

Second record of goblin shark *Mitsukurina owstoni* (Lamniformes: Mitsukurinidae) in Indonesian waters

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Abstract

Four specimens goblin sharks *Mitsukurina owstoni* Jordan, 1898 with range between c. 150-200 cm of total length were landed and documented on 4 April 2019 at Rigaih fish market, Lhok Timon village, Setia Bakti subdistrict, Aceh Jaya district, Aceh province, Indonesia. This finding is constitute a second record of *M. owstoni* in Indonesian waters, after a previous record on 20 March 2009 in Pelabuhan Ratu, West Java.

Key words: *Mitsukurina owstoni*, goblin shark, Aceh, Sumatra, Indonesia.

Introduction

Goblin shark or Family Mitsukurinidae is small family containing only single species (*Mitsukurina owstoni* Jordan, 1898) that patchily distributed in Atlantic, Western Indian ocean and Pacific (Compagno 2001; Ebert *et al.* 2013). The goblin shark *M. owstoni* is a large mysterious shark with a bizzare head, very elongated snout forming a flat, blade-like rostrum, small eyes, an elongate, asymmetrical caudal fin without a ventral lobe, partly exposed gill filaments, short rounded fins (except caudal fin), and highly prostrusile jaws with long, slender, awl-like teeth (Last & Stevens 1994; Yano *et al.* 2007). Although *M. owstoni* is considered rare in most places when they have been reported, because they are only a very occasional bycatch of deepwater fisheries, they seem likely to be widely distributed and there is nothing to infer any population decline (Ebert *et al.* 2013; Finucci & Duffy 2018).

The *M. owstoni* is one of rare and poorly known species because of the difficulty in accessing its deep water habitat and the resulting infrequency of encounters with humans (Compagno 2001; Nakaya *et al.* 2016). Due to this reason, it is clear why *M. owstoni* usually overlooked along its potential distribution range. A recent incidental caught of *M. owstoni* has been recognized from Aceh Province, northern Sumatra. This record is constitute second record of *M. owstoni* in Indonesia after first record from Pelabuhan Ratu, West Java (Fahmi 2007). This species has not been recorded in Southeast Asian waters of the neighboring countries of Indonesia (Arunrugstichai *et al.* 2018; Finucci & Duffy 2018; Arai & Azri 2019; Krajangdara 2019, Wildsingapore 2019), but it has been found in Australia and New Zealand (Last & Stevens 1994; Duffy 1997).

Materials and Methods

Four specimens of *M. owstoni* (c. 150-200 cm of total length) was caught and landed on 4 April 2019, at Rigaih fish market, Lhok Timon village, Setia Bakti subdistrict, Aceh Jaya district, Aceh province, Indonesia (04°41'15"N, 95°31'50"E) (Fig. 1). Not long after landed in fish market, all of these sharks are bought by local people, so all specimens are unable to preserved for scientific purpose. Information of meristic and morphometrics were undocumented, but specific characters of the sharks are seen clearly from photos taken. Two of them are male, based on the seen claspers on ventral side. Identification of these sharks are therefore based on the characters that seen in available photographs. Estimated proportional morphometric features of *M. owstoni* presented as percentage of total length based on seen characters in the photographs shown in Table 1. The occurrence of *M. owstoni* from Aceh province was reported by some medias (Booth & Ichsan 2019; Fajar 2019). This information has also been posted in inaturalist.nz, but with an uncorrect location in the map (stated in Banda Aceh, capital city of Aceh province, not Aceh Jaya district) (https://inaturalist.nz/observations?place_id=31686&taxon_id=105913).

