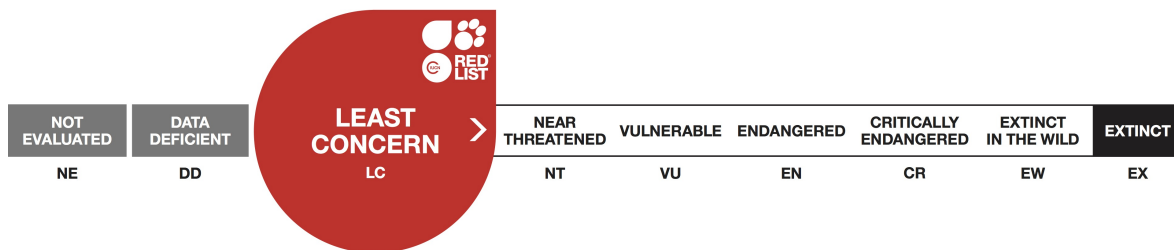


Epinephelus areolatus, Areolate Grouper

Assessment by: Nair, R. & To, A.



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Taxonomy

Kingdom	Phylum	Class	Order	Family
Animalia	Chordata	Actinopterygii	Perciformes	Epinephelidae

Taxon Name: *Epinephelus areolatus* (Forsskål, 1775)

Synonym(s):

- *Bodianus melanurus* Geoffroy Saint-Hillaire, 1817
- *Epinephelus angularis* (Valenciennes, 1828)
- *Epinephelus areolatus* Forsskal, 1775
- *Epinephelus chlorostigma* (non Valenciennes, 1828)
- *Epinephelus craspedurus* Jordan & Richardson, 1910
- *Epinephelus waandersii* Bleeker, 1859
- *Perca areolata* Forsskal, 1775
- *Serranus celebicus* Bleeker, 1851
- *Serranus glaucus* Day, 1871
- *Serranus waandersii* Bleeker, 1859

Regional Assessments:

- Persian Gulf

Common Name(s):

- English: Areolate Grouper, Areolated Grouper, Areolate Rock Cod, Flat-tail Cod, Green-spotted Rock Cod, Grouper, Spotted Grouper, Squartail Rockcod, Squartail Rock Cod, Yellow-spotted Rockcod, Yellow-spotted Rock-cod
- French: Merou Areole, Vieille Maconde
- Spanish: Mero Areolado

Assessment Information

Red List Category & Criteria: Least Concern [ver 3.1](#)

Year Published: 2018

Date Assessed: November 25, 2016

Justification:

This widely distributed species inhabits soft and hard bottom habitat and is generally regarded to be relatively common. It is captured in grouper fisheries in some localities and there are concerns for possible overfishing in Japan, Abu Dhabi, Hong Kong and Indonesia. Quantified declines have not yet been detected within the limited data that are available. Given that fishing is not known to be driving global-level declines at this time, it is listed as Least Concern. Improved monitoring and management of fisheries is strongly recommended, and research on life history would be beneficial.

Previously Published Red List Assessments

2008 – Least Concern (LC)

<http://dx.doi.org/10.2305/IUCN.UK.2008.RLTS.T132774A3447992.en>

Geographic Range

Range Description:

This species is widespread in the Indo-Pacific from the Red Sea and the Persian Gulf to Natal (South Africa), east to Fiji, north to Japan and south to the Arafura Sea (Russell and Houston 1989) and northern Australia. It has also been recorded from Tonga (Randall *et al.* 2003). It is apparently absent from Micronesia, Polynesia and most islands of the western Indian Ocean (Randall and Heemstra 1991). Its depth range is two to 200 metres.

