The marine fishes of St Eustatius Island, northeastern Caribbean: an annotated, photographic catalog

David Ross Robertson¹, Carlos J. Estapé², Allison M. Estapé², Ernesto Peña¹, Luke Tornabene³, Carole C. Baldwin⁴

¹ Smithsonian Tropical Research Institute, Balboa, Panama ² 150 Nautilus Drive, Islamorada, Florida, 33036, USA ³ School of Aquatic and Fishery Sciences and the Burke Museum of Natural History and Culture, University of Washington, Seattle, WA 98107, USA ⁴ Department of Vertebrate Zoology, National Museum of Natural History, Smithsonian Institution, Washington, DC 20560, USA

Corresponding author: David Ross Robertson (robertsondr@si.edu)

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Abstract

Sint Eustatius (Statia) is a 21 km² island situated in the northeastern Caribbean Sea. The most recent published sources of information on that island’s marine fish fauna is in two non-governmental organization reports from 2015–17 related to the formation of a marine reserve. The species-list in the 2017 report was based on field research in 2013–15 using SCUBA diving surveys, shallow “baited underwater video surveys” (BRUVS), and data from fishery surveys and scientific collections over the preceding century. That checklist comprised 304 species of shallow (mostly) and deep-water fishes. In 2017 the Smithsonian Deep Reef Observation Project surveyed deep-reef fishes at Statia using the crewed submersible Curasub. That effort recorded 120 species, including 59 new occurrences records. In March-May 2020, two experienced citizen scientists completed 62 SCUBA dives there and recorded 244 shallow species, 40 of them new records for Statia. The 2017–2020 research effort increased the number of species known from the island by 33.6% to 406. Here we present an updated catalog of that marine fish fauna, including voucher photographs of 280 species recorded there in 2017 and 2020. The Statia reef-fish fauna likely is incompletely documented as it has few small, shallow, cryptobenthic species, which are a major component of the regional fauna. A lack of targeted sampling is probably the major factor explaining that deficit, although a limited range of benthic marine habitats may also be contributing.
Keywords
biodiversity, checklist, faunal completeness, faunal structure, reef-associated bony fishes, SCUBA surveys, submersible surveys

Introduction

Sint Eustatius island, known locally as Statia, is a 21 km² island in the northeastern Caribbean, and is one of the Leeward Islands in the Lesser Antilles. Until recently there were very few published accounts relating to the marine-fish fauna of Statia. The most comprehensive are represented by two non-governmental organization (NGO) environmental reports to the Statia government by van Kuijk et al. (2015) and Davies and Piontek (2016, 2017). Those two reports referred to only one older scientific publication, by Metzelaar (1919), relating to the fish fauna of that island, among other islands of the Dutch Caribbean. Davies and Piontek (2017) combined their own results from visual surveys with information from BRUV (Baited Remote Underwater Video) surveys by van Kuijk et al. (2015), and a variety of historical scientific collections and fisheries surveys to produce a general list of 307 species (modified to 304, see below), which included both deep- and shallow-water species.

In this paper we use the results of deep-reef research using a crewed submersible in 2017 and shallow SCUBA surveys in 2020 to add to the checklist of the island’s marine fish fauna. We also include voucher photographs of most of the species observed and collected during those two surveys. In addition to representing vouchers for the species records, the photographs are intended for use by managers, citizen scientists, recreational divers and fishers who want to identify fishes they see and catch at Statia. Hopefully they will also stimulate future documentation of previously unreported species there. Finally, we compare aspects of the ecological structure of the Statia fauna to that of the regional, Greater Caribbean fauna to assess how complete the faunal inventory is for Statia.

Materials and methods

Study area

As one of the Dutch Caribbean islands, Statia sits among Saba, Sint Marten and St Kitts and Nevis (Figure 1) and shares a 200-m insular shelf with the last two islands (Suppl. material 1: Figure S1). Statia is surrounded by a narrow 200-m shelf, which is most extensive on the leeward, western side (Figure 2). The island has a limited diversity of marine habitats. It lacks large, deep embayments, particularly on the western side, that would otherwise provide sheltered locations for development of fringing and back-reef areas. Statia has little well-developed coral reef and most reef areas are of relatively low relief. Due to the general degree of exposure of the entire island to ocean swells it lacks
**Figure 1.** Location of Sint Eustatius. The Caribbean Sea, with the location of Sint Eustatius island indicated in the inset. Source: Hoetjes and Carpenter (2010: fig. 1).

**Figure 2.** Study sites at Sint Eustatius Island. Location of dive sites during 2017 and 2020: Black stars indicate submersible dives, blue stars 2017 SCUBA dives, red stars 2020 SCUBA dives (some individual stars indicate multiple dives in very close proximity), purple star an intertidal snorkeling site, and the red outline shows limits of the shore-diving area in 2020. See Suppl. material 2: Table S1 for georeferenced date on dive sites. Generalized 20 m, 30 m, 200 m and 500 m isobaths in blue; other lines indicate marine and terrestrial reserve areas. (Base map from Statiaparks, openstreemap.org, CC-BY-SA 2.0 with bathymetry data corrected from CARMABI/WWF/E.Imms (https://www.dcbd.nl/document/bathymetry-map-seas-surrounding-st-eustatius-saba-and-st-maarten, accessed 10 July 2020)
any mangroves and has little in the way of seagrass beds, which are now dominated by a non-native species of *Halodule* (van Kuijk et al. 2015; Hoeksema 2016).

The Caribbean Sea, with the location of Sint Eustatius island indicated in the inset. Source: Hoetjes and Carpenter (2010: fig. 1).

**Data sources**

**Published species lists**

A comprehensive set of species records came from two NGO studies, which were included in a report by Hoeksema (2016). van Kuijk et al. (2015) recorded 107 species during “baited underwater video surveys” (BRUVs) at 104 sites in shallow water (<30 m deep) scattered around all sides of the island in 2013. Davies and Piontek (2016, 2017) recorded 206 species during 38 of their own shallow, roving-diver surveys in 2015, and augmented that list with a list of species they extracted from historical literature, museum records (from major online aggregators, see below), photographs of fishes caught at the island that they obtained from various sources, and fisheries surveys. They added the species recorded by van Kuijk et al. (2015) to those they had seen and extracted from other sources to produce a combined list of 307 species.

**Research in 2017 and 2020**

In 2017 the Smithsonian Institution’s Deep Reef Observation Project (DROP) worked with the crewed submersible Curasub to make collections and observations on deep-reef fishes at Statia, to complement similar prior work at the Antillean islands of Dominica and Curacao (e.g., Baldwin et al. 2018). The submersible was launched close to shore from the tender vessel R/V Chapman and towed by a surface boat to locations along the outer reef slope off the southwest coast where the shallow reef flat transitioned to the slope (~ 40–50 m). Eleven submersible dives were made off the southwestern edge of the island’s 200 m platform (see Figure 2, and Suppl. material 2: Table S1). Each dive lasted approximately five hours and reached a maximum depth of 143–305 m, depending on the habitat at that particular site. Submersible surveys follow the methods used by Baldwin et al. (2018). Dives were roving surveys with the submersible facing the reef and moving laterally while slowly descending the slope. Periodically, stops were made to collect specimens using an anesthetic (quinidine in ethanol) ejection system attached to the sub’s manipulator arms, coupled with a suction pump attached to one arm that emptied into a holding chamber. On five of the eleven dives visual records of fishes were obtained by CB and LT, who were seated in the front of the submersible and linked their sightings of identifiable fishes to depth measurements recorded from a digital depth gauge inside the submersible. High-definition video was also recorded on five dives from a camera mounted on the front of the sub. Five scuba-based collection dives to a maximum depth of 20 m were also made by LT and CB, who were targeting sponge-associated gobies. A total of 210 specimens was collected, and 6475 individu-
als were recorded from visual observations during the SCUBA and submersible dives by DROP. Some of those specimens represent undescribed species or belong to groups with uncertain taxonomy.

