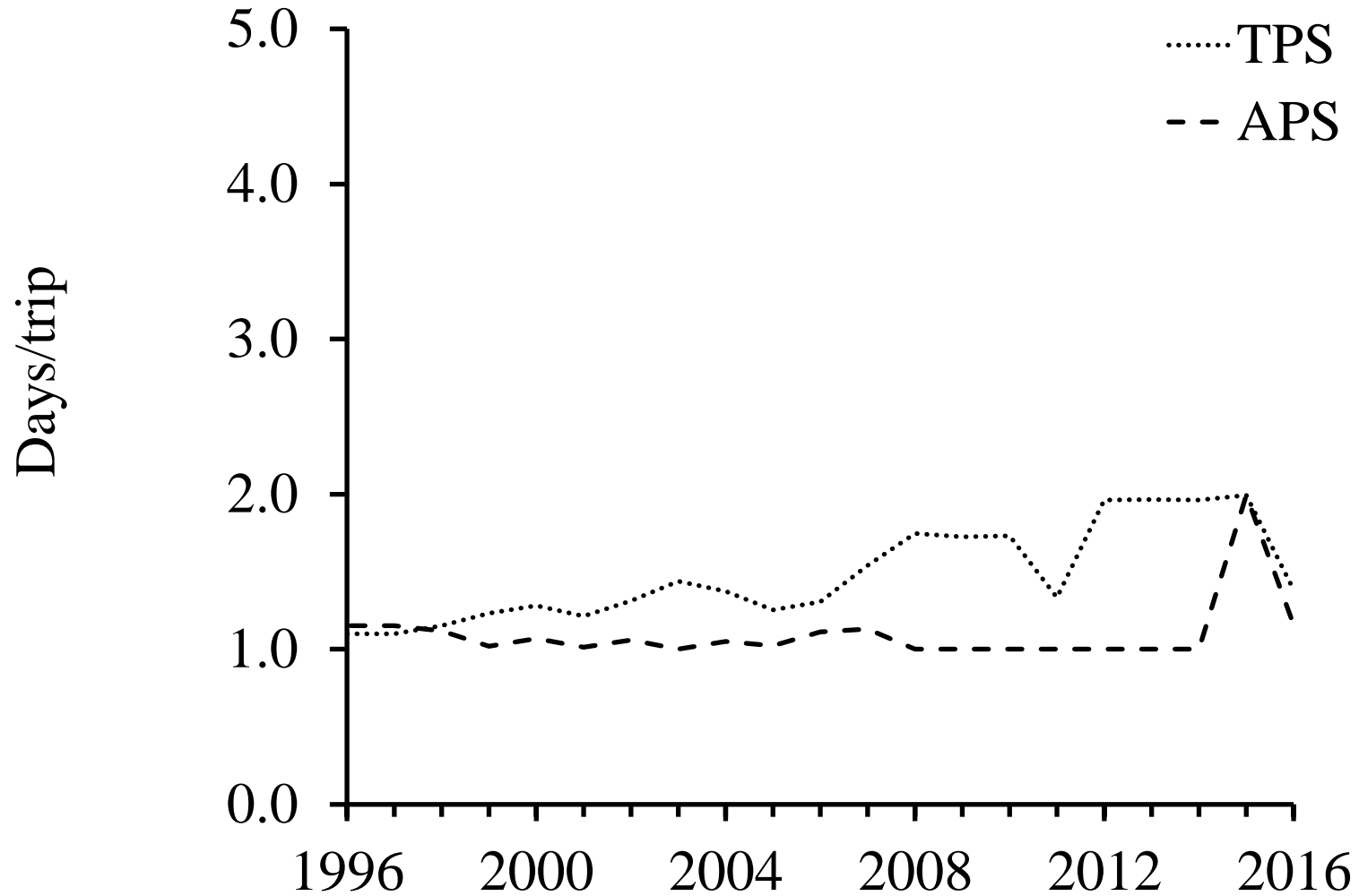
# Number of purse seine vessels in ANS



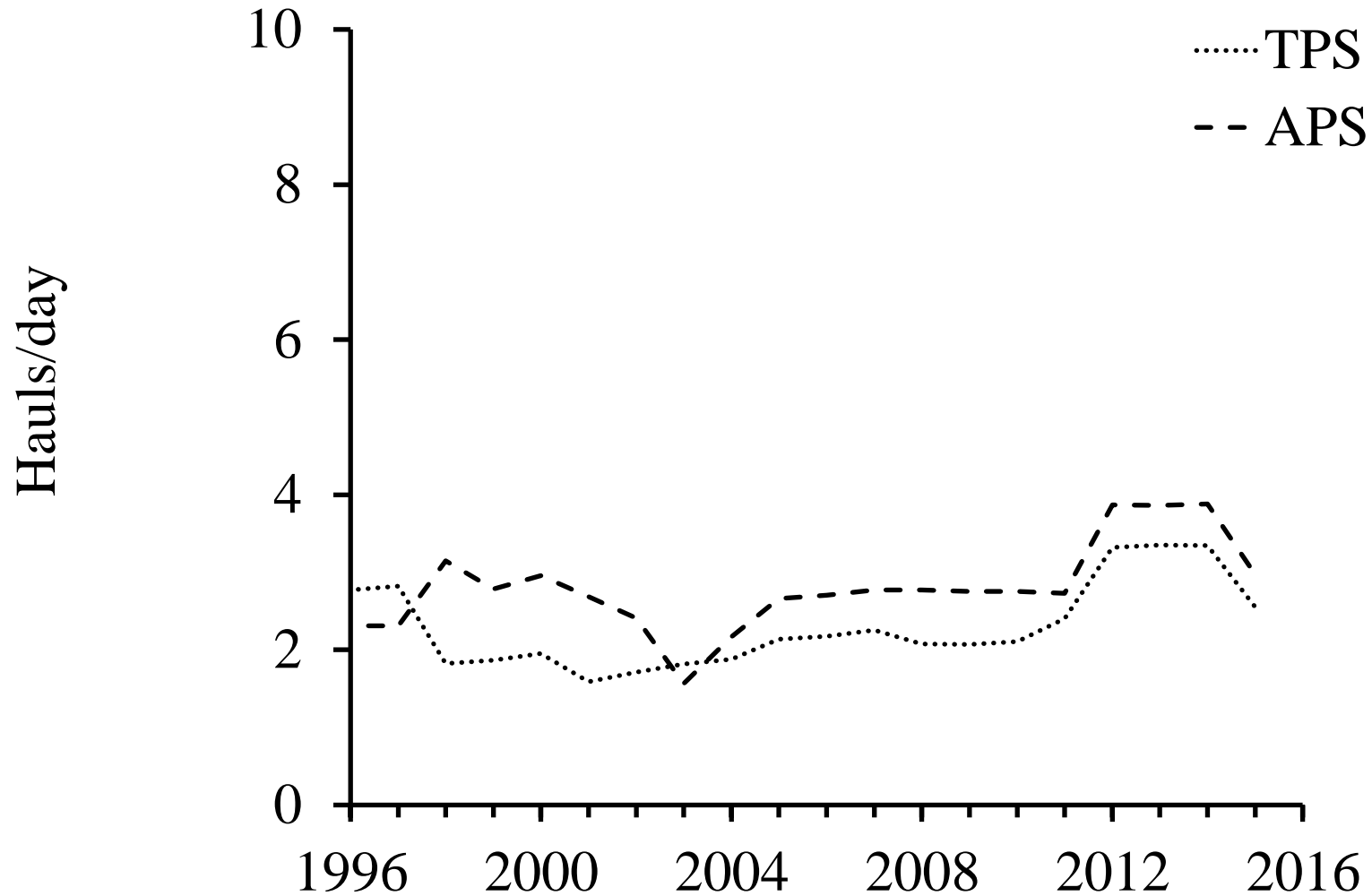
# Number of fishing days/trip in GOT



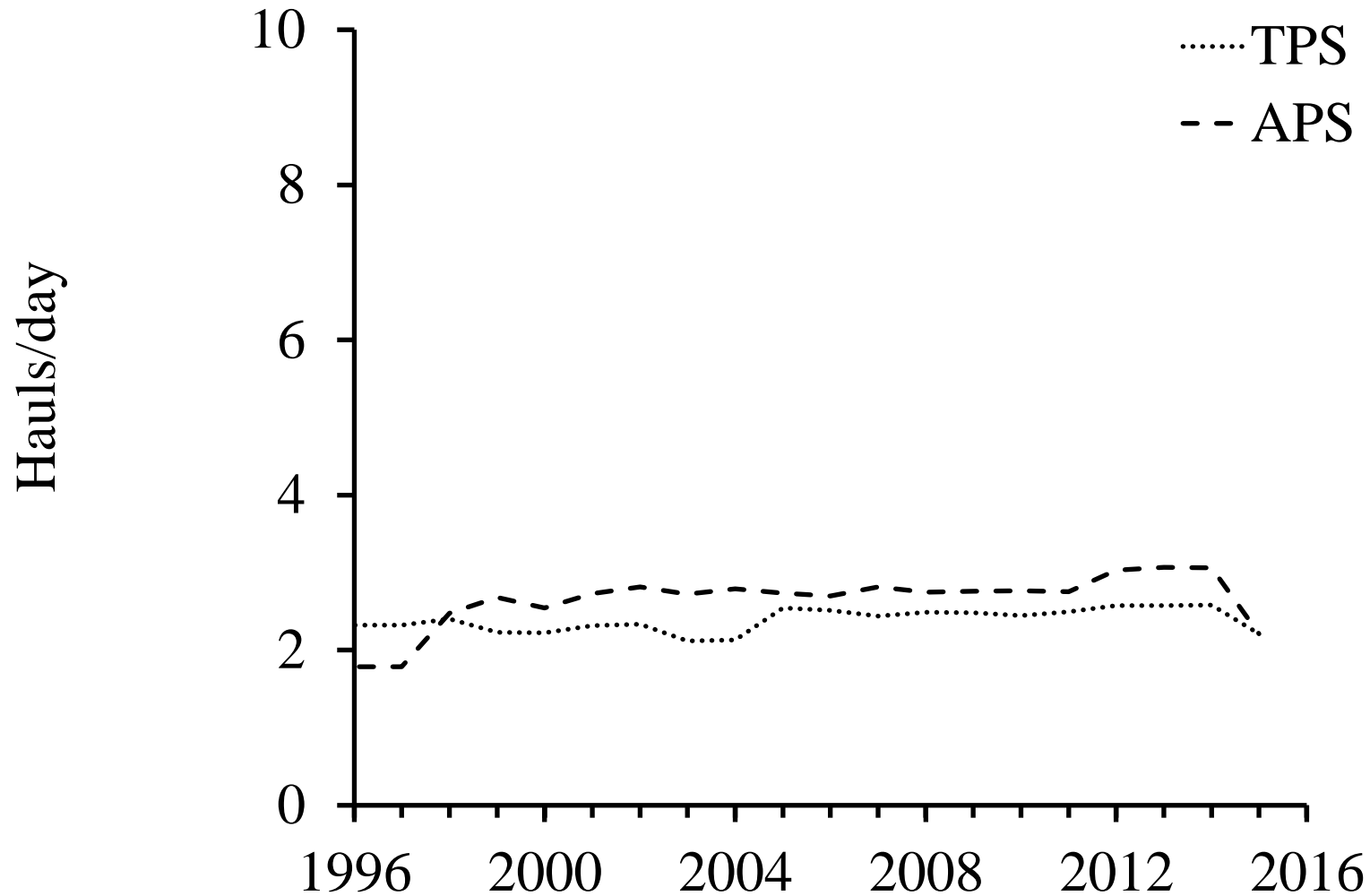
# Number of fishing days/trip in ANS



# Number of hauls/day in GOT

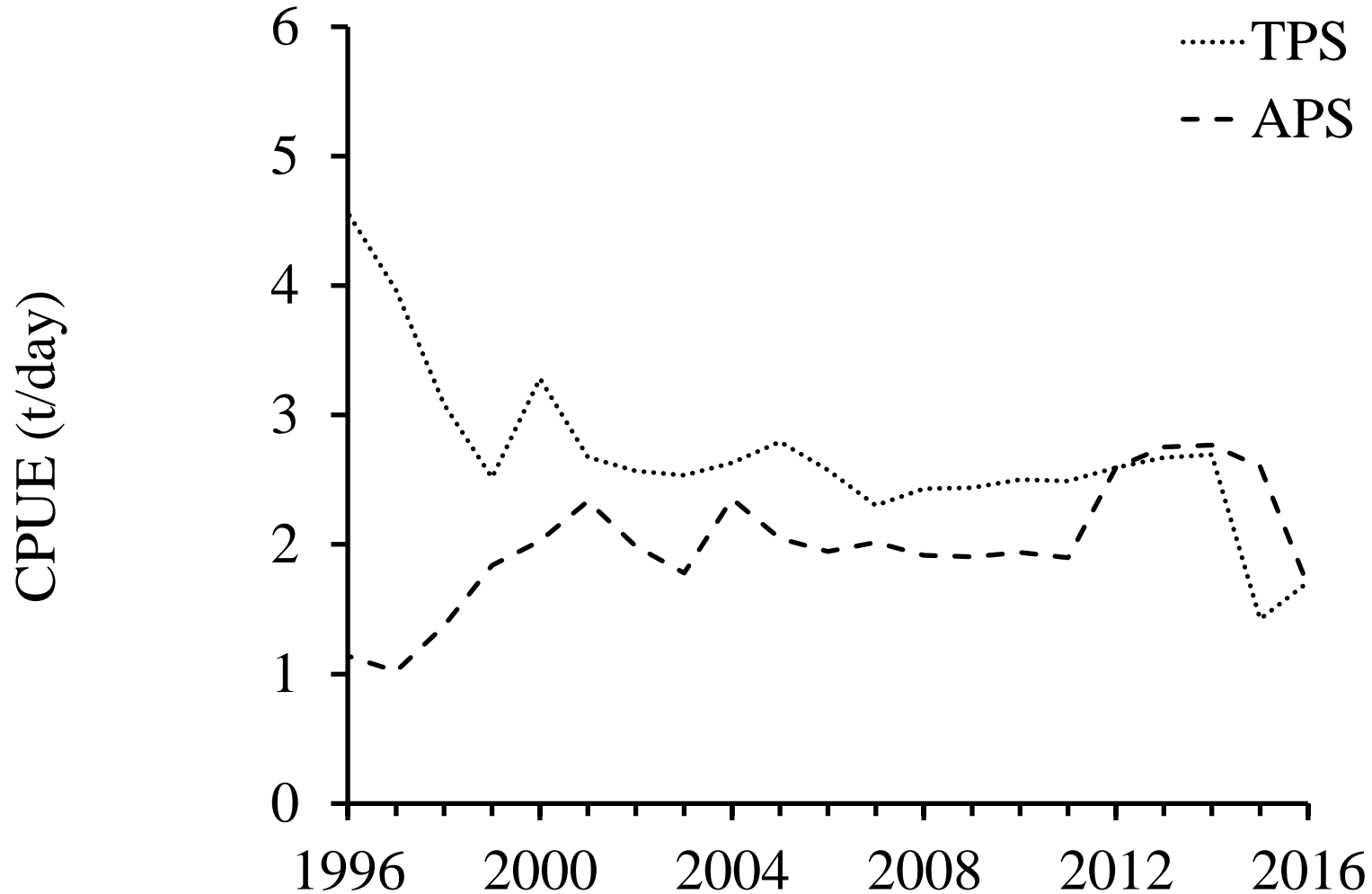