Localities:

Australia (Queensland, Northern Territory, Western Australia), Bahrain, Cambodia, China (Fujian, Guangdong, Guangdong–Hainan, Guangxi, Shanghai, Zhejiang), Cook Islands, Djibouti, Egypt, Eritrea, Fiji, Hong Kong, India (Andaman Island, Nicobar Island, Goa, Karaikal, Karnataka, Kerala, Lakshadweep, Maharashtra, Mahé, Pondicherry, Tamil Nadu, Tripura), Indonesia (Bali, Java, Kalimantan, Lesser Sunda Islands, Moluccas, Papua, Sulawesi, Sumatra), Iraq, Iran, Israel, Japan (Kyushu, Ogasawara-shoto, Ryukyu Islands, Shikoku), Jordan, Kenya, Kuwait, Malaysia (Peninsular Malaysia, Sabah, Sarawak), Maldives, Mozambique, New Caledonia, Oman, Pakistan, Papua New Guinea (Bismarck Archipelago North Solomons), Philippines, Qatar, Saudi Arabia, Seychelles, Singapore, Somalia, South Africa (KwaZulu-Natal), Sri Lanka, Sudan, Taiwan, Tanzania, Thailand, Tonga, United Arab Emirates, Viet Nam, and Yemen.

Country Occurrence:

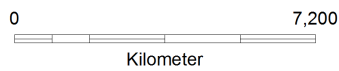
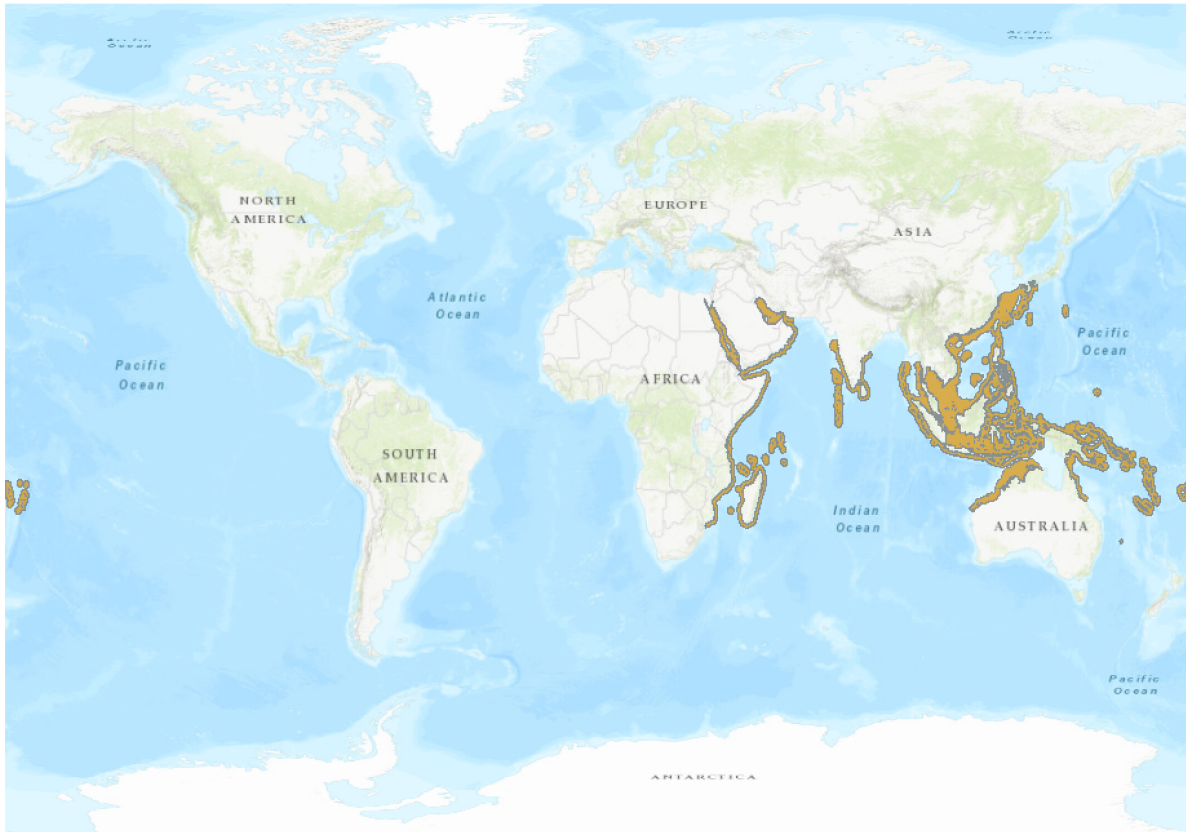
Native: Australia; Bahrain; Brunei Darussalam; Cambodia; China; Comoros; Disputed Territory (Paracel Is., Spratly Is.); Djibouti; Egypt; Eritrea; Fiji; French Southern Territories (Mozambique Channel Is.); Hong Kong; India; Indonesia; Iran, Islamic Republic of; Iraq; Israel; Japan; Jordan; Kenya; Korea, Republic of; Kuwait; Macao; Madagascar; Malaysia; Maldives; Mauritius; Mayotte; Micronesia, Federated States of; Mozambique; Myanmar; New Caledonia; Oman; Papua New Guinea; Philippines; Qatar; Saudi Arabia; Seychelles; Singapore; Solomon Islands; Somalia; Sri Lanka; Sudan; Taiwan, Province of China; Tanzania, United Republic of; Thailand; Timor-Leste; United Arab Emirates; Vanuatu; Viet Nam; Yemen