Two of the authors, CJE and AME, are citizen scientists with extensive experience photographing reef fishes at various sites in the Greater Caribbean. In 2020 they spent two months (mid-March to mid-May) living at Statia and SCUBA diving daily to obtain photographic vouchers of the fishes they observed. They made 62 dives, each of approximately one-hour duration, at depths between 1–30 m on both hard-reef, sand, rubble and seagrass habitats, as well as on sunken wrecked ships. Half of those dives were nearshore in a restricted area, as, during the second half of their stay at the island, they lacked dive-boat support and were able to dive only from the shoreline (see Figure 2, and Suppl. material 2: Table S1). During those dives CJE and AME accumulated photographs of the great majority of fish species they saw. They also obtained recent photographs of a few species taken by local divers and fishers at Statia that they did not see or photograph themselves.

Online aggregators

In addition, we also assessed information provided by three major aggregators of online georeferenced location data on marine fishes (GBIF https://www.gbif.org/, OBIS https://obis.org/, and FishNet2 http://www.fishnet2.net/search.aspx, all accessed on 7 May 2020), searching for records in ~120-km² quadrat based on Admiralty Chart 487G that encompassed Statia and the surrounding shelf area: the area bounded by 17.433°N to 17.533°N and –62.933°W to –63.033°W. That quadrat contained almost 100 km² of marine habitat. That area is a little larger than and centered on the area shown in Figure 2. Those sites regularly update the information they contain and might have had additional records to those found by Davies and Piontek (2017).

Location of dive sites during 2017 and 2020: Black stars indicate submersible dives, blue stars 2017 SCUBA dives, red stars 2020 SCUBA dives (some individual stars indicate multiple dives in very close proximity), purple star an intertidal snorkeling site, and the red outline shows limits of the shore-diving area in 2020. See Suppl. material 2: Table S1 for georeferenced date on dive sites. Generalized 20 m, 30 m, 200 m and 500 m isobaths in blue; other lines indicate marine and terrestrial reserve areas. (Base map from Statiaparks, openstreemap.org, CC-BY-SA 2.0 with bathymetry data corrected from CARMABI/WWF/E.Imms (https://www.dcbd.nl/document/bathymetramap-seas-surrounding-st-eustatius-saba-and-st-maarten, accessed 10 July 2020)

The structure of the Statia reef-fish fauna

Zoogeography

Members of the entire Statia fauna as currently known (Table 1; hereafter Statia20) were assessed in terms of their global and local geographical ranges, as follows: (a) Endemism
### Table 1. Updated checklist of marine fishes from Sint Eustatius Island, 2020. Key to column headings and entries: **DROP** – CP = collected and photographed; C collected only; V = visual observation only; **Estaté** – P = photographed by CJE and AME; (P) photographed by 3rd parties; V = visual observation only by CJE and AME. **New** – species is a new record resulting from 2017–20 research, and its source. Other sources of species records are van Kuijk et al. 2015 (*vK15*), Davies and Piontek 2017 (*DP17*), **GBIF**, and **OBIS**. DROP in GBIF indicates record in GBIF is derived from 2017 DROP collection specimens deposited in the fish collection of the US National Museum of Natural History. FishNet 2 records are not indicated separately because all such records are included by GBIF. **NA**- not applicable to non-native *Pterois volitans*. **Plate** – number indicates supplemental plate containing the voucher photograph of that species. **Zoogeography (Zoo)**- Global geographic range of species; GC = Greater Caribbean endemic; NWA = GC plus temperate eastern USA; WA = GC plus Brazil; TA = WA plus central or East Atlantic; PAC = Pacific; EP = East Pacific; IWP = Indo-west Pacific; PAN = Pantropical or Circumglobal. **Range** – extent of geographic range – L = range limited, not more than one third of the Greater Caribbean; remainder are more widely distributed in that region. **Deep** – species entirely or largely restricted to depths below 40 m. **Yes** indicates a species conforms to the heading of the column; ? indicates insufficient data.