# Number of hauls/day in ANS

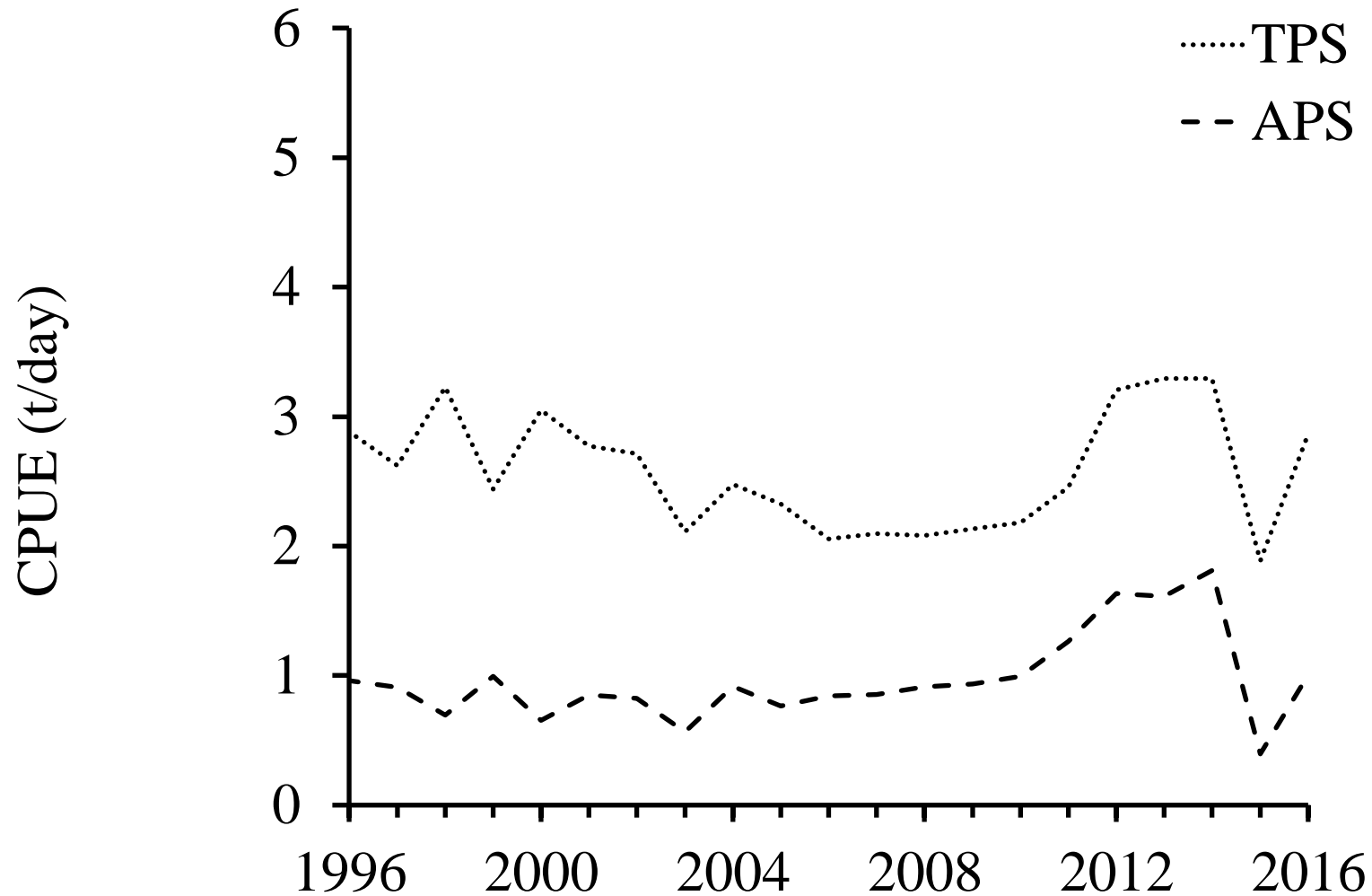




# Catch per unit effort (CPUE) in GOT



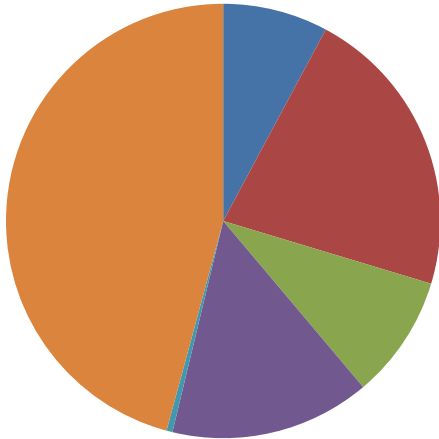
# Catch per unit effort (CPUE) in ANS



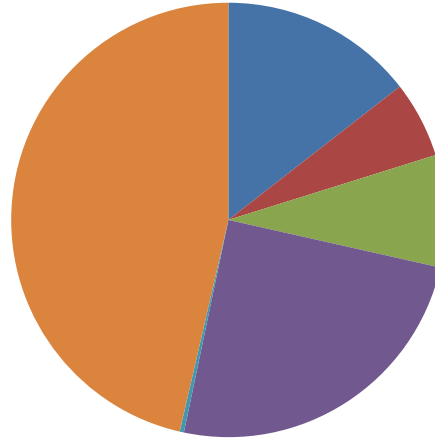
# **3. Biological information**

# Species composition

## TPS - GOT

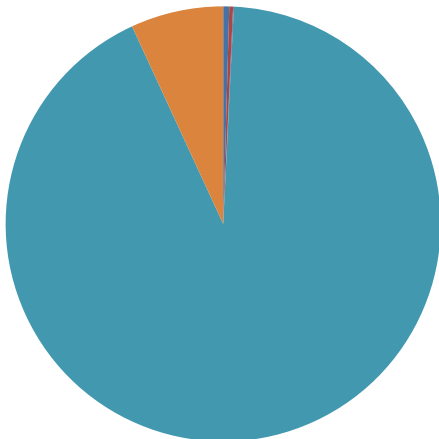