FAO Marine Fishing Areas:

Native: Indian Ocean - western, Indian Ocean - eastern, Pacific - western central, Pacific - northwest, Pacific - eastern central, Pacific - southwest

Distribution Map

Epinephelus areolatus



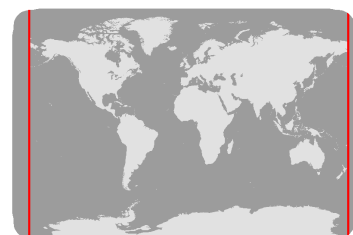
Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, © OpenStreetMap contributors, and the GIS User Community

Range

Extant (resident)

Compiled by:

IUCN Grouper and Wrasse Specialist Group



The boundaries and names shown and the designations used on this map do not imply any official endorsement, acceptance or opinion by IUCN.



Population

This species is widespread and reasonably common in some areas. Population data are limited in many parts of its range. It is likely declining where trawl fisheries are highly active.

Hong Kong: In the 1960s, the common size of this species in the Hong Kong market was about 35 cm total length (Chan 1968). In the Port Survey conducted by the AFCD with fishermen in 1996/1997, the estimated annual catch of this species by weight was 1 metric ton in Hong Kong waters (AFCD 1998). This species was considered commonly taken in the past, but has become rarer over time (Sadovy and Cornish 2000). A Hong Kong market survey conducted from 2004 to 2006 recorded 13 wild caught individuals of this species, 52% of which were immature and it ranked 13th by number amongst other grouper species (To 2009, To and Sadovy de Mitcheson 2009). The size of fish declined by 19 to 41% over about 40 years, which may indicate overfishing. A survey conducted from 2012 to 2013 in Hong Kong restaurants and wet markets recorded 99 individuals of this species, which represented about 0.4% of all groupers surveyed (including farmed and wild caught individuals) in terms of number, and 63% were found to be immature (Lam 2013). There is no long-term species-specific landings data for this species in Hong Kong. An underwater survey conducted in coral areas and rocky reefs and adjacent areas in Hong Kong from 2014 to 2016 recorded this species only once (n=187 surveys; Shea and Ho 2016). However, this species occurs in areas that were not sufficiently surveyed such as silty sand bottoms in deeper waters, and its absence in shallow reef surveys should be interpreted with caution.

Japan: Landings of this species in the Yaeyama Islands of Japan was 280, 53 and 56 kg respectively for 2005, 2006 and 2007, and the number of individuals landed during these years were 624, 135 and 103 (Ohta 2008). The stock of this species is very likely to be declining (K. Hoshino pers. comm. 2016). From 2008 to 2013, landings of this species at Fukue Fish Market, Goto Island increased from about 500 kg in 2008, peaked at 2,000 kg in 2011 and then was stable from 1,300 – 1,400 kg in 2012 and 2013 (Nakagawa 2014). The average weight of individuals of this species landed at the Goto Island port was around 1 kg per fish from 2008 to 2010, then weight per fish slightly increased in 2011 and 2012. During this time period, local fishing effort and number of fishermen did not increase (Nakagawa 2014, K. Hoshino pers. comm. 2016). There is a lack of long-term species-specific landings data for this species in Japan.