| Species in families | English common name | New | DROP | Estapé | vK15 | DP17 | GBIF | OBIS | Plate | Zoo | Range | Deep |
|--------------------|---------------------|-----|------|--------|------|------|------|------|-------|-----|-------|------|
| ACANTHURIDAE       |                     |     |      |        |      |      |      |      |       |     |       |      |
| Acanthurus chirurgus (Bloch, 1787) | Doctorfish | V   |      | P      | Yes  | Yes  | Yes  | Yes  | Yes   | 1   | GC    |       |
| Acanthurus coeruleus Bloch & Schneider, 1801 | Blue Tang | V   |      | P      | Yes  | Yes  | Yes  | Yes  | Yes   | 1   | GC    |       |
| Acanthurus tractus Poey, 1860 | Northern Ocean Surgeonfish | V   |      | P      | Yes  | Yes  | Yes  | Yes  | Yes   | 1   | GC    |       |
| ACHIRIDAE          |                     |     |      |        |      |      |      |      |       |     |       |      |
| Gymnachirus nudus Kaup, 1858 | Flabby Sole | Estapé | P    | 1     | GC    |       |
| ACROPOMATIDAE      |                     |     |      |        |      |      |      |      |       |     |       |      |
| Synagrops bellus (Goode & Bean, 1896) | Blackmouth Bass |       |      |        |      |      |      |      |       |     | WA    | Yes   |
| AETOBATIDAE        |                     |     |      |        |      |      |      |      |       |     |       |      |
| Aetobatus narinari (Euphrasen, 1790) | Spotted Eagle Ray |       |      |        | (P)  | Yes  |       |       | 1     | WA  |       |       |
| ANTENNARIIDAE      |                     |     |      |        |      |      |      |      |       |     |       |      |
| Antennarius multicoloratus (Valenciennes, 1837) | Longlure Frogfish |       |      | P      | Yes  |       |       |       | 1     | WA  |       |       |
| Histrio histrio (Linnaeus, 1758) | Sargassumfish |       |      | (P)   | Yes  |       |       |       | 1     | PAN |       |       |
| APOGONIDAE         |                     |     |      |        |      |      |      |      |       |     |       |      |
| Apogon aurorufus (Mowbray, 1927) | Bridle Cardinalfish |       |      |        |      |      |      |      |       |     |       |       |
| Apogon maculatus (Poey, 1860) | Flamefish |       |      |        |      |      |      |      |       |     |       |       |
| Apogon pilicornus Bohlke & Randall, 1968 | Broadsaddle Cardinalfish | DROP | V    |       |      |      |      |      |       |     | GC    |       |
| Apogon planifrons Longley & Hildebrand, 1940 | Pale Cardinalfish |       |      | DROP  | V    |      |      |      |       |     | GC    |       |
| Apogon pseudomaculatus Longley, 1932 | Tinspot Cardinalfish |       |      |       |      |      |      |      |       |     | GC    |       |
| Apogon quadrimaculatus Longley, 1934 | Sawcheek Cardinalfish |       |      |       |      |      |      |      |       |     | GC    |       |
| Apogon townsendi (Breder, 1927) | Belted Cardinalfish |       |      |       |      |      |      |      |       |     | GC    |       |
| Atropogon pantropicalis (Poey, 1867) | Blackfin Cardinalfish |       |      |       |      |      |      |      |       |     | GC    |       |
| Atropogon stellatus (Cope, 1867) | Conchfish |       |      |       |      |      |      |      |       |     | GC    |       |
| Paracheilinus affinis (Poey, 1875) | Bigtooth Cardinalfish |       |      |       |      |      |      |      |       |     | GC    |       |
| Species in families | English common name | New | DROPE | Estapé | vK15 | DP17 | GBIF | OBIS | Plate | Zoo | Range | Deep |
|---------------------|---------------------|-----|-------|--------|------|------|------|------|-------|-----|-------|------|
| Phaeoptyx conklini  | Freckled Cardinalfish| Estapé | P |       |       |      |      |      |       |     |       |      |
| Phaeoptyx pigmentaria | Dusky Cardinalfish |       | Yes |       |      |      |      |      |       |     |       |      |
| ARGENTINIDAE        |                     |     |     |        |      |      |      |      |       |     |       |      |
| Argentina stewarti  |                     |     |     |        |      |      |      |      |       |     |       |      |
| Atherina barringtoni |                     |     |     |        |      |      |      |      |       |     |       |      |
| Atherinomorus stipes |                     |     |     |        |      |      |      |      |       |     |       |      |
| AULOSTOMIDAE        |                     |     |     |        |      |      |      |      |       |     |       |      |
| Aulostomus maculatus |                     |     |     |        |      |      |      |      |       |     |       |      |
| BALISTIDAE          |                     |     |     |        |      |      |      |      |       |     |       |      |
| Balistes capriscus  | Gray Triggerfish    | P   |       | Yes    |      |      |      |      |       |     |       |      |
| Balistes vetula     | Queen Triggerfish   | P   | Yes   | Yes    |      |      |      |      |       |     |       |      |
| Canthidermis sufflamen | Ocean Triggerfish | V   |       | Yes    |      |      |      |      |       |     |       |      |
| Melichthys niger    | Black Durgon        | P   | Yes   | Yes    | Yes  |      |      |      |       |     |       |      |
| Xanthischthys ringens | Sargassum Triggerfish | DROP | V |       |      |      |      |      |       |     |       |      |
| BELONIDAE           |                     |     |     |        |      |      |      |      |       |     |       |      |
| Platylebene argulus  | Keeltail Needlefish |     |       | Yes    |      |      |      |      |       |     |       |      |
| Glyptcephalus argulus     | Houndfish          | P   |       | Yes    |      |      |      |      |       |     |       |      |
| BLENNIDAE           |                     |     |     |        |      |      |      |      |       |     |       |      |
| Entomacrodus nigericanus | Pearl Blenny     | P   |       | Yes    |      |      |      |      |       |     |       |      |
| Hypoheros cometa | Oyster Blenny      | Estapé | P |       |      |      |      |      |       |     |       |      |
| Hypoheros springeri | Orangespotted Blenny | P |      |       |      |      |      |      |       |     |       |      |
| Hypoblemmus occidentalis | Longhorn Blenny | (P) |       | Yes    |      |      |      |      |       |     |       |      |
| Ophiohambra maculatus | Redlip Blenny       | P   | Yes   | Yes    |      |      |      |      |       |     |       |      |
| Psammoblemmus marmoratus | Seaweed Blenny    | P   |       | Yes    |      |      |      |      |       |     |       |      |
| BOTHIDAE            |                     |     |     |        |      |      |      |      |       |     |       |      |
| Bothus lunatus      | Peacock Flounder   | P   | Yes   | Yes    |      |      |      |      |       |     |       |      |
| Bothus ocellatus    | Eyer Flounder      | P   | Yes   | Yes    |      |      |      |      |       |     |       |      |
| Chilopogonsetta legubris | Pelican Flounder | Yes |       |       |      |      |      |      |       |     |       |      |
| CALLIONYMIDAE       |                     |     |     |        |      |      |      |      |       |     |       |      |
| Callionymus bairdi | Lancer Dragonet    | P   |       | Yes    |      |      |      |      |       |     |       |      |
| CAPROIDAE           |                     |     |     |        |      |      |      |      |       |     |       |      |
| Antigonia capros    | Deepbody Boarfish | DROP | V |       |      |      |      |      |       |     |       |      |
| CARANGIDAE          |                     |     |     |        |      |      |      |      |       |     |       |      |
| Alectis ciliaris    | African Pompano    |     |       | Yes    |      |      |      |      |       |     |       |      |

