



SEAFDEC/UNEP/GEF Project on Establishment and Operation of a Regional System of Fisheries *Refugia* in the South China Sea and Gulf of Thailand

***Siganus punctatus***

**Goldspotted spinefoot**



**Scientific classification**

Kingdom: [Animalia](#)  
Phylum: [Chordata](#)  
Class: [Actinopterygii](#)  
Order: [Perciformes](#)  
Family: [Siganidae](#)  
Genus: [Siganus](#)

**Binomial name**

***Siganus punctatus***  
([Schmeider & Forster](#), 1801)

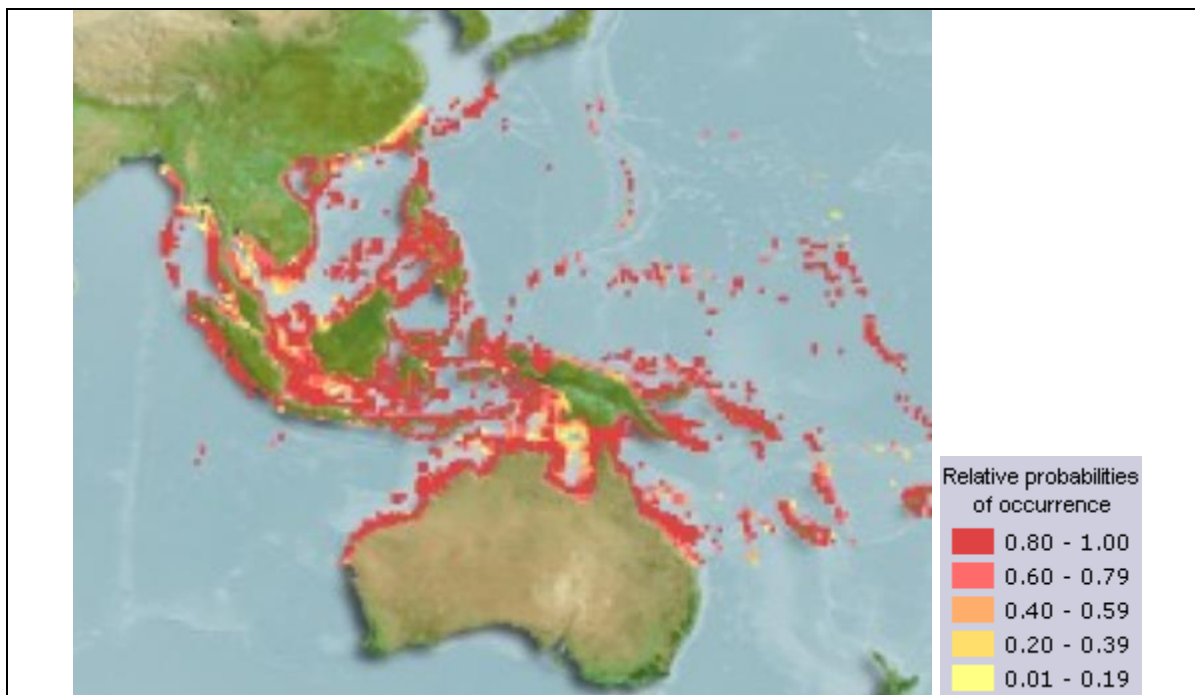
**Synonyms<sup>[2]</sup>**

- *Amphacanthus punctatus*  
([Schmeider & Forster](#), 1801)

## A. Environment/Ecology:

Marine; reef-associated; depth range 1 - 40 m (Ref. [1602](#)). Tropical; 30°N - 25°S, 92°E - 160°W

## B. Distribution:



Western Pacific: fringe of the eastern sector of the Indian Ocean, Cocos (Keeling) Islands, Australia, Indonesia, Singapore, Gulf of Thailand, South China Sea, Philippines, Taiwan, Ryukyu Islands, Ogasawara Islands, Mariana Islands, Palau (Belau), Caroline Islands, Kapingamarangi Islands, Nauru and Niue. The species is replaced by its sibling, *Siganus stellatus*, in the Andaman Sea and regions which are located further west.