Persian Gulf, Abu Dhabi and Oman: Aggregate FAO RECOFI landings of this species in the Persian Gulf increased from 306 in 2000 to 473 tonnes in 2011. It was consistently recorded in the Abu Dhabi fishery from 2001-2012. In 2005, it was separated from the aggregated serranid landings (1.2 mt in the fishery). Landings declined from 1.2 tonnes in 2005 to 0.4 tonnes in 2012, which represents about a 67% decline over eight years. This species has typically been only a very minor component of the serranid catch in the UAE. It is occasionally found in markets (i.e., not directly targeted) elsewhere in the Persian Gulf. This species may be extensively fished in Oman and the Arabian Sea by the line fishery and trawling, and there are concerns for impacts on the population from high fishing pressure (J. McIlwain unpublished data).

India: Fisheries surveys conducted from 2010 to 2011 in Kerala, India reported that this was an 'abundant' species captured in the seamount fishery off the west coast, and the size range of the fish was 22 to 32 cm (Bineesh *et al.* 2014). A survey conducted from 2009 - 2011 in fish landing centres of Visakhapatnam reported that the common size of this species in the commercial catches was 19 to 21 cm total length (n = 81) (Kandula *et al.* 2015).

Indonesia: This species is caught in the deep water demersal multi-species fisheries in eastern

Indonesia, and from 2014 to 2016 at least 90% of the individuals ($n = 13,112$) were mature. This fishery does not target immature size classes of this species (Mous and Pet 2016). Mega-spawners accounted for about 9% of the catch by number for this species. Although this fishery is not known to be causing overfishing of this species, there is substantial risk for overfishing due to the unsustainable harvest of mega spawners (Mous and Pet 2016). In Buton (eastern Indonesia), underwater surveys conducted in 2006 and 2007 recorded 4 and 8 individuals of this species per hectare, respectively. In Kalmas in 2010, the density of this species was 2 fish per hectare and in Sibolga (western Indonesia) surveys reported 4.4 fish per hectare in 2008 (S. Suharti pers. comm. 2016). It was not recorded in other surveys conducted from 2004 to 2013 in many other localities, but this may be due to the lack of survey effort in deeper and silty sand bottoms.

East Africa: A market survey conducted in 2007 at three beaches in southern Kenya where there is high artisanal fishing effort reported that this species comprised less than 1% of all grouper catches (in terms of number of fish) (Agembe *et al.* 2010). This species represents 0.5 to 1% of the total catch in the small-scale industrial and commercial line and trap fisheries of Mozambique (Maputo unpublished data). This is the 2nd most commonly landed serranid in commercial fisheries of Djibouti (Darar 1994). Underwater surveys conducted from 2010 to 2015 at 52 sites across Tanzania, Mozambique and Djibouti recorded only a single sighting of this species (M. Samoilys unpublished data 2016).

Maldives: The grouper fishery in the Maldives in 2010 reported a shift in size distribution for some of the most commonly exploited species to smaller size classes, and a significant decrease in mean lengths for the most common species in comparison to a similar study conducted around the year 2005 (Sattar and Adams 2005, Sattar *et al.* 2011). Many landed grouper individuals in the Maldives fishery are immature (Sattar *et al.* 2011) and the length of this species in the export trade during 2003 to 2004 was about 31.8 cm total length ($n=23$; Sattar and Adams 2005).