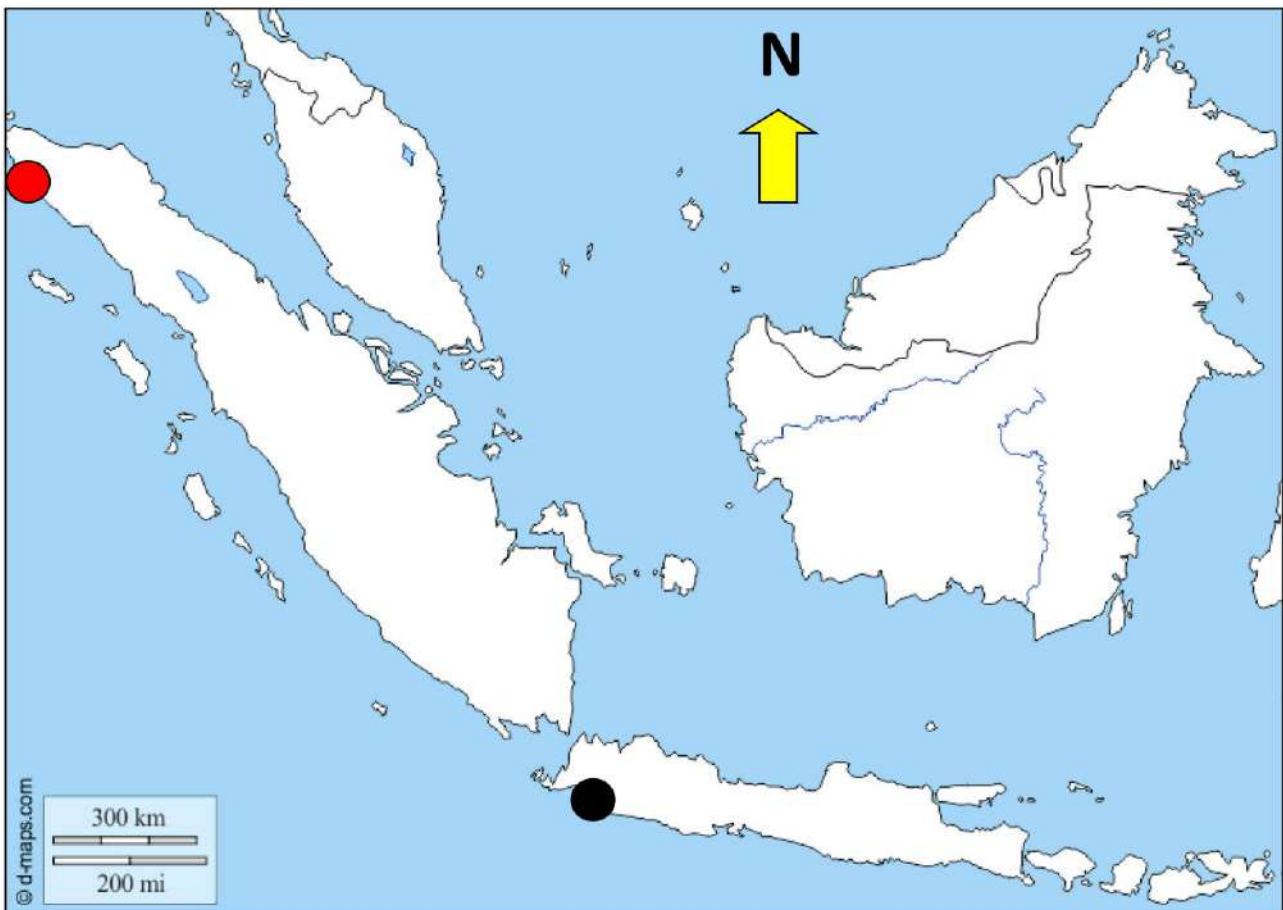


Figure 1. Map of *M. owstoni* records in Indonesia. Red circle is recent *M. owstoni* found in Aceh province, and black circle is previous record in Pelabuhan Ratu, West Java province.

Results and Discussions

The sharks caught on 4 April 2020 from Aceh province has distinct characters of unmistakable flat elongated snout, protrusible jaws, long-cusped slender teeth, short rounded fins except long tail fin (Figs. 2 and 3). These characters are specific characters of *M. owstoni* compare to other shark guides (Last & Stevens 1994; Compagno 2001, Compagno *et al.* 2005; Ebert *et al.* 2013). The unique characters of *M. owstoni* and supported with its diet suggest that this shark is a sluggish mesopelagic species (Duffy 1997).



Figure 2. Four *M. owstoni* landed on 4 April 2019 at Rigaih fish market, Lhok Timon village, Setia Bakti subdistrict, Aceh Jaya district, Aceh province (Photo: Jafar).



Figure 3. Distinct head pattern of *M. owstoni* landed on 4 April 2019 in at Rigaih fish market, Lhok Timon village, Setia Bakti subdistrict, Aceh Jaya district, Aceh province (Photo: Jafar).

Table 1. Estimated proportional morphometric features of *M. owstoni* presented as percentage of total length based on seen characters in the photographs. G1 = Goblin shark specimens from Aceh, G2 = Goblin shark specimen Pelabuhan Ratu, West Java (Fahmi 2017).

Characters	G1	G2
Snout to mouth (protruded)	5	5.5
Snout to mouth (to upper lip)	10	10.1
Snout to eye	12	13
Snout to pectoral-fin origin	29	26.4
Snout to first dorsal-fin origin	35	33.2
Pectoral fin base	4	4
First dorsal-fin base	6	6.1
Second dorsal-fin base	5	5
Pelvic-fin length	10	9.8
Anal-fin length	10	9.9

The *M. owstoni* is wide ranging species of sharks but rarely caught because they inhabit deepwater sea habitat, mainly reported from 270-960 m, to at least 1.300 m, and very rarely at the surface or 95-137 m (Shimada & Seigel 2005; Ebert *et al.* 2013). Although the range of *M. owstoni* has been known but regional localities not been fully mapped (eg. Parsons *et al.* 2002; Prokofiev & Kukuev 2009; Rincon *et al.* 2014; Driggers *et al.* 2014; Orlov *et al.* 2017).