Statia20 marine fishes
| Species in families | English common name | New | DROP | Estapé | vK15 | DP17 | GBIF | OBIS | Plate | Zoo | Range | Deep |
|---------------------|---------------------|-----|------|--------|------|------|------|------|-------|-----|-------|------|
| *Caranx bartholomaei* (Cuvier, 1833) | Yellow Jack | P | Yes | 2 | TA |
| *Caranx crysos* (Mitchill, 1815) | Blue Runner | P | Yes | 2 | TA |
| *Caranx hippos* (Linnaeus, 1766) | Crevalle Jack | | Yes | WA |
| *Caranx latus* Agassiz, 1831 | Horse-eye Jack | P | Yes | Yes | 2 | TA |
| *Caranx lugubris* Poey, 1860 | Black Jack | V | Yes | Yes | PAN |
| *Caranx ruber* (Bloch, 1793) | Bar Jack | V | P | Yes | Yes | Yes | 2 | WA |
| *Decapterus macarellus* (Cuvier, 1833) | Mackerel Scad | P | Yes | 2 | PAN |
| *Decapterus punctatus* (Cuvier, 1829) | Round Scad | P | Yes | 2 | TA |
| *Elegantis bipinnulata* (Quoy & Gaimard, 1825) | Rainbow Runner | P | Yes | 2 | PAN |
| *Selar crumenophthalmus* (Bloch, 1793) | Bigeye Scad | P | Yes | 2 | PAN |
| *Sympleopus rivulatus* (Poey, 1860) | Almaco Jack | P | Yes | Yes | 2 | PAN |
| *Trachinotus falcatus* (Linnaeus, 1758) | Permit | P | Yes | 2 | WA |
| *Trachinotus goodei* Jordan & Evermann, 1896 | Palometa | P | Yes | 2 | WA |
| **CARCHARHINIDAE** | | | | | | | | | | | | |
| *Carcharhinus leucas* (Müller & Henle, 1839) | Bull Shark | | Yes | PAN |
| *Carcharhinus limbatus* (Müller & Henle, 1839) | Blacktip Shark | | Yes | PAN |
| *Carcharhinus perezi* (Poey, 1876) | Reef Shark | V | Yes | Yes | WA |
| *Galeocerdo cuvier* (Peron & Lesueur, 1822) | Tiger Shark | | Yes | PAN |
| *Negaprion brevirostris* (Poey, 1860) | Almoco Shark | P | Yes | 2 | TA,EP |
| **CENTROPHORIDAE** | | | | | | | | | | | | |
| *Centrophorus granulatus* (Bloch & Schneider, 1801) | Large Gulper Shark | | Yes | TA, IWP |
| **CHAENOPSIDAE** | | | | | | | | | | | | |
| *Acantoblemnus asperus* (Longley, 1927) | Roughhead Blenny | P | Yes | 2 | GC |
| *Acantoblemnus maris* Bohlke, 1961 | Secretary Blenny | P | Yes | Yes | 2 | GC |
| *Acantoblemnus spinosa* Metzelaar, 1919 | Spinyhead Blenny | P | Yes | Yes | 2 | GC |
| *Chaenopsis limbata* Robins & Randall, 1965 | Yellowface Pikeblenny | P | Yes | 2 | GC |
| **Emblemarrhynchus Evermann & Manz, 1900** | | | | | | | | | | | | |
| *Emblemarrhynchus salai* | Sailfin Blenny | P | Yes | Yes | 2 | GC |
| **Emblemarrhynchus vittatus Williams, 2002** | | | | | | | | | | | | |
| *Emblemarrhynchus bahamensis* Stephens, 1961 | Blackhead Blenny | Estapé | P | 3 | GC, L |
| **Emblemarrhynchus angulatus** Stephens, 1961 | | | | | | | | | | | | |
| **CHÆTODONTIDAE** | | | | | | | | | | | | |
| *Chauliodus asperatus* Linnaeus, 1758 | Foureye Butterflyfish | V | P | Yes | Yes | Yes | Yes | 3 | GC |
| *Chauliodus octoventris* Bloch, 1787 | Spotfin Butterflyfish | P | Yes | Yes | Yes | 3 | WA |
| *Chauliodus seledentarius* Poey, 1860 | Reef Butterflyfish | V | Yes | Yes | Yes | WA |
| *Chauliodus striatus* Linnaeus, 1758 | Banded Butterflyfish | V | P | Yes | Yes | Yes | Yes | 3 | WA |
| *Pregnabodes acutus* (Poey, 1860) | Longnout Butterflyfish | C | P | Yes | Yes | Yes | 3 | WA |
| Species in families | English common name | New | DROP | Estapé | vK15 | DP17 | GBIF | OBIS | Plate | Zoo | Range | Deep |
|---------------------|---------------------|-----|------|--------|------|------|------|------|-------|-----|-------|------|
| Prognathodes guyanensis (Durand, 1960) | Guyana Butterflyfish | DROP | V | | | | | | | | GC | Yes |
| Chaunacidae | | | | | | | | | | | | |
| Chaunax suttikus Caruso, 1989 | Pale-cavity Gaper | | | Yes | | | | | | | TA | Yes |
| Chimaeridae | | | | | | | | | | | | |
| Chimaera cubana Howell Rivero, 1936 | Cuban Chimaera | | | Yes | | | | | | | GC | Yes |
| Hydrolagus alberti Bigelow & Schroeder, 1951 | Gulf Chimaera | | | Yes | | | | | | | GC | Yes |
| Chlopsidae | | | | | | | | | | | | |
| Chlorophthalmus agassizi (Goode & Bean, 1895) | Longnose Greeneye | | | Yes | | | | | | | WA | Yes |
| Chlorophthalmus agassizi (Goode & Bean, 1895) | Shortnose Greeneye | | | Yes | | | | | | | TA | Yes |
| Cichlidae | | | | | | | | | | | | |
| Amblycirrhitus pinos (Mowbray, 1927) | Redspotted Hawkfish | | | P | Yes | Yes | | | | | 3 | WA |
| Clupeidae | | | | | | | | | | | | |
| Harengula clupeola (Cuvier, 1829) | False Pilchard | | | Yes | | | | | | | WA | | |
| Harengula hembrae (Cuvier, 1829) | Redear Sardine | | | Yes | | | | | | | GC | |
| Jenkinia lamprotaenia (Goose, 1851) | Dwarf Herring | | | Yes | | | | | | | GC | |
| Opisthobrama oglinum (Lesueur, 1818) | Atlantic Thread Herring | | | Yes | | | | | | | WA | |
| Sardinae aurita Valenciennes, 1847 | Spanish Sardine | | | Yes | | | | | | | TA | |
| Congridae | | | | | | | | | | | | |
| Arisanus bokaricum (Delaroche, 1809) | Bandtooth Conger | Estapé | (P) | | | | | | | | 3 | TA |
| Heteroscleror longissimus Gunther, 1870 | Brown Garden Eel | P | Yes | Yes | Yes | | | | | | 3 | WA |
| Xenostomus bisidentatus (Reid, 1940) | Two-patched-teeth Conger | | | Yes | | | | | | | TA | Yes |
| Coryphaenidae | | | | | | | | | | | | |
| Coryphaena hippurus Linnaeus, 1758 | Dolphinfish | | | | | | | | | | | PAN |
| Crurirajidae | | | | | | | | | | | | |
| Cynoscopra ruga Bigelow & Schroeder, 1958 | Rough Leg Skate | | | Yes | | | | | | | GC | Yes |
| Cynoglossidae | | | | | | | | | | | | |
| Symbranchus marginatus (Goode & Bean, 1886) | Margined Tonguefish | | | Yes | | | | | | | WA | Yes |
| Dactylopteridae | | | | | | | | | | | | |
| Dactylopterus volitans (Linnaeus, 1758) | Flying Gurnard | P | Yes | Yes | Yes | | | | | | 3 | TA |
| Dasyatidae | | | | | | | | | | | | |
| Hypanus americanus Hildebrand & Schroeder, 1928 | Southern Stingray | P | Yes | Yes | Yes | | | | | | 3 | WA |
| Diodontidae | | | | | | | | | | | | |
| Chilomycterus annulatus Jordan & Rutter, 1897 | Web Burrfish | P | Yes | Yes | Yes | | | | | | 3 | WA |
| Chilomycterus schoepfi (Walbaum, 1792) | Striped Burrfish | | | Yes | | | | | | | NWA | |
| Species in families | English common name | New | DROP | Estapé | vK15 | DP17 | GBIF | OBIS | Plate | Zoo | Range | Deep |
|---------------------|---------------------|-----|------|--------|------|------|------|------|-------|-----|-------|------|