## TPS - ANS

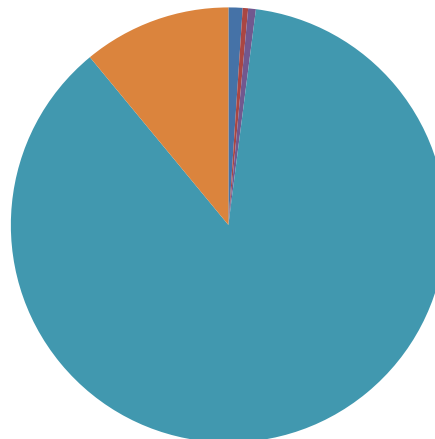


- Indian mackerel
- Indo-Pacific mackerel
- Bonitos
- Scads
- Anchovies
- Others: king mackerel, mullets, trevallies, pomfrets, croakers, breams, sardines, squids, crustaceans, *etc*

## APS - GOT



## APS - ANS



- Indian mackerel
- Indo-Pacific mackerel
- Bonitos
- Scads
- Anchovies
- Others: king mackerel, sardines, squids

# Length at 1<sup>st</sup> maturity of female

Species	Total length (cm)	
	GOT	ANS
<i>Rastrelliger brachysoma</i>	17.95 <sup>a</sup>	15.33 <sup>a</sup>
<i>Rastrelliger kanagurta</i>	17.12 <sup>a</sup>	18.92 <sup>a</sup>
<i>Sardinella gibbosa</i>	10.35 <sup>b</sup>	13.12 <sup>c</sup>
<i>Decapterus maruadsi</i>	13.19 <sup>d</sup>	15.66 <sup>e</sup>
<i>Selar crumenophthalmus</i>	18.25 <sup>f</sup>	19.95 <sup>g</sup>
<i>Encrasicholina punctifer</i>	6.51 <sup>h</sup>	6.47 <sup>i</sup>
<i>Encrasicholina heteroloba</i>	7.49 <sup>j</sup>	6.44 <sup>i</sup>
<i>Encrasicholina devisi</i>	7.81 <sup>j</sup>	7.21 <sup>i</sup>

<sup>a</sup>Krajangdara *et al.* (2007); <sup>b</sup>Nasuchon *et al.* (2010); <sup>c</sup>Krajangdara and Chalee (2004); <sup>d</sup>Hussadee *et al.* (2015);

<sup>e</sup>Supongpan *et al.* (2003); <sup>f</sup>Phuttharaksa *et al.* (2008); <sup>g</sup>Chalee and Yakoh (2013); <sup>h</sup>Sinanun *et al.* (2012);

<sup>i</sup>Yakoh *et al.* (2014); <sup>j</sup>Nasuchon and Puntuleng (2005)