Australia: This species is captured in the commercial Northern Demersal Scalefish Fishery of Western Australia where it represents about 7% of total finfish catch (in terms of number of fish) and a wide size range of this species was recorded (Newman *et al.* 2001). About 220 – 240 kg of this species were landed in 2014 and 2015 in the commercial Queensland line fishery (State of Queensland 2013). Reef Life Survey data from 2010 to 2015 yielded only a single record of this species from Australia (Edgar and Stuart-Smith 2014). It was not recorded during underwater surveys conducted in the Great Barrier Reef (Pears 2005). **Solomon Islands:** During a survey conducted in the Solomon Islands Honiara fish market in 2015 and 2016, this species comprised about 5% of all groupers in terms of number of fish and about 98% of these individuals were mature (Solomon Islands Ministry of Fisheries and Marine Resources). **New Caledonia:** This is one of the most common grouper species caught by fisheries on soft bottoms in New Caledonia (8% of grouper catch). It is not frequently captured in the handline fishery, but is a major component of serranid longline catch in New Caledonia (Kulbicki *et al.* 2000).

Taiwan: During 10-15 years of underwater observation in a very limited locality in Taiwan, this species was regarded as “occasional” (K-T. Shao pers. comm. 2016).

Pacific oceanic islands: Underwater surveys conducted across 17 Pacific Island countries from 2002 to 2009 rarely recorded this species, and where it was sighted, usually only a single fish was recorded (Pacific Regional Oceanic and Coastal Fisheries Development Programme 2002-2009), but since this species also inhabits non-reef area, these low sightings should be interpreted with caution.

Current Population Trend: Unknown

Habitat and Ecology (see Appendix for additional information)

This continental shelf species is usually found in turbid water in seagrass beds or silty sand bottoms around isolated small rock outcrops, as well as near dead coral or soft coral as deep as 200 metres (Randall and Ben-Tuvia 1983, Leis 1987, Randall and Heemstra 1991). Juveniles are common to depths of 80 m (Kailola *et al.* 1993). It has also been observed on artificial reefs in Hong Kong (AFCD 2001). It feeds on fish and benthic invertebrates, primarily prawns and crabs (Parrish 1987, Randall and Heemstra 1991, Salini *et al.* 1994, Kulbicki *et al.* 2005). Maximum total length is 47 cm and maximum weight is 1.4 kg (Moran *et al.* 1988). The maximum reported age for this species is 15 years (Shapiro 1987), but a study conducted in northern Oman recorded a maximum age of 25 years and total length of 48 cm (J. McIlwain unpublished data). It is thought to spawn during seasonal periods and form spawning aggregations (Shapiro 1987). In New Caledonia, the sex ratio is reported as 1:6 males to females, with a size at maturity of females at 19.5 cm and 29 cm total length for males (IRD database).

Systems: Marine

Use and Trade

This is a commercially valued species in many areas. It is taken with hook and line, traps and trawls (Heemstra and Randall 1993, To 2009). In Hong Kong, it was caught by long-liners and trawlers on mud grounds along the coast and was most abundant in depths between 70 to 90 m (Chan 1968). It is also taken by hook and line and trawl in India (Kandula *et al.* 2015). It is taken as bycatch in prawn trawl fisheries in Northern Territory, Australia (Stobutzki *et al.* 2001, Errity 2003). It is also taken for the live reef fish trade in the Philippines (Pratt *et al.* 2000, Padilla *et al.* 2003).

It is one of the most common species in the mariculture industry of southern China, southeast Asia and the Middle East (Leung *et al.* 1999). Live reef fish import data from the Hong Kong Census and Statistics Department record large quantities of "other groupers" and "other marine fishes" as being imported from Thailand. Thailand and Malaysia are important sources for so-called "cultured" species including *Epinephelus areolatus*/*E. bleekeri*, which are amongst the 12 most commonly available species imported to Hong Kong (<http://www.traffic.org/reef-fish/executivesummary.html>). Fingerlings are wild-caught in Vietnam and Thailand (Sadovy 2000) and no hatcheries are known for this species (Y. Sadovy pers. comm.).

Threats (see Appendix for additional information)

Heavy fishing pressure is a potential threat to this species on a localised level, but this is not known to be driving major declines on a global level at this time.