| *Diodon holocanthus* Linnaeus, 1758 | Balloonfish | P | Yes | | 3 | PAN |
| *Diodon hystrix* Linnaeus, 1758 | Porcupinefish | P | Yes | Yes | Yes | 3 | PAN |
| DIETMIDAE | | | | | | |
| *Diretmus argenteus* Johnson, 1864 | Silver Spinyfish | | | Yes | | | | | PAN | Yes |
| ECHENIDEA | | | | | | |
| *Echeneis naucrates* Linnaeus, 1758 | Sharksucker | P | Yes | Yes | Yes | 3 | PAN |
| *Echeneis naucrates* Linnaeus, 1758 | Whitefin Sharksucker | Estapé | P | | 3 | NWA |
|DirectoryName | Remora | Remora | | | | | | | | |
| EPHIPPIDAE | | | | | | |
| *Ch旬iชนiopvtes* (Broussonet, 1782) | Atlantic Spadefish | | | Yes | | | | | WA |
| ETMOPTERIDAE | | | | | | |
| *Etmopterus hillianus* (Poey, 1861) | Caribbean Lantern Shark | | | Yes | | | | | NWA | Yes |
| *Etmopterus robinsi* Schofield & Burgess, 1997 | West Indian Lantern Shark | | | Yes | | | | | GC | Yes |
| FISTULARIIDAE | | | | | | |
| *Fistularia tabacaria* Linnaeus, 1758 | Bluespotted Cornetfish | P | Yes | Yes | 3 | TA |
| GERREIDAE | | | | | | |
| *Eucinostomus jonesii* (Gunther, 1879) | Slender Mojarra | | | Yes | | | | | WA |
| *Eucinostomus lefroyi* (Goode, 1874) | Mottled Mojarra | | P | Yes | | | | | 3 | WA |
| Gerres cinereus | Yellowfin Mojarra | | | Yes | | | | | WA |
| Ginglymostomatidae | | | | | | |
| Ginglymostoma c脳ntum (Bonnierre, 1788) | Nurse Shark | (P) | Yes | Yes | Yes | 3 | TA |
| GOBIOSOCIDAE | | | | | | |
| *Derilissus lombardii* Sparks & Gruber, 2012 | Tailspot Clingfish | DROP | CP | | | | | | 3 | GC | Yes |
| Gobiidae | | | | | | |
| *Antillobius nikki* Van Tasell & Colin, 2012 | Sabre Goby | DRO ؛ CP | | | | | | | 3 | GC | Yes |
| Batrachogobiidae Tomabene, Baldwin & Pezold, 2010 | Antilles Frillfin | Estapé | P | | | | | | 3 | GC |
| Coryphopterus dicros Bohlke & Robins, 1960 | Colon Goby | | | Yes | | | | | 3 | WA |
| Coryphopterus eidosolus Bohlke & Robins, 1960 | Pallid Goby | | | Yes | | | | | 3 | GC |
| Coryphopterus glaucofraenum Gill, 1863 | Bridled Goby | | | Yes | | | | | WA |
| Coryphopterus hyalinus Bohlke & Robins, 1962 | Glass Goby | | | Yes | | | | | 4 | GC |
| Coryphopterus kuna Victor, 2007 | Kuna Goby | Estapé | | | | | | | 4 | GC |
| Coryphopterus leptus Bohlke & Robins, 1962 | Peppermint Goby | | | Yes | | | | | 4 | GC |
| Coryphopterus personatus (Jordan & Thompson, 1905) | Masked Goby | P | | V | | | | | 4 | GC |
| Coryphopterus s脳rils Bohlke & Robins, 1960 | Bartail Goby | P | | Yes | | | | | 4 | WA |
| Coryphopterus tortugae (Jordan, 1904) | Sand Goby | | | | | | | | 4 | GC |
| Coryphopterus venezuelae Cervignon, 1966 | Sand-Canyon Goby | Estapé | | | | | | | 4 | GC |
| Species in families | English common name | New | DROP | Estapé | vK15 | DP17 | GBIF | OBIS | Plate | Zoo | Range | Deep |
|---------------------|--------------------|-----|------|--------|------|------|------|------|-------|-----|-------|------|
| Ctenogobius saepapallens (Gilbert & Randall, 1968) | Dash Goby | Estapé | P | 4 | GC |
| Eleginus chanci (Beebe & Hollister, 1933) | Shortstripe Goby | C | P | Yes | Yes | 4 | GC | L |
| Eleginus evernynae (Bohlke & Robins, 1968) | Sharknose Goby | P | Yes | Yes | 4 | GC |
| Genus 1 species 5 | | | | | | | | |
| Genus 1 species 6 | | | | | | | | |
| Genus 2 species 1 | | | | | | | | |
| Ginsburgellus novemlineatus (Fowler, 1950) | Ninelined Goby | Estapé | P | 4 | GC |
| Gnatholepis thompsoni Jordan, 1904 | Goldspot Goby | V | P | Yes | Yes | 4 | TA |
| Lythrypnus elasson | Dwarf Goby | DROP/ | C | P | 4 | GC |
| Microgobius carri Fowler, 1945 | Seminole Goby | Estapé | P | 4 | WA |
| Nea longus (Nichols, 1914) | Orangespotted Goby | P | Yes | 4 | GC |
| Palatogobius grandoculus Greenfield, 2002 | Bigeye Goby | DROP | CP | DROP | 4 | GC | Yes |
| Palatogobius incendius Tomabene, Robertson & Baldwin, 2017 | Ember Goby | DROP | C | DROP | GC | Yes |
| Pinnichthys asimieniusi Van Tassell & Tomabene, 2016 | Thionys Goby | DROP | CP | 4 | GC | Yes |
| Priolepis bipolitae (Metzelaar, 1922) | Rusty Goby | P | Yes | 4 | WA |
| Ptereleotris bledanea (Randall, 1968) | Hovering Dartfish | V | P | Yes | 4 | GC |
| Risor ruber (Rosen, 1911) | Tusked Goby | C | P | Yes | Yes | 4 | WA |
| Tigrigobius dilepis (Robins & Bohlke, 1964) | Orangesided Goby | P | Yes | 4 | GC |
| Tigrigobius multifasciatus (Steindachner, 1876) | Greenbanded Goby | Estapé | P | 4 | GC | L |
| Varicus cephalocellatus Gilmore, Van Tassell & Baldwin, 2016 | Ocellated Split-Fin Goby | DROP | CP | DROP | 4 | GC | L | Yes |
| Varicus veligutta Van Tassell, Baldwin & Gilmore, 2016 | Spotted-Sail Goby | DROP | CP | DROP | 4 | GC | Yes |
| Grammatidae | | | | | | | | |
| Gramma linki Starck & Colin, 1978 | Yellowcheek Basslet | DROP | CP | DROP | 5 | GC |
| Gramma loreto Poey, 1868 | Fairy Basslet | P | Yes | Yes | 5 | GC |
| Lipogramma ceydus Robins & Colin, 1979 | Banded Basslet | DROP | CP | DROP | 5 | GC | Yes |
| Lipogramma kleyi Randall, 1963 | Bicolor Basslet | DROP | CP | 5 | GC | Yes |
| Lipogramma levisoni Baldwin, Nonaka & Robertson, 2016 | Hourglass Basslet | DROP | CP | 5 | GC | Yes |
| Lipogramma regia Robins & Colin, 1979 | Royal Basslet | DROP | CP | 5 | GC | Yes |
| Lipogramma trilineata Randall, 1963 | Threeline Basslet | DROP | CP | 5 | GC | Yes |
| Grammicolepididae | | | | | | | | |
| Grammicolepis brachiscelidos Poey, 1873 | Thorny Tinselfish | Yes | | PAN | Yes |
| Haemulidae | | | | | | | | |
| Anisotremus swirei (Bloch, 1791) | Black Margate | P | Yes | Yes | 5 | WA |
| Brachyacris chrysargyreum (Gunther, 1859) | Smallmouth Grunt | P | Yes | Yes | Yes | 5 | GC |
| Haemulon albula Cuvier, 1830 | Margate | P | Yes | Yes | 5 | WA |
| Species in families | English common name | New | DROP | Estapé | vK15 | DP17 | GBIF | OBIS | Plate | Zoo | Range | Deep |
|---------------------|---------------------|-----|------|--------|------|------|------|------|-------|-----|-------|------|
| Haemulon aurolineatum | Tomtate | P | Yes | Yes | Yes | Yes | 5 | WA |
| Haemulon carbonarium | Caesar Grunt | P | Yes | Yes | Yes | Yes | 5 | GC |
| Haemulon flavolineatum | French Grunt | P | Yes | Yes | Yes | Yes | 5 | GC |
| Haemulon macrurum | Spanish Grunt | Yes | GC |
| Haemulon melanurum (Linnæus, 1758) | Cottonwick | P | Yes | 5 | WA |