The presence of *M. owstoni* in Aceh province is a second record of this deepwater shark in Indonesia. Previously known species from Indonesia reported from a specimen collected on 20 March 2009 in Pelabuhan Ratu, West Java (Fahmi 2017). *Mitsukurina owstoni* in Pelabuhan Ratu was caught in deepwater fish longline targetting squaloid sharks off southwest off Java at about 200 m depth. The lacking of *M. owstoni* records in Indonesian waters could be a combination of rarely caught of this shark from deepwater and limited local ichthyologists to determine a good documentation. New additional distribution records of sharks and elasmobranchs have been reported recently from Indonesian waters (Iqbal & Yustian 2016; Iqbal *et al.* 2019a, b, c; Windusari *et al.* 2019). More data is needed to learn better understanding of distributional localities of *M. owstoni* in Indonesian waters, and to determine probably some threats of its populations in the future. Northwest Sumatra and southwest off Java waters, two locations known of *M. owstoni* in Indonesian waters are part of *Sunda Trench* where depth variation is about 200-600 m (Raghuram *et al.* 2018). This deepwater habitat is an ideal and potential habitat of *M. owstoni*.

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References

- Arai T, Azri A (2019) Diversity, occurrence and conservation of sharks in the southern South China Sea. *PLoS ONE*, 14(3), e0213864. <https://doi.org/10.1371/journal.pone.0213864>
- Arunrugstichai, S., True, J.D. & White, W.T. (2018) Catch composition and aspects of the biology of sharks caught by Thai commercial fisheries in the Andaman Sea. *Journal of Fish Biology*, 92(5), 1487-1504.
- Booth, H. & Ichsan, M. (2019) *Indonesia's first record of 'living fossil': The Goblin shark*. Available from: <https://medium.com/wcs-marine-conservation-program/indonesias-first-record-of-living-fossil-the-goblin-shark-38a9a666142a> (13 April 2020).