# Spawning Season

Species	Peak season	
	GOT	ANS
<i>Rastrelliger brachysoma</i>	Feb-May/Jul-Oct <sup>a</sup>	Nov-May/Jul-Sep <sup>a</sup>
<i>Rastrelliger kanagurta</i>	Jan-Mar/May/ Jul/Sep/Nov <sup>a</sup>	Dec-Mar/Aug-Sep <sup>a</sup>
<i>Sardinella gibbosa</i>	Mar-Dec <sup>b</sup>	Apr-Jun/ Aug-Sep/Nov-Jan <sup>c</sup>
<i>Decapterus maruadsi</i>	Jan-Mar/May-Jul <sup>d</sup>	Dec-Feb <sup>e</sup>
<i>Selar crumenophthalmus</i>	Mar-Jun/Oct-Nov <sup>f</sup>	Sep <sup>g</sup>
<i>Encrasicholina punctifer</i>	N.A.	Jan <sup>h</sup>
<i>Encrasicholina heteroloba</i>	Nov-Jan <sup>i</sup>	Jul <sup>h</sup>
<i>Encrasicholina devisi</i>	N.A.	Jun <sup>h</sup>

<sup>a</sup>Krajangdara *et al.* (2007); <sup>b</sup>Nasuchon *et al.* (2010); <sup>c</sup>Krajangdara and Chalee (2004); <sup>d</sup>Hussadee *et al.* (2015);

<sup>e</sup>Supongpan *et al.* (2003); <sup>f</sup>Phuttharaksa *et al.* (2008); <sup>g</sup>Chalee and Yakoh (2013); <sup>h</sup>Yakoh *et al.* (2014); <sup>i</sup>Munprasit (1996)

# Growth and mortality parameters

Species	$L_{\infty}$ (cm)	K (year <sup>-1</sup> )	$T_0$ (year)	Z (year <sup>-1</sup> )	M (year <sup>-1</sup> )	F (year <sup>-1</sup> )
<i>Rastrelliger brachysoma</i> <sup>a</sup>	22.00	2.50	-0.003	6.12	N.A.	N.A.
<i>Rastrelliger kanagurta</i> <sup>b</sup>	26.98	1.60	-0.003	5.32	2.56	2.76
<i>Sardinella gibbosa</i> <sup>c</sup>	21.68	1.61	-0.007	9.91	2.21	7.70
<i>Decapterus maruadsi</i> <sup>d</sup>	27.75	1.01	0.000	6.43	1.89	4.54
<i>Selar crumenophthalmus</i> <sup>e</sup>	28.40	1.87	0.000	7.03	2.22	4.81
<i>Encrasicholina punctifer</i> <sup>f</sup>	10.80	1.85	-0.011	11.35	2.90	8.45
<i>Encrasicholina Heteroloba</i> <sup>f</sup>	10.60	1.70	-0.011	10.91	2.76	8.15
<i>Encrasicholina devisi</i> <sup>f</sup>	10.54	1.80	-0.011	9.59	2.88	6.72

<sup>a</sup>Sinanun *et al.* (2012); <sup>b</sup>Thongsila *et al.* (2012) <sup>c</sup>Boonjorn *et al.* (2013) <sup>d</sup>Yamrungrueng *et al.* (2018)

<sup>e</sup>Khemakorn *et al.* (2015); <sup>f</sup>Boonsuk *et al.* (2010)



## **4. Status on pelagic fish stock**

# Maximum sustainable yield (MSY) vs Catch (MFRDD, 2018)

Group	Area	MSY (t) (A)	Catch (t) (B)	(B)/(A)
Pelagic fishes	GOT	250,739	199,507	0.80
	ANS	118,755	121,400	1.02
	All	369,494	320,907	0.87
Anchovies	GOT	201,564	108,212	0.54
	ANS	33,194	13,570	0.41
	All	234,758	121,782	0.52

# **5. Existing management strategies**

# Management measures

- New Fisheries Acts (Royal Ordinance on Fisheries) have been established in 2015 and revised in 2017
- Regulations for marine capture were updated
- For purse seine, the regulations are enforced to control the gear and effort
- Vessel owners must renew their fishing license every 2 years

- **Mesh size:**  $\geq 25$  mm for TPS and  $> 6$  mm for APS
- **Fishing time:** only daytime operation is allowed for APS
- **Closed seasons:** 4 periods in GOT and 1 period in ANS
- **Closed areas:** Trad Bay for LL operation of TPS and coastal zone announced by each coastal province

**Thank you for your kind attention**



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