#### C. Length at first maturity / Size / Weight / Age:

Maturity:  $L_m$  ?, range 24 - ? cm

Max length : 40.0 cm TL male/unsexed; (Ref. [9710](#)); common length : 30.0 cm TL male/unsexed; (Ref. [9813](#))

#### D. Short description

[Dorsal spines](#) (total): 13; [Dorsal soft rays](#) (total): 10; [Anal spines](#): 7; [Anal soft rays](#): 9; [Vertebrae](#): 13. Color pattern changes with age; iris silver with 8-10 orange spots. Juveniles with a deep brown patch straddling the lateral line; the spot becoming obscured with increase in size. Stout, venomous spines not so pungent. Preopercular angle 87°-105°. Strong scales fully cover the cheeks. Midline of thorax scaled but not pelvic ridges.

#### E. Biology

Occurs in clear lagoons and seaward reefs. Juveniles live in schools of up to about 50 fish with pairing commencing as small as 15 cm, but fish may still be schooling at 22 cm SL; older fish live in pairs. Feeds on benthic algae (Ref. [9813](#)). Adults on deep coastal reefs, juveniles in shallow estuaries (Ref. [48637](#)).

#### F. Life cycle and mating behavior

Spawn in pairs. Spawning occurs around either new or full moons or both (Ref. [37816](#)).

## G. Fisheries

(NA)

## H. IUCN Red List Status

**GEOGRAPHIC RANGE**

- **Taxonomy**

Kingdom:	<a href="#">Animalia</a>
Phylum:	<a href="#">Chordata</a>
Class:	<a href="#">Actinopterygii</a>
Order:	<a href="#">Perciformes</a>
Family:	<a href="#">Siganiidae</a>
Genus:	<a href="#"><i>Siganus</i></a>

- **Geographic Range**

**NUMBER OF LOCATIONS**

UPPER DEPTH LIMIT : 1 metres

LOWER DEPTH LIMIT : 40 metres

**RANGE DESCRIPTION**

This species is widely distributed in the western Pacific, from Cocos-Keeling Islands east to Samoa and from Australia to southern Japan (Woodland 2001). It is found to depths of 40 m (Myers 1991).

- **Population**

**CURRENT POPULATION TREND** : *Unknow*

- **Habitat and Ecology**

System : Marine

Habitat type : Marine Neritic

- **Threats**

This species is targeted in parts of its range but this does not currently appear to be a major threat.

- **Use and Trade**

This species is mainly caught in traps or by spearing; marketed fresh (Woodland 2001). It is opportunistically harvested by spearfishers in Palau (Chavarro et al. 2012).

- **Conservation Action**

There are no known species-specific conservation measures in place; however, it occurs in marine protected areas throughout its range.

I. More Information:

1) Stocks

(NA)

2) Ecology

### Ecology of *Siganus punctatus*

<b>Main Ref.</b>	<a href="#">Woodland, D.J., 1990</a>					
<b>Distribution</b>	Brackishwater <ul style="list-style-type: none"> <li><b>estuaries/lagoons/brackish seas</b></li> </ul> Highlighted items on the list are where <i>Siganus punctatus</i> may be found.					
<b>Remarks</b>	Fish of 20 cm SL & larger live more often in pairs. Pairing observed in fish as small as 15 cm SL; but may school with about 50 individuals; smaller schools (< 5) of very small juveniles have been seen. Common along face of drop-offs at the reef edges. Typically, it grows to a larger size than other siganids (Ref. 1419).					
	Substrate					
<b>Special habitats</b>	<b>Beds: sea grass; Coral Reefs;</b>					
<b>Special habitats Ref.</b>	<a href="#">Unsworth, R.K., L.M. Nordlund and L.C. Cullen-Unsworth, 2018</a>					
	Feeding					
<b>Feeding type</b>	plants/detritus+animals (troph. 2.2-2.79)					
<b>Feeding type ref</b>	<a href="#">Sano, M., M. Shimizu and Y. Nose, 1984</a>					
<b>Feeding habit</b>	grazing on aquatic plants					
<b>Trophic level(s)</b>		<b>Original sample</b>		<b>Unfished population</b>		<b>Remark</b>
	<b>Estimation method</b>	Troph	s.e.	Troph	s.e.	
	<b>From diet composition</b>			2.77	0.08	
	<b>Ref.</b>	<a href="#">Sano, M., M. Shimizu and Y. Nose, 1984</a>				

		<b>From individual food items</b>	2.00	0.00			Trophic level and s.e. inferred from exclusive plant/detritus food items.
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## 3) Diet

