## Abstract: Online Atlas to the Commercial Fishes of Socotra

Zajonz, U., Bogorodsky, S.V., Saeed, F.N., Morris, M., Nasher, K., Aideed, M.S., Al-Jumaily, M., Weiland, C. & Winter, T. (2020). Online Atlas to the Commercial Fishes of Socotra (Version 1.2, 2020/07). UNEP-GEF/EPA/SGN "Support to the Integrated Program for the Conservation and Sustainable Development of Socotra Archipelago" (GEF #5347). Senckenberg Society for Nature Research, Frankfurt a.M., Germany. URL: <u>http://socotra.senckenberg.de/FishAtlas</u> [Date accessed].

This Atlas represents an online repository of basic data and images, primarily dedicated to support fisheries management on Socotra Archipelago. Its main objectives are to (a) aid the identification of fish species encountered in the small-scale fishery of the island group; and to, (b) help preserving local fish denominations in the non-written indigenuous Soqotri language. The Atlas is directed at fishery practioners with the intention to promote the taxonomic identification of catch and landings at the species level in support of future evidence-based fishery management. The scope of the Atlas renders it also amenable though for use in neighbouring fishing regions of southern Arabia.

The Atlas is presently optimized for desktop devices and current operating systems Windows 10, Ubuntu 18 and Mac iOS 10.xx, and testet with Explorer, Firefox, Chrome and Safari 13.x. browsers, and can be accessed at <a href="http://socotra.senckenberg.de/FishAtlas/">http://socotra.senckenberg.de/FishAtlas/</a>

Search	ha j			Online Atlas to the Commercial Fi پر الإندان الأسمال الجارية في مطاري			Aid to Family Identification المساعد لتعريف الفائلات
Ni (r3)		Family name	ienus name ایم اجنس		non name Socotri na مرق سلطون (چسو ا		
1	Orectolobiformes	Rhincodontidae	Rhincodon	Rhincodon typus Smith, 1828	Whale shark	keyr	ا قربان الموت
2	Lamniformes	Lamnidae	Isurus	Isurus axyrinchus Rafinesque, 1810	Shortfin mako	diybih ~ diybeh	UB <sub>J</sub> )
3	Carcharhiniformes	Triakidae	Mustelus	Mustelus mosis Hemprich & Ehrenberg, 1899	Arabian houndshark / Arabian smooth- hound	ba hanak ~ bu hanak	كلب القرش العربي الأملس
4	Carcharhiniformes	Carcharhinidae	Carcharhinus	Carcharhinus albimarginatus (Rüppell, 1837)	Silvertip shark	libini	قرش فضي الطرف
5	Carcharhiniformes	Carcharhinidae	Carcharhinus	Carcharhinus ambilyrhynchos (Bleeker, 1856)	Gray reef shark	shazah	قربان رشيق
6	Carcharhiniformes	Carcharhinidae	Carcharhinus	Carcharhinus brevipinna (Valenciennes in Müller & Henle, 1839)	Spinner shark	helkeh di-'iyug ~ hélka	Jacon
7	Carcharhiniformes	Carcharhinidae	Carcharhinus	Carcharhinus humani White & Weigmann, 2014	Human's whaler shark	habarqi	قربان صائد الحيتان اليفري
8	Carcharhiniformes	Carcharhinidae	Carcharhinus	Carcharhinus limbatus (Valenciennes in Müller & Henle, 1839)	Blacktip shark	helkeh	قرش أسود الطرف
9	Carcharhiniformes	Carcharhinidae	Carcharhinus	Carcharhinus longimanus (Poey, 1861)	Oceanic whitetip shark	miskah	قريان المحيطات الأبيض الأطراف
10	Carcharhiniformes	Carcharhinidae	Carcharhinus	Carcharhinus maclati (Müller & Henle, 1839)	Hardnose shark	helkeh	قرش قوي الأنف
11	Carcharhiniformes	Carcharhinidae	Carcharhinus	Corcharhinus melanopterus (Quoy & Gaimard, 1824)	Blacktip reef shark	haafi	قربان الشعاب أسود الطرف
12	Carcharhiniformes	Carcharhinidae	Carcharhinus	Carcharhinus plumbeus (Nardo, 1827)	Sandbar shark	dogha	قرش ومادي
13	Carcharhiniformes	Carcharhinidae	Carcharhinus	Carcharhinus sorrah (Valenciennes in Müller & Henle, 1839)	Spottail shark	helkeh di-ghubba	قرش أيقع الذيل
14	Carcharhiniformes	Carcharhinidae	Laxadon	Laxadon macrorhinus Müller & Henle, 1839	Sliteye shark	jibeybi	و قرش ذو عيون مُغولية
Zajor Deve The f	nz, U., Bogorodsky, S.V., Saeed, F. Jopment of Socotra Archipelago following fishermen kindly allow Halah; Ageel Salem Abdullah ar	(GEF #5347). Senckenbe ed us taping their voices a d Abdullah Ageel Salem t	ng Society for Nature Rese and greatly helped record from Areriahan; Omar Hila	M., Wolland, C. & Writter, T. (2020). Online Atlas to the Commercial Fahers arch, Frankfurt a M., Germany, URL: http://socutra.sencienberg.dr/?hhAfi gr and better understanding film harmes in the indigenzous Socythi language Ahmed from Ersiel; Abdulazezt Saleh bin Ahmed and Paisal Ahmed Saecd of Ulutura 18, and etsets with biodiners, Fredox and Chrome browsers. Mac	is [Date accessed]. (Note: DOI to be determined) e: Kamees Abdullah Salem, Haitham Fouad Nase Alghatnani from Ghubbah; and, Hamood Ali Saar	ib Saeed and Raslan Ameen Jumaan Ragab fro I and Jumaan Saad Hammodi from Mahfrhin.	m Hadiboh; Omar Ali Ahmed