- Compagno, L.J.V. (2001) *Sharks of the world. An annotated and illustrated catalogue of shark species known to date. Volume 2. Bullhead, mackerel and carpet sharks (Heterodontiformes, Lamniformes and Orectolobiformes)*. FAO Species Catalogue for Fishery Purposes. No. 1, Vol. 2. FAO, Rome, 269 p.
- Compagno, L., Dando, M. & Fowler, S. (2005) *A field guide to the sharks of the world*. Princeton University Press, New Jersey, 368 p.
- Duffy, C.A. (1997) Further records of the Goblin shark, *Mitsukurina owstoni* (Lamniformes: Mitsukurinidae), from New Zealand. *New Zealand Journal of Zoology*, 24(2), 167-171.
- Ebert, D., Fowler, S. & Compagno, L. (2013) *Sharks of the world, a fully illustrated guide*. Wild Nature Press, Plymouth, 528 p.
- Fahmi. (2017) Notes on the record of Goblin shark (*Mitsukurina owstoni* Jordan, 1898) from Indonesia. *Marine Research Indonesia*, 42(2), 59-65.
- Fajar, J. (2019) Pertama kali di Indonesia, ditemukan hiu 'living fossil' Goblin di Aceh. Available from: <https://www.mongabay.co.id/2019/08/07/pertama-kali-di-indonesia-ditemukan-hiu-living-fossil-goblin-di-aceh/> (13 April 2020) [in Indonesian].
- Finucci, B. & Duffy, C.A.J. (2018) *Mitsukurina owstoni*. *The IUCN red list of threatened species 2018*: e.T44565A2994832. <https://dx.doi.org/10.2305/IUCN.UK.2018-2.RLTS.T44565A2994832.en>. Downloaded on 13 April 2020.
- Iqbal, M., Nurnawati, E., Setiawan, A., Dahlan, Z. & Yustian, I. (2019) First photographic inland records of bull shark *Carcharhinus leucas* (Carcharhiniformes: Carcharhinidae) in Sumatran waters, Indonesia. *Ecologica Montenegrina*, 22, 171-176.
- Iqbal, M., Saputra, R.F., Setiawan, A. & Yustian, I. (2019) First photographic inland record of blacktip reef sharks *Carcharhinus melanopterus* (Carcharhiniformes: Carcharhinidae) in Indonesian waters. *Ecologica Montenegrina*, 24, 6-10.
- Iqbal, M., Setiawan, A. & Yustian, I. (2019) First inland record of bull shark *Carcharhinus leucas* (Carcharhiniformes: Carcharhinidae) in Indonesian Borneo. *Ecologica Montenegrina*, 24, 52-57.
- Iqbal, M. & Yustian, I. (2016) Occurrence of the giant freshwater stingray *Urogymnus polylepis* in Sumatra, Indonesia (Chondrichthyes: Dasyatidae). *Ichthyological Exploration of Freshwaters*, 27, 333–336.
- Krajangdara, T. (2019). *Sharks and rays of Thailand*. Department of Fisheries, Bangkok, 21 p.
- Last, P.R. & Stevens, J.D. (1994) *Sharks and rays of Australia*. CSIRO, Australia. 513 p.
- Moyle, P.B. & Cech, J.J. (2004) *Fishes, an introduction to ichthyology*. Prentice Hall, Upper Saddle River, 726 p.
- Nakaya, K., Tomita, T., Suda, K., Sato, K., Ogimoto, K., Chappell, A., Sato, T., Takano, K. & Yuki, Y. (2016) Slingshot feeding of the goblin shark *Mitsukurina owstoni* (Pisces: Lamniformes: Mitsukurinidae). *Scientific Reports*, 6(27786). <https://doi.org/10.1038/srep27786>
- Nelson, J.S., Terry, C., Grande, T.C. & Wilson, M.V.H. (2016) *Fishes of the world*. John Wiley and Sons, Hoboken, 752 pp.
- Parsons, G.R., Ingram, G.W. & Havard, R. (2002) First record of the Goblin shark *Mitsukurina owstoni*, Jordan (Family Mitsukurinidae) in the Gulf of Mexico. *Southeastern Naturalist*, 1(2), 189–192.
- Prokofiev, A.M. & Kukuev, E.I. (2009) New findings of rare fish species from the families Mitsukurinidae (Chondrichthyes), Muraenidae, Lophiidae, Macrouridae, and Psychrolutidae (Teleostei) on raises of the Atlantic Ocean with a description of *Gymnothorax walvisensis*. *Journal of Ichthyology*, 49, 215–277.
- Raghuram, G., Capitanio, F.A. & Radhakrishna, M. (2018) Flexural Analysis Along the Sunda Trench: Bending, Buckling and Plate Coupling. *Tectonics* 37(10): 3524-3544.
- Rincon, G., Vaske, T. & Gadig, O.B.F. (2012) Record of the Goblin shark *Mitsukurina owstoni* (Chondrichthyes: Lamniformes: Mitsukurinidae) from the south-western Atlantic. *Marine Biodiversity Records*, 5(e44), 1–5. doi:<http://dx.doi.org/10.1017/S1755267211000923>.
- Shimada, K. & Seigel, J.A. (2005) The relationship between the tooth size and total body length in the Goblin shark, *Mitsukurina owstoni* (Lamniformes : Mitsukurinidae). *Journal of Fossil Research*, 38(1), 49-56.
- Yano, K., Miya, M., Aizawa, M. & Tetsuhisa Noichi, T. (2007) Some aspects of the biology of the Goblin shark, *Mitsukurina owstoni*, collected from the Tokyo Submarine Canyon and adjacent waters, Japan. *Ichthyological Research*, 54, 388–398.

- Wildsingapore. (2019) Sharks: Class Elasmobranchii, Infraclass Selachii. Available from: <http://www.wildsingapore.com/wildfacts/vertebrates/fish/selachii/selachii.htm> (19 April 2020).
- Windusari, Y., Hanum, L., Setiawan, D. & Iqbal, M. (2019) Photographic evidence of freshwater whipray *Urogymnus dalyensis* (Myliobatiformes: Dasyatidae) in Indonesian waters. *Ecologica Montenegrina*, 22, 166-170.