| Haemulon parra (Desmarest, 1823) | Sailors Choice | Yes | WA |
| Haemulon sciurus (Shaw, 1803) | Bluestriped Grunt | (P) | Yes | Yes | 5 | GC |
| Haemulon striatum (Linnæus, 1758) | Striped Grunt | V | V | Yes | 5 | WA |
| Haemulon vittatum (Poey, 1860) | Boga | P | Yes | 5 | GC |
| HALOSAURIDAE | | | | | | | | | | | | |
| Halosaurus ovenci Johnson, 1864 | Stripejaw Halosaur | Yes | TA,IWP | Yes |
| HEMIRAMPHIDAE | | | | | | | | | | | | |
| Heminamphus brasilenesis (Linnæus, 1758) | | | | | | | | | | | | |
| HOLOCENTRIDAE | | | | | | | | | | | | |
| Corniger spinosus Agassiz, 1831 | Spinycheek Soldierfish | DROP | V | | | | | | | | | |
| Holocentrus adscensionis (Osbeck, 1765) | Squirrelfish | V | P | Yes | Yes | Yes | 5 | TA |
| Holocentrus niger (Walbaum, 1792) | Longspine Squirrelfish | V | P | Yes | Yes | Yes | 5 | GC |
| Myripristis jacobus Cuvier, 1829 | Blackbar Soldierfish | V | P | Yes | Yes | 5 | TA |
| Neoniphon coruscum (Poey, 1860) | Reef Squirrelfish | P | Yes | 5 | GC |
| Neoniphon marianus (Cuvier, 1829) | Longjaw Squirrelfish | C | P | Yes | Yes | 5 | GC |
| Neoniphon vexillarium (Poey, 1860) | Dusky Squirrelfish | P | Yes | 5 | GC |
| Otichthys trachypomus (Gunther, 1859) | Bigeye Squirrelfish | DROP | CP | DROP | 6 | WA | Yes |
| Plectropomus retrogularis (Guichenot, 1853) | Cardinal Soldierfish | Estapé | P | | | | | | | | | |
| ISTIOPHORIDAE | | | | | | | | | | | | |
| Istiophorus platypterus (Shaw, 1792) | Sailfish | Yes | TA | | | | | | | | | |
| Makata nigricans Lacepde, 1802 | Blue Marlin | Yes | PAN | | | | | | | | | |
| KYPHOSIDAE | | | | | | | | | | | | |
| Kyphosus brachyurus Lacepde, 1801 | Gray Seachub | Estapé | P | | | | | | | | | |
| Kyphosus cinereus (Forskal, 1775) | Topsail Seachub | P | Yes | 6 | TA,IWP |
| Kyphosus sectatrix (Linnæus, 1760) | Bermuda Chub | P | Yes | 6 | PAN |
| Kyphosus vaigiensis (Quoy & Gaimard, 1825) | Yellow Chub | V | Yes | 6 | PAN |
| LABRITAE | | | | | | | | | | | | |
| Labrinche | | | | | | | | | | | | |
| Bodianus rufigula (Linnæus, 1758) | Spanish Hogfish | V | P | Yes | Yes | Yes | 6 | WA |
| Clepticus parva (Bloch & Schneider, 1801) | Creole Wrasse | V | P | Yes | Yes | Yes | 6 | GC |
| Species in families | English common name | New | DROP | Estapé | vK15 | DP17 | GBIF | OBIS | Plate | Zoo | Range | Deep |
|--------------------|---------------------|-----|------|--------|------|------|------|------|-------|-----|-------|------|
| Decodon puellaris  | Poey, 1860          | Red Hogfish | DROP | CP     |      |      | DROP | 6    | WA    | Yes |       |      |
| Decodon species 2  |                     |     |      |        |      |      |      |      |       |     |       |      |
| Halichoeres bettyleyi | (Beebe & Tee-Van,1932) | Greenband Wrasse | DROP | V     |      |      |      |      |       |     |       |      |
| Halichoeres bivittatus | Bloch, 1791         | Slippery Dick | P    | Yes   | Yes  | 6    | WA   | Yes  |       |     |       |      |
| Halichoeres cyanochilus | Bloch, 1791         | Yellowcheek Wrasse | P    | Yes   | Yes  | 6    | GC   |      |       |     |       |      |
| Halichoeres gurnotii | Valenciennes, 1839  | Yellowhead Wrasse | V    | P     | Yes  | Yes | Yes | 6    | GC   |      |      |
| Halichoeres maculipinna | (Müller & Troschel, 1848) | Clown Wrasse | P    | Yes   | Yes  | 6    | GC   |      |       |     |       |      |
| Halichoeres pictus  | Poey, 1860          | Rainbow Wrasse | P    | Yes   | 6    | GC   |      |      |       |     |       |      |
| Halichoeres polli | (Steindachner, 1867) | Blackear Wrasse | P    | Yes   | 6    | WA   |      |      |       |     |       |      |
| Halichoeres rutilatus | Linnaeus, 1758      | Puddingswife | P    | Yes   | Yes  | 6    | WA   |      |      |     |       |      |
| Thalassoma bifasciatum | Bloch, 1791         | Bluehead | V    | P     | Yes  | Yes | Yes | 6    | GC   |      |      |
| Xyrichtys marinae | Valenciennes, 1840  | Rosy Razorfish | P    | Yes   | Yes  | 6    | GC   |      |       |     |       |      |
| Xyrichtys nosagula | Linnaeus, 1758      | Peetary Razorfish | P    | Yes   | 6    | WA   |      |      |       |     |       |      |
| Xyrichtys splendens | Castelnau, 1855     | Green Razorfish | P    | Yes   | Yes | Yes | 6    | GC   |      |     |       |      |
| Scarinae             |                     |     |      |        |      |      |      |      |       |     |       |      |
| Cryptotomus morsus | Cope, 1871          | Bluelip Parrotfish | P    | Yes   | 6    | WA   |      |      |       |     |       |      |
| Scarus coeruleus    | Bloch, 1786          | Blue Parrotfish | Yes | Yes   | 6    | GC   |      |      |       |     |       |      |
| Scarus guacamaia | Cuvier, 1829         | Rainbow Parrotfish | Yes | Yes   | 6    | GC   |      |      |       |     |       |      |
| Scarus triangularis | Bloch, 1789          | Stripped Parrotfish | P    | Yes   | Yes | Yes | 6    | GC   |      |     |       |      |
| Scarus taeniopodus | Desmarest, 1831      | Princess Parrotfish | V    | P     | Yes  | Yes | Yes | 6    | GC   |      |      |
| Scarus vetula       | Bloch & Schneider, 1801 | Queen Parrotfish | P    | Yes  | Yes | Yes | Yes | 6    | GC   |      |      |
| Sparisoma atraeum | Poey, 1861           | Greenblotch Parrotfish | P    | Yes   | 6    | GC   |      |      |       |     |       |      |
| Sparisoma aurifrontatum | Valenciennes, 1840) | Redband Parrotfish | V    | P     | Yes  | Yes | Yes | 7    | GC   |      |      |
| Sparisoma chrysopterum | (Bloch & Schneider, 1801) | Redtail Parrotfish | P    | Yes  | Yes | Yes | 7    | GC   |      |     |       |      |
| Sparisoma nudatus | Valenciennes, 1840   | Bucktooth Parrotfish | P    | Yes  | 7    | WA   |      |      |       |     |       |      |
| Sparisoma rubripinnis | Valenciennes, 1840) | Yellowtai Parrotfish | P    | Yes  | Yes | 7    | GC   |      |       |     |       |      |
| Sparisoma viride | Bonnaterre, 1788     | Stoplight Parrotfish | V    | P     | Yes  | Yes | Yes | 7    | GC   |      |      |
| LABRISOMIDAE        |                     |     |      |        |      |      |      |      |       |     |       |      |