Food and Feeding Habits: Diet Composition <i>Siganus punctatus</i>						
n = 1						
Main Food	Percent	Trophic Level (y)	Predator Life Stage	Country	Locality	Ref.
<a href="#">zoobenthos</a>	74	2.8	recruits/juv.	Ryukyu Is.	Minatogawa, Okinawa Is.	<a href="#">6110</a>

## 4) Reproduction

Reproduction of <i>Siganus punctatus</i>	
Main Ref.	<a href="#">Myers, R.F., 1999</a>
Mode	dioecism
Fertilization	external
Mating type	monogamy:
Spawning aggregation	Yes. Ref. <a href="#">SCRFA, Science and Conservation of Fish Aggregations, 2018</a>
Batch spawner	Ref.
Reproductive guild	nonguarders open water/substratum egg scatterers
Parental Care	none
Description of life cycle and mating behavior	Spawn in pairs. Spawning occurs around either new or full moons or both (Ref. 37816).
Search for more references on reproduction	<a href="#">Scirus</a>

## 5) Maturity

Maturity studies for <i>Siganus punctatus</i>
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n = 1

Sort  
by  Lm  Country  Locality  tm

Lm (cm)	Length (cm)	Age range (y)	tm (y)	Sex of fish	Country	Locality
	24.0	-	-	<a href="#">unsexed</a>		Asia-Pacific Region

## 6) Spawning

(NA)

## 7) Spawning aggregation

**Spawning Aggregations of *Siganus punctatus***  
[ n = 1 ]

Country	Spawning type	Aggregation type	Status
<a href="#">Solomon Is.</a>	Unknown	Unknown	Unknown

## 8) Fecundity

(NA)

## 9) Eggs

(NA)

## 10) Egg development

(NA)

## 11) Age/Size

**List of Population Characteristics records for *Siganus punctatus***  
n = 3

Sex	Wmax	Lmax (cm)	Tmax (y)	Country	Locality
<a href="#">unsexed</a>		40			Asia-Pacific Region
<a href="#">unsexed</a>		40		Global	East Indies
<a href="#">unsexed</a>		40		Global	Not specified

## 12) Growth

(NA)

13) Length-weight

Length-Weight Parameters for <i>Siganus punctatus</i>												
<a href="#">Length-weight (log a vs b) graph</a>										[n=5]		
										<a href="#">Hide graph</a>		
Sort by <input type="radio"/> a <input checked="" type="radio"/> b <input type="radio"/> Country <input type="radio"/> Locality												
Score	a	b	Doubtful ?	Sex	Length (cm)	Length type	r <sup>2</sup>	SD b	SD log <sub>10</sub> a	n	Country	Locality
0.00	<a href="#">0.01825</a>	3.000		unsexed	21.0 - 21.0	TL				1		
0.00	<a href="#">0.03440</a>	3.000	Yes	unsexed		SL				1		
0.95	<a href="#">0.01990</a>	3.070		unsexed	16.1 - 32.0	FL	0.950	0.030	0.0484	1408	Guam	2009-2013
1.00	<a href="#">0.02060</a>	3.207		unsexed	4.0 - 29.0	SL	0.999	0.064	0.0708	18	Philippines	Davao Gulf / 2009-2012
0.99	<a href="#">0.00949</a>	3.276		mixed	10.0 - 36.5	FL	0.988			27	New Caledonia	

14) Length-length

Length-length Parameters for <i>Siganus punctatus</i>						
[n=3]						
Unknown length	a	b	Known length	r	Length range (cm)	Sex of fish
<a href="#">SL</a>	0.000	0.800	TL		41.1 - 41.1	unsexed
<a href="#">SL</a>	0.000	0.810	TL		21 - 21	unsexed
<a href="#">TL</a>	-0.941	1.380	SL	0.997	4 - 29	unsexed

15) Length-frequencies

(NA)

16) Morphometrics

Morphometric Data for <i>Siganus punctatus</i>
n = 1



Picture Name	Length		Lifestage	Aspect ratio
<a href="#">Sipun_u2.jpg</a>	24.8	SL	unsexed	2.91
Picture Used	Sipun_u2.jpg			
Size (cm)	24.8 SL			
Sex	unsexed			
Total length (TL)	502 pixels			
Standard length	85.3 % TL			
Fork length	91.6 % TL			
Pre-anal length	48.0 % TL			
Pre-dorsal length	21.3 % TL			
Pre-pelvic length	24.5 % TL			
Pre-pectoral length	19.9 % TL			
Body depth	40.6 % TL			
Head length (HL)	20.7 % TL			
Eye diameter	33.7 % HL			
Pre-orbital length	37.5 % HL			
Aspect ratio of caudal fin	2.90689			