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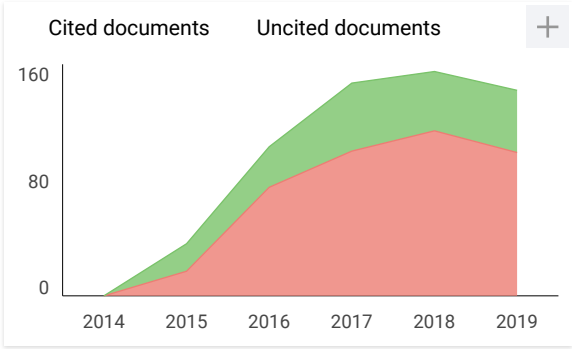
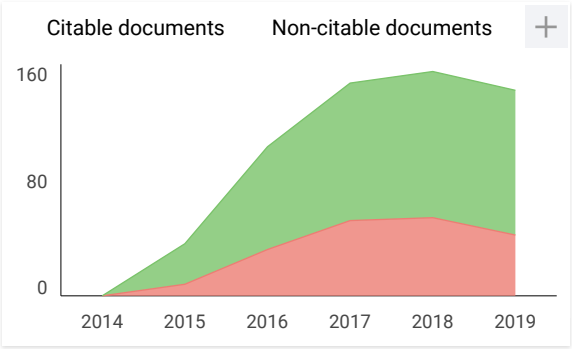
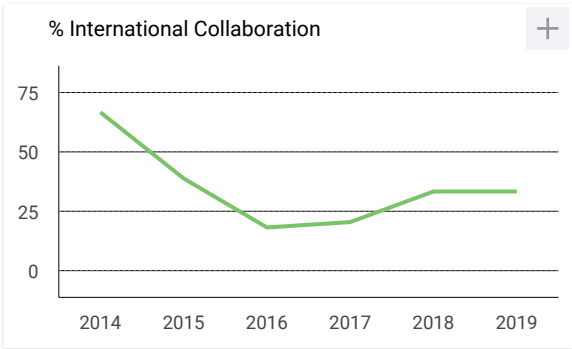
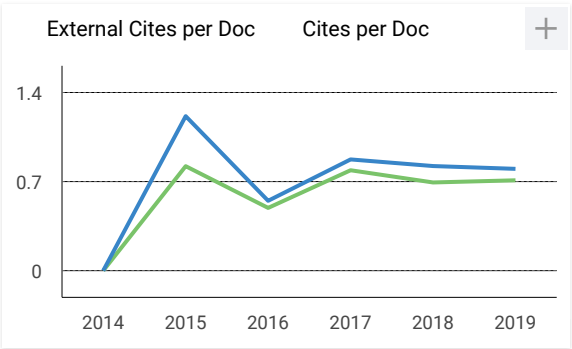
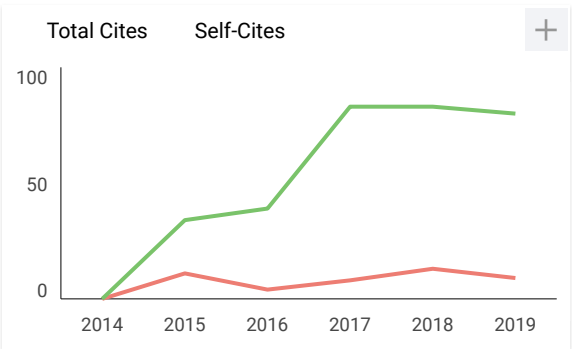
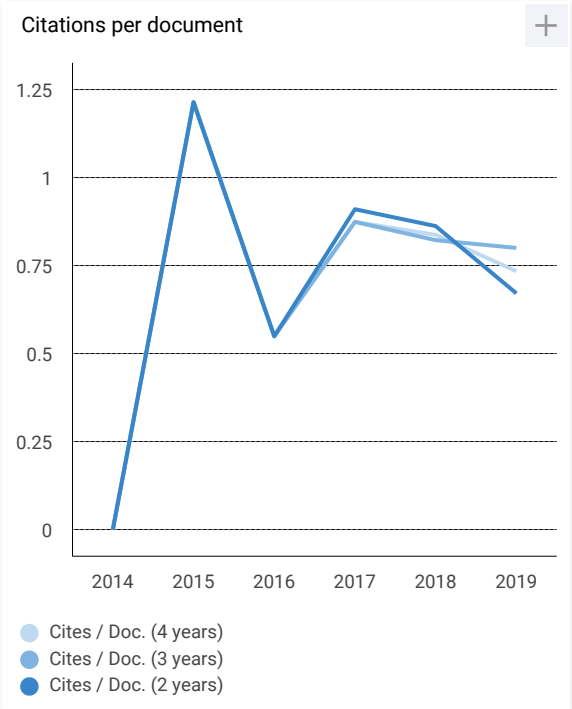
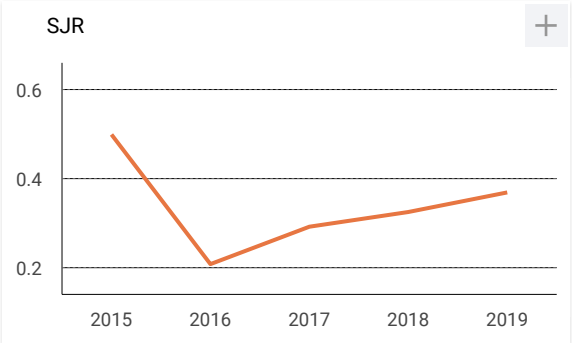
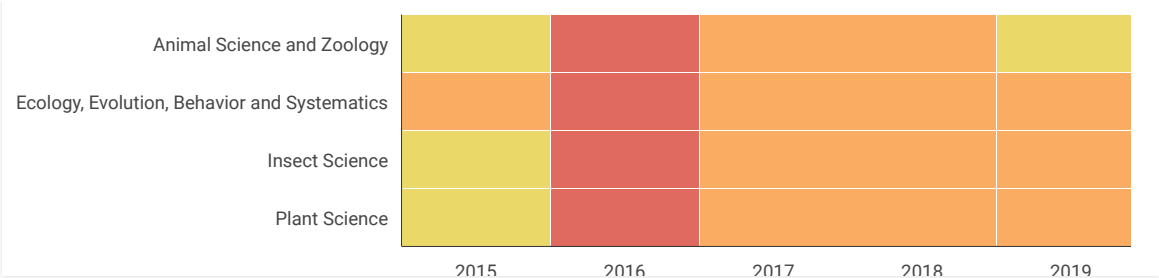
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By Arum Setiawan