| Brockius nigricinctus | Howell Rivero, 1936 | Spotcheek Blenny | Estapé | P    | 7    | GC   |      |      |       |     |       |      |
| Gobiodon ocelliferus | Poey, 1868         | Puffcheek Blenny | Estapé | P    | 7    | GC   |      |      |       |     |       |      |
| Gobiodon gobius | Valenciennes, 1836  | Pakhead Blenny | Estapé | P    | 7    | WA   |      |      |       |     |       |      |
| Gobiodon guppy | Norman, 1922        | Mimic Blenny | Estapé | P    | 7    | WA   |      |      |       |     |       |      |
| Labrisomus nachtigallii | Quoy & Gaimard, 1824 | Hairy Blenny | P     | Yes | Yes | 7    | TA   |      |       |     |       |      |
| Malacocentrus aurorubens | Smith, 1957         | Goldline Blenny | P     | Yes | 7    | GC   |      |      |       |     |       |      |
| Malacocentrus bohlskei | Springer, 1959       | Diamond Blenny | P     | Yes | 7    | GC   |      |      |       |     |       |      |
| Malacocentrus ebrmanni | Smith, 1957         | Imitator Blenny | Estapé | P    | 7    | GC   |      |      |       |     |       |      |
| Species in families | English common name | New | DROP | Estapé | vK15 | DP17 | GBIF | OBIS | Plate | Zoo | Range | Deep |
|---------------------|---------------------|-----|------|--------|------|------|------|------|-------|-----|-------|------|
| Malacoctenus macropus (Poey, 1868) | Rosy Blenny | Estapé | P | | | 7 | GC | |
| Malacoctenus triangulatus Springer, 1959 | Saddled Blenny | Estapé | P | | | 7 | GC | |
| Lobotes surinamensis (Bloch, 1790) | Atlantic Tripletail | | | | | | TA/IWP | |
| Lophiodes monodi Le Danois, 1971 | Club-bait Goosefish | | | | | GC | Yes | |
| Apistius dentatus Guichenot, 1853 | Black Snapper | | | | | | | |
| Etelis maculatus (Valenciennes, 1828) | Queen Snapper | | | | | GC | Yes | |
| Lutjanus analis (Cuvier, 1828) | Mutton Snapper | V | P | Yes | Yes | Yes | 7 | WA | |
| Lutjanus apodus (Walbaum, 1792) | Schoolmaster | V | P | Yes | Yes | Yes | 7 | GC | |
| Lutjanus buccanella (Cuvier, 1828) | Blackfin Snapper | V | P | Yes | | | 7 | WA | |
| Lutjanus cyanopterus (Cuvier, 1828) | Cubera Snapper | | | | | 7 | WA | |
| Lutjanus griseus (Linnaeus, 1758) | Gray Snapper | (P) | Yes | Yes | | 7 | TA | |
| Lutjanus jocu (Bloch & Schneider, 1801) | Dog Snapper | | | Yes | Yes | 7 | TA | |
| Lutjanus mahogoni (Cuvier, 1828) | Mahogany Snapper | V | P | Yes | Yes | Yes | 7 | GC | |
| Lutjanus purpureus (Poey, 1866) | Caribbean Red Snapper | | | Yes | | | 7 | TA | |
| Lutjanus synagris (Linnaeus, 1758) | Lane Snapper | | | Yes | Yes | 7 | TA | |
| Lutjanus vivinus (Cuvier, 1828) | Silk Snapper | | | Yes | | TA | Yes | |
| Ocyurus chrysurus (Bloch, 1791) | Yellowtail Snapper | V | P | Yes | Yes | Yes | 7 | TA | |
| Pristipomoides sp. | | | | | | | | |
| Gadomus acutus (Goode & Bean, 1886) | Doublethread Grenadier | | | Yes | | | TA | Yes | |
| Gadomus dispar (Vaillant, 1888) | Oneelong Grenadier | | | Yes | | TA | Yes | |
| Hymenops pupilus (Berg, 1905) | Nobead Grenadier | | | Yes | | WA | Yes | |
| Hymenops pupilus bigeby Marsh & Iwamoto, 1973 | Bigeye Grenadier | | | Yes | | | TA | Yes | |
| Malacosteus kesi (Lowe, 1843) | Velvet Grenadier | | | Yes | | WA | Yes | |
| Naussula aequidens (Günther, 1878) | Atlantic Blacktip Grenadier | | | Yes | | TA | Yes | |
| Ventrisius macropogon Marsh, 1973 | Longbeard Grenadier | | | Yes | | WA | Yes | |
| MACROURIDAE | | | | | | | | |
| Malacanthus plumieri (Bloch, 1786) | Sand Tilefish | V | P | Yes | Yes | Yes | 7 | WA | |
| MEGALOPIDAE | | | | | | | | |
| Megalops atlanticus Valenciennes, 1847 | Tarpon | P | Yes | | | 8 | TA | |
| MERLUCCIIDAE | | | | | | | | |
| Steindachneria argentea Goode & Bean, 1896 | Luminous Hake | | | | | GC | Yes | |
| Species in families | English common name | New | DROP | Estapé | vK15 | DP17 | GBIF | OBIS | Plate | Zoo | Range | Deep |
|---------------------|---------------------|-----|------|--------|------|------|------|------|-------|-----|-------|------|
| MONACANTHIDAE       | Aluterus scriptus (Osbeck, 1765) | Scrapped Filefish | P | Yes | Yes | 8 | PAN |
|                     | Cantherhines macrocerus (Holland, 1853) | Whitespotted Filefish | P | Yes | Yes | Yes | Yes | 8 | WA |
|                     | Cantherhines pullus (Ranzani, 1842) | Orangespotted Filefish | P | Yes | Yes | Yes | 8 | TA |
| Monacanthus ciliatus (Mitchell, 1818) | Fringed Filefish | P | Yes | Yes | 8 | TA |
| Monacanthus tuckeri Bean, 1906 | Slender Filefish | P | Yes | Yes | 8 | GC |
| Stephanolepis sayer (Bennett, 1831) | Pygmy Filefish | P | Yes | Yes | 8 | WA |
| MUGILIDAE           | Mugil curena Valenciennes, 1836 | White Mullet | Yes | 8 | TA |
| MULIIDAE            | Mullidae martini (Cuvier, 1829) | Yellow Goatfish | V | P | Yes | Yes | Yes | 8 | TA |
|                     | Pseudaponeus maculatus (Bloch, 1793) | Spotted Goatfish | V | P | Yes | Yes | Yes | 8 | WA |
| MURAENIDAE          | Echidna catenata (Bloch, 1795) | Chain Moray | P | Yes | 8 | WA |
|                     | Enchelycore carychis Bohlke & Bohlke, 1976 | Chestnut Moray | Estapé | (P) | 8 | TA |
|                     | Enchelycore nigricans (Bonmatre, 1788) | Viper Moray | Estapé | (P) | 8 | TA |
| Gymnothorax funebris Ranzani, 1839 | Green Moray | P | Yes | Yes | 8 | TA |
| Gymnothorax miliaris (Kaup, 1856) | Goldentail Moray | P | Yes | Yes | 8 | TA |
| Gymnothorax moringa (Cuvier, 1829) | Spotted Moray | P | Yes | Yes | 8 | TA |
| Gymnothorax vicinus (Castelnau, 1855) | Purplemouth Moray | P | Yes | Yes | 8 | TA |
| NARCINIDAE          | Narcine bancroftii (Griffith & Smith, 1834) | Lesser Electric Ray | Yes | GC |
| OGOCEPHALIDAE       | Dibranchus atlanticus Peters, 1876 | Atlantic Batfish | Yes | TA | Yes |
|                     | Ogocephalus corniger Bradbury, 1980 | Longnose Batfish | DROP | CP | 8 | GC |
| Zalulites mcgintyi (Fowler, 1952) | Tricorn Batfish | DROP | CP | 8 | GC | Yes |
| OPHICHTHIDAE        | Myrichthys breviceps (Richardson, 1848) | Sharpnose Eel | Yes | WA |
|                     | Myrichthys ocellatus (Lesueur, 1825) | Goldspotted Eel | Estapé | P | 8 | WA |
| Ophichthus ophio (Linnaeus, 1758) | Spotted Eel | Yes | WA |