Conservation Actions (see Appendix for additional information)

This species occurs in marine protected areas that are within its range. The Cape d'Aguilar Marine Reserve of Hong Kong is a no-take area (Cornish 2000). Trawling has been banned in Hong Kong since 2013, which may reduce fishing effort on this species. The trade limit for this species in Indonesia is set at first maturity (25 cm total length; Mous and Pet 2016). In the Maldives there is a size and quota limit for this species in the export trade (Sattar and Adams 2005, Marine Research Centre, Maldives and

Marine Conservation Society 2011). There are size and bag limits for this species in Queensland, Australia (Department of Primary Industries 2003).

Credits

Assessor(s): Nair, R. & To, A.

Reviewer(s): Linardich, C.

**Facilitators(s) and
Compiler(s):** Craig, M.T.

Bibliography

AFCD. 1998. Port Survey 96/97. Fisheries Management Division AFCD, Hong Kong.

AFCD. 2001. *SCUBA Fisheries Assessment of Artificial Reefs Final Report November 2001*. AFCD, Hong Kong.

Agembe, S., Mlewa, C.M. and Arara-Kaunda, B. 2010. Catch composition, abundance and length-weight relationships of groupers (Pisces: Serranidae) from inshore waters of Kenya. *Western Indian Ocean Journal of Marine Science* 9: 91-102.

Bineesh, K.K., Akhilesh, K.V., Abdussamad, E.M. and Prakasan, D. 2014. Seamount associated fishery of south-west coast of India - a preliminary assessment. *Indian Journal of Fisheries* 61(3): 29-34.

Chan, W.L. 1968. *Marine Fishes of Hong Kong Part I*. Hong Kong Government Press, Hong Kong.

Cornish, A.S. 2000. The reef fish species of the Cape d' Aguilar Marine Reserve, Hoi Ha Wan Marine Park, Yan Chau Tong Marine Park and Ping Chau. In: B. Morton (ed.), *The Marine Flora and Fauna of Hong Kong and Southern China V. Proceedings of the Tenth International Marine Biological Workshop: The Marine Flora and Fauna of Hong Kong and Southern China*, Hong Kong, pp. 369-382. Hong Kong.

Darar, A. 1994. An account of fisheries development in the Republic of Djibouti with notes on the growth and mortality of three species of groupers. *Naga: ICLARM Quarterly Newsletter* 17(2): 30-32.

Department of Primary Industries. 2008. Fisheries Regulation 2008 Schedule 2 Regulated fish declarations. Queensland Department of Primary Industries.

Errity, C.M. 2003. A description of the Northern Territories finfish trawl fishery. Fishery Report. Northern Territory Department of Business, Industry and Resource Development, Darwin, Australia.

IUCN. 2018. The IUCN Red List of Threatened Species. Version 2018-2. Available at: www.iucnredlist.org. (Accessed: 15 November 2018).

Kailola, P.J., Williams, M.J., Stewart, P.C., Reichelt, R.E., McNee, A. and Grieve, C. 1993. *Australian fisheries resources*. Bureau of Resource Sciences, Canberra, Australia.

Kandula, S., Shrikanya, K. V. and Iswarya Deepti, V. A. 2015. Species diversity and some aspects of reproductive biology and life history of groupers (Pisces: Serranidae: Epinephelinae) off the central eastern coast of India. *Marine Biology Research* 11(1): 18-33.

Kulbicki, M., Bozec, Y.-M., Labrosse, P., Letourneur, Y., Mou-Tham, G. and Wantiez, L. 2005. Diet composition of carnivorous fishes from coral reef lagoons of New Caledonia. *Aquatic and Living Resources* 18: 231-250.

Kulbicki, M., Labrosse, P. and Letourneur, Y. 2000. Fish stock assessment of the northern New Caledonian lagoons: 2 – Stocks of lagoon bottom and reef-associated fishes. *Aquatic and Living Resources* 13(2): 77-90.