Second record of goblin shark *Mitsukurina owstoni* (Lamniformes: Mitsukurinidae) in Indonesian waters

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Key words: *Mitsukurina owstoni*, goblin shark, Aceh, Sumatra, Indonesia.

Introduction

Goblin shark or Family Mitsukurinidae is small family containing only single species (*Mitsukurina owstoni* Jordan, 1898) that patchily distributed in Atlantic, Western Indian ocean and Pacific (Compagno 2001; Ebert *et al.* 2013). The goblin shark *M. owstoni* is a large mysterious shark with a bizzare head, very elongated snout forming a flat, blade-like rostrum, small eyes, an elongate, asymmetrical caudal fin without a ventral lobe, partly exposed gill filaments, short rounded fins (except caudal fin), and highly prostrusile jaws with long, slender, awl-like teeth (Last & Stevens 1994; Yano *et al.* 2007). Although *M. owstoni* is considered rare in most places when they have been reported, because they are only a very occasional bycatch of deepwater fisheries, they seem likely to be widely distributed and there is nothing to infer any population decline (Ebert *et al.* 2013; Finucci & Duffy 2018).

The *M. owstoni* is one of rare and poorly known species because of the difficulty in accessing its deep water habitat and the resulting infrequency of encounters with humans (Compagno 2001; Nakaya *et al.* 2016). Due to this reason, it is clear why *M. owstoni* usually overlooked along its potential distribution range. A recent incidental caught of *M. owstoni* has been recognized from Aceh Province, northern Sumatra. This record is constitute second record of *M. owstoni* in Indonesia after first record from Pelabuhan Ratu, West Java (Fahmi 2007). This species has not been recorded in Southeast Asian waters of the neighboring countries of Indonesia (Arunrugstichai *et al.* 2018; Finucci & Duffy 2018; Arai & Azri 2019; Krajangdara 2019, Wildsingapore 2019), but it has been found in Australia and New Zealand (Last & Stevens 1994; Duffy 1997).

Materials and Methods

Four specimens of *M. owstoni* (c. 150-200 cm of total length) was caught and landed on 4 April 2019, at Rigaih fish market, Lhok Timon village, Setia Bakti subdistrict, Aceh Jaya district, Aceh province, Indonesia (04°41'15"N, 95°31'50"E) (Fig. 1). Not long after landed in fish market, all of these sharks are bought by local people, so all specimens are unable to preserved for scientific purpose. Information of meristic and morphometrics were undocumented, but specific characters of the sharks are seen clearly from photos taken. Two of them are male, based on the seen claspers on ventral side. Identification of these sharks are therefore based on the characters that seen in available photographs. Estimated proportional morphometric features of *M. owstoni* presented as percentage of total length based on seen characters in the photographs shown in Table 1. The occurrence of *M. owstoni* from Aceh province was reported by some medias (Booth & Ichsan 2019; Fajar 2019). This information has also been posted in inaturalist.nz, but with an uncorrect location in the map (stated in Banda Aceh, capital city of Aceh province, not Aceh Jaya district) (https://inaturalist.nz/observations?place_id=31686&taxon_id=105913).



Figure 1. Map of *M. owstoni* records in Indonesia. Red circle is recent *M. owstoni* found in Aceh province, and black circle is previous record in Pelabuhan Ratu, West Java province.

Results and Discussions

The sharks caught on 4 April 2020 from Aceh province has distinct characters of unmistakable flat elongated snout, protrusible jaws, long-cusped slender teeth, short rounded fins except long tail fin (Figs. 2 and 3). These characters are specific characters of *M. owstoni* compare to other shark guides (Last & Stevens 1994; Compagno 2001, Compagno *et al.* 2005; Ebert *et al.* 2013). The unique characters of *M. owstoni* and supported with its diet suggest that this shark is a sluggish mesopelagic species (Duffy 1997).



Figure 2. Four *M. owstoni* landed on 4 April 2019 at Rigaih fish market, Lhok Timon village, Setia Bakti subdistrict, Aceh Jaya district, Aceh province (Photo: Jafar).