## 17) Morphology

<b>Morphology Data of <i>Siganus punctatus</i></b>	
<a href="#">Identification keys</a>	
<a href="#">Abnormalities</a>	
Main Ref.	<a href="#">Woodland, D.J., 1990</a>
Appearance refers to	Male; Female
Descriptive characteristics of juvenile and adult	
Striking features	none
Body shape lateral	short and / or deep
Cross section	compressed
Dorsal head profile	more or less straight
Type of eyes	more or less normal
Type of mouth/snout	more or less normal
Position of mouth	terminal
Type of scales	cycloid scales
Diagnosis	Color pattern changes with age; iris silver with 8-10 orange spots. Juveniles with a deep brown patch straddling the lateral line; the

	spot becoming obscured with increase in size. Stout, venomous spines not so pungent. Preopercular angle 87°-105°. Strong scales fully cover the cheeks. Midline of thorax scaled but not pelvic ridges.
Meristic characteristics of <i>Siganus punctatus</i>	
Lateral Lines	1 Interrupted: No
Scale rows above lateral line	23 - 27
Barbels	0
on lower limb	18 - 22
on upper limb	4 - 5
total	22 - 27
preanal	10 - 10
total	13 - 13
Fins	
Dorsal fin(s)	
Attributes	extending over most of the back length
Fins number	1
Finlets No.	Dorsal 0 - 0
	Ventral 0 - 0
Spines total	13 - 13
Soft-rays total	10 - 10
Adipose fin	absent
Caudal fin	
Attributes	forked; more or less normal
Anal fin(s)	
Fins number	1
Spines total	7 - 7
Soft-rays total	9 - 9
Paired fins	
Pectoral	Attributes more or less normal
	Spines 0
	Soft-rays 16 - 17
Pelvics	Attributes more or less normal
	Position thoracic behind origin of D1
	Spines 1
	Soft-rays 5 - 5

## 18) Larvae

Larvae Information Summary for *Siganus punctatus*

<b>Main Ref:</b>	<a href="#">Alcala, A.C. and A.S. Cabanban 1986</a>
	Yolk-sac larvae
<b>Place of development</b>	planktonic
<b>Larval area</b>	coastal zone

## 19) Recruitment

(NA)

## 20) Abundance

(NA)

## References

1. Woodland, D.J., 1990. Revision of the fish family Siganidae with descriptions of two new species and comments on distribution and biology. *Indo-Pac. Fish.* (19):136 p. (Ref. [1419](#))
2. Chavarro, S.B., Mumby, P.J. and Golbuu, Y., 2012. Changes in the spear fishery of herbivores associated with closed grouper season in Palau, Micronesia. *Animal Conservation* 17: 133–143.
3. Heenan, A., Ayotte, P., Gray, A., Lino, K., McCoy, K., Zamzow, J. and Williams, I. 2014. Ecological monitoring 2012–2013—reef fishes and benthic habitats of the main Hawaiian Islands, American Samoa, and Pacific Remote Island Areas. Pacific Reef Assessment and Monitoring Program. NOAA Pacific Islands Fisheries Science Center.
4. IUCN. 2016. The IUCN Red List of Threatened Species. Version 2016-3. Available at: [www.iucnredlist.org](http://www.iucnredlist.org). (Accessed: 07 December 2016).
5. IUCN. 2017. The IUCN Red List of Threatened Species. Version 2017-1. Available at: [www.iucnredlist.org](http://www.iucnredlist.org). (Accessed: 27 April 2017).
6. Myers, R.F. 1989. *Micronesian Reef Fishes: A practical Guide to the identification of the Coral Reef Fishes of the Tropical Central and Western Pacific*. Coral Graphics, Barrigada, Guam.
7. Woodland, D. 2001. Siganidae. Rabbitfishes (spinefoots). In: Carpenter, K.E. and Niem, V. (eds), *FAO species identification guide for fishery purposes. The living marine resources of the Western Central Pacific. Vol. 6. Bony fishes part 4 (Labridae to Latimeriidae), estuarine crocodiles, sea turtles, sea snakes and marine mammals.*, pp. 3627-3650. Food and Agriculture Organization of the United Nations, Rome.