The Socotra Archipelago (Yemen) in the northern Indian Ocean is recognized globally for its outstanding universal values, including unique patterns of biodiversity, which led to the designation of the entire island group as a UNESCO World Heritage Site in 2008 (Scholte, Al-Okashi & Suleyman 2011). The Archipelago, situated at the junction between the Gulf of Aden and the Arabian Sea, forms the centre of a region with relatively poorly known coastal and marine faunas. The fishes inhabiting the island group have recently been reviewed by Zajonz et al. (2019) who report 733 species and estimate the total richness at ~875 spp., thus providing the basis for the account presented herein.

Fishing used to be the second-most important source of income and food for the islanders after the pastoralist economy (Cheung and DeVantier 2006; Mehring, Zajonz & Hummel 2017). There are very productive small-scale and industrial-scale fishing activities around the Archipelago that supply both domestic and commercial demand. The small-scale fishery operates from >80 coastal villages (on Socotra, Samha and Abd al-Kuri) over the continental slope (Nichols 2001; Zajonz et al. 2016), using

either fibre-glass skiffs called 'houri' or larger 'sambuq' (Van Rensburg 2016, for details). Socotri fishers target shallow demersal and "reef" fishes, rock lobster and sea-cucumber inshore, and large pelagics, including sharks, and some deep demersals offshore. The customary management norms of the fishermen of Socotra have long been unique in the Arab region (Cheung and DeVantier 2006). The local fishery, however, has to date transformed into a more commercial enterprise, severely undermining best customary practices. Overfishing now presents a major challenge as illustrated by the negative trends in fish production and also confirmed by fishers. Research into these fisheries has however been limited and the quality of catch recording is insufficient to inform fishery management (Zajonz et al. 2016). The present Atlas seeks to act crucial aid to address this major shortcoming.