Figure 3. Distinct head pattern of *M. owstoni* landed on 4 April 2019 in at Rigaih fish market, Lhok Timon village, Setia Bakti subdistrict, Aceh Jaya district, Aceh province (Photo: Jafar).

Table 1. Estimated proportional morphometric features of *M. owstoni* presented as percentage of total length based on seen characters in the photographs. G1 = Goblin shark specimens from Aceh, G2 = Goblin shark specimen Pelabuhan Ratu, West Java (Fahmi 2017).

Characters	G1	G2
Snout to mouth (protruded)	5	5.5
Snout to mouth (to upper lip)	10	10.1
Snout to eye	12	13
Snout to pectoral-fin origin	29	26.4
Snout to first dorsal-fin origin	35	33.2
Pectoral-fin base	4	4
First dorsal-fin base	6	6.1
Second dorsal-fin base	5	5
Pelvic-fin length	10	9.8
Anal-fin length	10	9.9

The *M. owstoni* is wide ranging species of sharks but rarely caught because they inhabit deepwater sea habitat, mainly reported from 270-960 m, to at least 1,300 m, and very rarely at the surface or 95-137 m (Shimada & Seigel 2005; Ebert *et al.* 2013). Although the range of *M. owstoni* has been known but regional localities not been fully mapped (eg. Parsons *et al.* 2002; Prokofiev & Kukuev 2009; Rincon *et al.* 2014; Driggers *et al.* 2014; Orlov *et al.* 2017).

The presence of *M. owstoni* in Aceh province is a second record of this deepwater shark in Indonesia. Previously known species from Indonesia reported from a specimen collected on 20 March 2009 in Pelabuhan Ratu, West Java (Fahmi 2017). *Mitsukurina owstoni* in Pelabuhan Ratu was caught in deepwater fish longline targetting squaloid sharks off southwest off Java at about 200 m depth. The lacking of *M. owstoni* records in Indonesian waters could be a combination of rarely caught of this shark from deepwater and limited local ichthyologists to determine a good documentation. New additional distribution records of sharks and elasmobranchs have been reported recently from Indonesian waters (Iqbal & Yustian 2016; Iqbal *et al.* 2019a, b, c; Windusari *et al.* 2019). More data is needed to learn better understanding of distributional localities of *M. owstoni* in Indonesian waters, and to determine probably some threats of its populations in the future. Northwest Sumatra and southwest off Java waters, two locations known of *M. owstoni* in Indonesian waters are part of *Sunda Trench* where depth variation is about 200-600 m (Raghuram *et al.* 2018). This deepwater habitat is an ideal and potential habitat of *M. owstoni*.

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References

- Arai T, Azri A (2019) Diversity, occurrence and conservation of sharks in the southern South China Sea. *PLoS ONE*, 14(3), e0213864. <https://doi.org/10.1371/journal.pone.0213864>
- Arunrugstichai, S., True, J.D. & White, W.T. (2018) Catch composition and aspects of the biology of sharks caught by Thai commercial fisheries in the Andaman Sea. *Journal of Fish Biology*, 92(5), 1487-1504.
- Booth, H. & Ichsan, M. (2019) *Indonesia's first record of 'living fossil': The Goblin shark*. Available from: <https://medium.com/wcs-marine-conservation-program/indonesias-first-record-of-living-fossil-the-goblin-shark-38a9a666142a> (13 April 2020).