Lam, S.S.T. 2013. Status of Live Reef Fish Trade in the Hong Kong Retail Sector. Unpublished Final Year Project, The University of Hong Kong.

Leis, J.M. (ed.). 1987. Review of the early life history of tropical groupers (Serranidae) and snappers (Lutjanidae). In: Polovina, J.J. and Ralston, S. (eds), *Tropical Snappers and Groupers. Biology and Fisheries Management*, pp. 189-237. Westview Press, Boulder.

Leung, K.M.Y., Chu, J.C.W. and Wu, R.S.S. 1999. Effects of body weight, water temperature and ration size

on ammonia excretion by the areolated grouper (*Epinephelus areolatus*) and mangrove snapper (*Lutjanus argentimaculatus*). *Aquaculture* 170(3): 215-227.

Moran, M., Jenke, J., Burton, C. and Clarke, D. 1988. The Western Australian trap and line fishery on the Northwest Shelf. Final Report. FIRTA Project 86/28. Western Australian Marine Research Laboratories.

Mous, P.J., Pet, J.S. 2016. Length-Based Assessment of Data-Poor Multi-Species Deep Grouper Fisheries in Fisheries Management Areas (WPP) 573, 712, 713, 714, 715 & 718 in Indonesia. *TNC-IFCP Technical Paper. The Nature Conservancy/People and Nature Consulting International*: 79.

Nakagawa, M. 2014. Catch trend of serranid fishes in Fukue Island of Goto Islands from fish market survey. *Yutaka na Umi* 34: 17-20.

Ohta, I. 2008. Current Status of Coral Reef Fish Fisheries in the Yaeyama Islands II. *Project Report, Okinawa Prefectural Fisheries and Marine Research Center* 69: 95-102.

Padilla, J.E., Mamauag, S., Braganza, G., Brucal, N., Yu, D. and Morales, A. 2003. Sustainability assessment of the live reef-fish for food industry in Palawan Philippines.

Parrish, J.D. 1987. The trophic biology of snappers and groupers. In: In: J.J. Polovina and S. Ralston (eds) (eds), *Tropical Snappers and Groupers. Biology and Fisheries Management*, pp. 405-463. Westview Press, Boulder, USA.

Pears, R.J. 2005. Comparative demography and assemblage structure of serranid fishes: implications for conservation and fisheries management. James Cook University.

Pratt, V., Mamauag, S., Alban, J., Parfan, E. and Donaldson, T. 2000. Status Report on the Philippine Live Reef Fish Trade and Strategies to Combat its Destructive Fishing Practices. Report on the Status of Coral Reefs in the Philippines. Marine Science Institute, University of the Philippines, Diliman, Quezon City, Philippines.

Randall, J.E. and Ben-Tuvia, A. 1983. A review of the groupers (Pisces: Serranidae: Epinephelinae) of the Red Sea, with description of a new species of *Cephalopholis*. *Bulletin of Marine Science* 33(2): 373-426.

Randall, J.E. and Heemstra, P.C. 1991. Revision of the Indo-Pacific groupers: (Perciformes: Serranidae: Epinephelinae): with descriptions of five new species. *Indo-Pacific Fishes* 20: 1-332.

Randall, J.E., Williams, J.T., Smith, D.G., Kulbicki, M., Tham, G.M., Labrosse, P., Kronen, M., Clua, E. and Mann, B.S. 2003. Checklist of the shore and epipelagic fishes of Tonga. *Atoll Research Bulletin* 502: 1-37.

Russell, B.C. and Houston, S. 1989. Offshore fishes of the Arafura Sea. *Beagle* 6(1): 69-84.

Sadovy, Y. 2000. Regional survey for fry/fingerling supply and current practices for grouper mariculture: evaluating current status and long-term prospects for grouper mariculture in South East Asia.

Sadovy, Y. and Cornish, A.S. 2000. *Reef Fishes of Hong Kong*. Hong Kong University Press, Hong Kong.