Local maritime and fishing customs are highly vested in oral traditions and thus in the indigenuous Soqotri language (Morris 2002, Van Rensburg 2016). Improved fishery management can only be successful if it adopts and addresses the local cultural treasures of marine resource use. The 'Soqotri' is one of the six Modern South Arabian Languages (MSAL), unwritten Semitic languages spoken by minority populations in southern Arabia, which are not comprehensible to an Arabic speaker. They are, however, not 'modern' yet named so to differentiate them from even older, extinct South Arabian languages. Due to rapid economic and socio-political change in recent decades, the MSAL have increasingly falling into disuse. Creating a permanent record of Soqotri is crucial to help preserving the traditional knowledge in sustainable natural resource use which the islanders have built up over generations. The present Atlas contributes to documenting the threatened Soqotri by providing audio records of native fish names by local fishers, and qualified written representations of these names as Arabic, Latin and phonetic trancriptions.

The Atlas is the first online repository of marine and fishery data for Socotra and Southern Arabia. It represents "work in progress" and will be iteratively improved, both in terms of data additions and technical upgrades. The Atlas was prepared with partial support of the UNEP-GEF Socotra Project (#5347). The data and intellectual property rights rest with the authors.

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## Version 1.2, 2020/07

The update includes primarily the activation of the 'Aid to Family Identification'. The Aid is aimed at easing the correct taxonomic identification of catch and landings at the family level, requisite to the subsequent positive identification at the species level. The Aid refers to the technical terms and measurements of FAO's Species Identification and Data Programme 'Fish Finder' and is conceived as illustrated guide that is browsed for the straightforward recognition of key morphological characters. Once the user arrived at the proper family identification a click on the family name opens a list of the species of the respective family that are included in the Atlas, serving the onward identification process. FAO's Fish Finder programme is gratefully acknowledged for granting access and permission to use its baseline illustrations, which were modified by the authors to display the concerned key family characters. They are shown in English language as part of the illustration and mirrored in both languages.

In addition to the Aid also the display of the Atlas on portable devices has been improved.

## References

- Cheung, C. & DeVantier, L. (Eds.) (2006) Socotra. A Natural History of the Islands and Their People. Odyssey Books & Guides, Hong Kong, 393 pp.
- Mehring, M. Zajonz, U. & Hummel, D. (2017). Social-Ecological Dynamics of Ecosystem Services: Livelihoods and the Functional Relation between Ecosystem Service Supply and Demand—Evidence from Socotra Archipelago, Yemen and the Sahel Region, West Africa. – Sustainability 9 (1037): 1-15.
- Morris, M. (2002) Manual of Traditional Land Use in the Soqotra Archipelago. Report to the UNDP-GEF project Conservation and Sustainable Use of the Biodiversity of Socotra Archipelago (YEM/96/G32), 540 pp.
- Nichols, P.V. (2001) UNDP-GEF. Marine Habitat, Biodiversity and Fisheries Surveys and Management. Fisheries Management Plan for the Socotra Island Group (UNOPS YEM/96/G32, C-972248). Part I: Fisheries overview and management options, pp. 90.
- Scholte, P., Al-Okaishi, A. & Suleyman, A.S. (2011). When conservation precedes development: a case study of the opening up of the Socotra archipelago, Yemen. Oryx, 45(3), 401–410.
- van Rensburg, J.J. (2016) The Maritime Traditions of the Fishermen of Socotra, Yemen. Archaeopress Archaeology, i-x; 1-186.
- Zajonz, U., Lavergne, E., Klaus, R., Krupp, F., Aideed, M.S. & Naseeb, F.S. (2016). The Coastal Fishes and Fisheries of the Socotra Archipelago. Marine Pollution Bulletin (Special Issue: Arabian Reefs) 105 (2): 660-675.
- Zajonz, U., Lavergne, E., Bogorodsky, S., Naseeb, F.S., Aideed, M.S. & Krupp, F. (2019). Coastal fish diversity of the Socotra Archipelago, Yemen. Zootaxa 4636 (1): 1-108.