- Compagno, L.J.V. (2001) *Sharks of the world. An annotated and illustrated catalogue of shark species known to date. Volume 2. Bullhead, mackerel and carpet sharks (Heterodontiformes, Lamniformes and Orectolobiformes)*. FAO Species Catalogue for Fishery Purposes. No. 1, Vol. 2. FAO, Rome, 269 p.
- Compagno, L., Dando, M. & Fowler, S. (2005) *A field guide to the sharks of the world*. Princeton University Press, New Jersey, 368 p.
- Duffy, C.A. (1997) Further records of the Goblin shark, *Mitsukurina owstoni* (Lamniformes: Mitsukurinidae), from New Zealand. *New Zealand Journal of Zoology*, 24(2), 167-171.
- Ebert, D., Fowler, S. & Compagno, L. (2013) *Sharks of the world, a fully illustrated guide*. Wild Nature Press, Plymouth, 528 p.
- Fahmi. (2017) Notes on the record of Goblin shark (*Mitsukurina owstoni* Jordan, 1898) from Indonesia. *Marine Research Indonesia*, 42(2), 59-65.
- Fajar, J. (2019) Pertama kali di Indonesia, ditemukan hiu 'living fossil' Goblin di Aceh. Available from: <https://www.mongabay.co.id/2019/08/07/pertama-kali-di-indonesia-ditemukan-hiu-living-fossil-goblin-di-aceh/> (13 April 2020) [in Indonesian].
- Finucci, B. & Duffy, C.A.J. (2018) *Mitsukurina owstoni*. The IUCN red list of threatened species 2018: e.T44565A2994832. <https://dx.doi.org/10.2305/IUCN.UK.2018-2.RLTS.T44565A2994832.en>. Downloaded on 13 April 2020.
- Iqbal, M., Nurnawati, E., Setiawan, A., Dahlan, Z. & Yustian, I. (2019) First photographic inland records of bull shark *Carcharhinus leucas* (Carcharhiniformes: Carcharhinidae) in Sumatran waters, Indonesia. *Ecologica Montenegrina*, 22, 171-176.
- Iqbal, M., Saputra, R.F., Setiawan, A. & Yustian, I. (2019) First photographic inland record of blacktip reef sharks *Carcharhinus melanopterus* (Carcharhiniformes: Carcharhinidae) in Indonesian waters. *Ecologica Montenegrina*, 24, 6-10.
- Iqbal, M., Setiawan, A. & Yustian, I. (2019) First inland record of bull shark *Carcharhinus leucas* (Carcharhiniformes: Carcharhinidae) in Indonesian Borneo. *Ecologica Montenegrina*, 24, 52-57.
- Iqbal, M. & Yustian, I. (2016) Occurrence of the giant freshwater stingray *Urogymnus polylepis* in Sumatra, Indonesia (Chondrichthyes: Dasyatidae). *Ichthyological Exploration of Freshwaters*, 27, 333–336.
- Krajangdara, T. (2019). *Sharks and rays of Thailand*. Department of Fisheries, Bangkok, 21 p.
- Last, P.R. & Stevens, J.D. (1994) *Sharks and rays of Australia*. CSIRO, Australia. 513 p.
- Moyle, P.B. & Cech, J.J. (2004) *Fishes, an introduction to ichthyology*. Prentice Hall, Upper Saddle River, 726 p.
- Nakaya, K., Tomita, T., Suda, K., Sato, K., Ogimoto, K., Chappell, A., Sato, T., Takano, K. & Yuki, Y. (2016) Slingshot feeding of the goblin shark *Mitsukurina owstoni* (Pisces: Lamniformes: Mitsukurinidae). *Scientific Reports*, 6(27786). <https://doi.org/10.1038/srep27786>
- Nelson, J.S., Terry, C., Grande, T.C. & Wilson, M.V.H. (2016) *Fishes of the world*. John Wiley and Sons, Hoboken, 752 pp.
- Parsons, G.R., Ingram, G.W. & Havard, R. (2002) First record of the Goblin shark *Mitsukurina owstoni*, Jordan (Family Mitsukurinidae) in the Gulf of Mexico. *Southeastern Naturalist*, 1(2), 189–192.
- Prokofiev, A.M. & Kukuev, E.I. (2009) New findings of rare fish species from the families Mitsukurinidae (Chondrichthyes), Muraenidae, Lophiidae, Macrouridae, and Psychrolutidae (Teleostei) on raises of the Atlantic Ocean with a description of *Gymnothorax walvisensis*. *Journal of Ichthyology*, 49, 215–277.
- Raghuram, G., Capitanio, F.A. & Radhakrishna, M. (2018) Flexural Analysis Along the Sunda Trench: Bending, Buckling and Plate Coupling. *Tectonics* 37(10): 3524-3544.
- Rincon, G., Vaske, T. & Gadig, O.B.F. (2012) Record of the Goblin shark *Mitsukurina owstoni* (Chondrichthyes: Lamniformes: Mitsukurinidae) from the south-western Atlantic. *Marine Biodiversity Records*, 5(e44), 1–5. doi:<http://dx.doi.org/10.1017/S1755267211000923>.
- Shimada, K. & Seigel, J.A. (2005) The relationship between the tooth size and total body length in the Goblin shark, *Mitsukurina owstoni* (Lamniformes : Mitsukurinidae). *Journal of Fossil Research*, 38(1), 49-56.
- Yano, K., Miya, M., Aizawa, M. & Tetsuhisa Noichi, T. (2007) Some aspects of the biology of the Goblin shark, *Mitsukurina owstoni*, collected from the Tokyo Submarine Canyon and adjacent waters, Japan. *Ichthyological Research*, 54, 388–398.

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- Wildsingapore. (2019) Sharks: Class Elasmobranchii, Infraclass Selachii. Available from: <http://www.wildsingapore.com/wildfacts/vertebrates/fish/selachii/selachii.htm> (19 April 2020).
- Windusari, Y., Hanum, L., Setiawan, D. & Iqbal, M. (2019) Photographic evidence of freshwater whipray *Urogymnus dalyensis* (Myliobatiformes: Dasyatidae) in Indonesian waters. *Ecologica Montenegrina*, 22, 166-170.

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