Salini, J.P., Blaber, S.J. and Brewer, D.T. 1994. Diets of trawled predatory fish of the Gulf of Carpentaria, Australia, with particular reference to predation on prawns. *Australian Journal of Freshwater Research* 45(3): 397-411.

Sattar, S.A., Najeeb, A., Afzal, M.S., Islam, F. and Wood, E. 2011. Review of the Maldivian Grouper Fishery and Export Industry.

Shapiro, D.Y. 1987. Reproduction in groupers. In: J.J. Polovina and S. Ralston (eds), *Tropical Snappers and Groupers. Biology and Fisheries Management*, pp. 295-327. Westview Press, London.

Shea, K.H.S. and Ho, K.Y. 2016. Rapid survey on the species composition and spatial patterns of reef fishes associated with shallow coral communities, rocky reefs and adjacent areas in Hong Kong waters 2016 – 2017. Unpublished report submitted to the Swire Group Charitable Trust.

Stobutzki, I., Miller, M. and Brewer, D. 2001. Sustainability of fishery bycatch: a process for assessing highly diverse and numerous bycatch. *Environmental Conservation* 28: 167-181.

To, A.W.L. and Sadovy de Mitcheson, Y. 2009. Shrinking baseline: the growth in juvenile fisheries, with the Hong Kong grouper fishery as a case study. *Fish and Fisheries* 10(4): 396-407.

To, W.L. 2009. The Biology, Fisheries of Groupers (Family: Serranidae) in Hong Kong and Adjacent Waters, and Implications for Management. PhD Thesis, The University of Hong Kong.

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External Resources

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Appendix

Habitats

(<http://www.iucnredlist.org/technical-documents/classification-schemes>)

Habitat	Season	Suitability	Major Importance?
9. Marine Neritic -> 9.2. Marine Neritic - Subtidal Rock and Rocky Reefs	Resident	Suitable	Yes
9. Marine Neritic -> 9.4. Marine Neritic - Subtidal Sandy	Resident	Suitable	Yes
9. Marine Neritic -> 9.5. Marine Neritic - Subtidal Sandy-Mud	Resident	Suitable	Yes
9. Marine Neritic -> 9.6. Marine Neritic - Subtidal Muddy	Resident	Suitable	Yes
9. Marine Neritic -> 9.9. Marine Neritic - Seagrass (Submerged)	Resident	Suitable	Yes
15. Artificial/Aquatic & Marine -> 15.11. Artificial/Marine - Marine Anthropogenic Structures	Resident	Suitable	Yes

Threats

(<http://www.iucnredlist.org/technical-documents/classification-schemes>)

Threat	Timing	Scope	Severity	Impact Score
5. Biological resource use -> 5.4. Fishing & harvesting aquatic resources -> 5.4.1. Intentional use: (subsistence/small scale) [harvest]	Ongoing	Unknown	Unknown	Unknown
	Stresses:	2. Species Stresses -> 2.1. Species mortality		
5. Biological resource use -> 5.4. Fishing & harvesting aquatic resources -> 5.4.2. Intentional use: (large scale) [harvest]	Ongoing	Unknown	Unknown	Unknown
	Stresses:	2. Species Stresses -> 2.1. Species mortality		

Conservation Actions in Place

(<http://www.iucnredlist.org/technical-documents/classification-schemes>)

Conservation Actions in Place
In-Place Land/Water Protection and Management
Occur in at least one PA: Yes

Conservation Actions Needed

(<http://www.iucnredlist.org/technical-documents/classification-schemes>)

Conservation Actions Needed
3. Species management -> 3.1. Species management -> 3.1.1. Harvest management

Research Needed

(<http://www.iucnredlist.org/technical-documents/classification-schemes>)

Research Needed
1. Research -> 1.2. Population size, distribution & trends
1. Research -> 1.3. Life history & ecology
1. Research -> 1.5. Threats
1. Research -> 1.6. Actions
3. Monitoring -> 3.1. Population trends

Additional Data Fields

Distribution
Lower depth limit (m): 200
Upper depth limit (m): 2
Population
Population severely fragmented: No

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