| OPHIDIDAE           | Brotna barbata (Bloch & Schneider, 1801) | Atlantic Bearded Brotna | DROP | CP | 8 | TA |
| Nemcythys elongatus Nielsen & Retzl, 1994 | Elongate Cusk-eel | Yes | GC | Yes |
| Pempredion schmidtii (Woods & Kanazawa, 1951) | Dusky Cusk-eel | Estapé | P | 8 | GC |
| OPISTOGNATHIDAE     | Opistognathus ausbroni (Jordan & Thompson, 1905) | Yellowhead Jawfish | P | Yes | Yes | Yes | 8 | WA |
|                     | Opistognathus macgregorii Poey, 1860 | Banded Jawfish | Yes | GC |
| Species in families | English common name | New | DROP | Estapé | vK15 | DP17 | GBIF | OBIS | Plate | Zoo | Range | Deep |
|---------------------|---------------------|-----|------|--------|------|------|------|------|-------|-----|-------|------|
| **OSTRACIIDAE**      |                     |     |      |        |      |      |      |      |       |     |       |      |
| Opistognathus macilour Poey, 1860 | Mottled Jawfish | Estapé | P |        |      |      |      |      | 8 | GC |
| Acantostachion polygonius Poey, 1876 | Honeycomb Cowfish | V | P | Yes | Yes | Yes | Yes | 8 | WA |
| Acantostacion quadrirrornis (Linnaeus, 1758) | Scrapped Cowfish | V | P | Yes |      |      |      |      | 9 | TA |
| Lacophrys bicaudalis (Linnaeus, 1758) | Spotted Trunkfish | P | Yes | Yes |      |      |      |      | 9 | TA |
| Lacophrys trigonus (Linnaeus, 1758) | Trunkfish | P | Yes | Yes |      |      |      |      | 9 | TA |
| Lacophrys triguerter (Linnaeus, 1758) | Smooth Trunkfish | P | Yes | Yes | Yes |      |      |      | 9 | WA |
| **Citharichthyidae** |                     |     |      |        |      |      |      |      |       |     |       |      |
| Citharichthys cornutus (Gunther, 1880) | Horned Whiff | |       |        |      |      |      |      |      | WA | Yes |
| Gastroperca frontalis Bean, 1895 | Shrimp Flounder | DROP | CP | DROP |      |      |      |      | 9 | GC |
| **PARAZENIDAE**      |                     |     |      |        |      |      |      |      |       |     |       |      |
| Syacium micrurum Ranzani, 1842 | Channel Flounder | P | Yes |      |      |      |      |      | 9 | WA |
| **PEMPHERIDAE**      |                     |     |      |        |      |      |      |      |       |     |       |      |
| Pempheris schoenborgi Müller & Troschel, 1848 | Glassy Sweeper | P | Yes |      |      |      |      |      | 9 | WA |
| **PENTANCHIDAE**     |                     |     |      |        |      |      |      |      |       |     |       |      |
| Apristurus cornutus Springer & Heemstra, 1979 | Hoary Cat Shark | |       |        |      |      |      |      |      | GC | Yes |
| Galeus antillensis Springer, 1979 | Antilles Sawtail Catshark | |       |        |      |      |      |      |      | GC | L | Yes |
| **PERCOPHIDAE**      |                     |     |      |        |      |      |      |      |       |     |       |      |
| Bembrops ocellatus Thompson & Suttkus, 1998 | Ocellate Duckbill | |       |        |      |      |      |      |      | GC | Yes |
| Bembrops quadrisellus Thompson & Suttkus, 1998 | Saddleback Duckbill | |       |        |      |      |      |      |      | GC | Yes |
| Chironemus aquamentum (Ginsburg, 1955) | Scallychin Flathead | DROP | CP | DROP |      |      |      |      | 9 | GC | Yes |
| **PERISTEDIIDAE**    |                     |     |      |        |      |      |      |      |       |     |       |      |
| Peristesio truncatum (Gunther, 1880) | Black armored Searobin | |       |        |      |      |      |      |      | WA | Yes |
| **POLYMIXIIDAE**     |                     |     |      |        |      |      |      |      |       |     |       |      |
| Polybothus loewi Gunther, 1859 | Beardfish | |       |        |      |      |      |      |      | WA | Yes |
| **POMACANTHIDAE**    |                     |     |      |        |      |      |      |      |       |     |       |      |
| Centropyge argi Woods & Kanazawa, 1951 | Cherubfish | V | P | Yes |      |      |      |      | 9 | GC |
| Holacanthus ciliaris (Linnaeus, 1758) | Queen Angelfish | V | P | Yes | Yes | Yes | Yes | 9 | WA |
| Holacanthus tricolor (Bloch, 1795) | Rock Beauty | V | P | Yes | Yes | Yes | Yes | 9 | WA |
| Pomacanthus arcuatus (Linnaeus, 1758) | Gray Angelfish | |       |        |      |      |      |      |      | WA |
| Pomacanthus paru (Bloch, 1787) | French Angelfish | V | P | Yes | Yes | Yes | Yes | 9 | WA |
| **POMACENTRIDAE**    |                     |     |      |        |      |      |      |      |       |     |       |      |
| Abudefduf saxatilis | Sergeant Major | P | Yes | Yes |      |      |      |      | 9 | TA |
| Abudefduf taurus Müller & Troschel, 1848 | Night Sergeant | P | Yes | Yes |      |      |      |      | 9 | TA |
| Chromis cf. enchrysea | | DROP | CP | DROP |      |      |      |      | 13 | WA | Yes |
| Species in families | English common name | New | DROP | Estapé | vK15 | DP17 | GBIF | OBIS | Plate | Zoo | Range | Deep |
|--------------------|---------------------|-----|------|--------|------|------|------|------|-------|-----|-------|------|
| *Chromis cyanea* (Poey, 1860) | Blue Chromis | V | P | Yes | Yes | Yes | 9 | GC |
| *Chromis insolata* (Cuvier, 1830) | Sunshineshark | V | P | Yes | Yes | 9 | GC |
| *Chromis multilineata* (Guichenot, 1853) | Brown Chromis | V | P | Yes | Yes | Yes | 9 | TA |
| *Chromis scotti* Emery, 1968 | Purple Reefshark | DROP | V | | | | | |
| *Micromus lacrymaria* (Cuvier, 1830) | Yellowtail Damsel | V | P | Yes | Yes | Yes | 9 | WA |
| *Stegastes diadema* (Troschel, 1855) | Dusky Damsel | P | Yes | 9 | GC |
| *Stegastes diadema* (Jordan & Rutter, 1897) | Longfin Damsel | P | Yes | 9 | GC |
| *Stegastes leucostictus* (Müller & Troschel, 1848) | Beaugregory |  |  |  |  |  |  |  |
| *Stegastes parvus* (Troschel, 1855) | Bicolor Damsel | V | P | Yes | Yes | Yes | 9 | GC |
| *Stegastes planifrons* (Cuvier, 1830) | Threespot Damsel | P | Yes | 9 | GC |
| *Stegastes santibras* (Poey, 1860) | Cocoa Damsel | P | Yes | 9 | GC |
| *PRIACANTHIDAE* |  |  |  |  |  |  |  |  |
| *Heteropriacanthus crenatus* (Lacepède, 1801) | Glasseye Snapper | V | P | Yes | Yes | 9 | TA |
| *Priacanthus arenatus* Cuvier, 1829 | Bigeye | V |  |  |  |  | TA |
| *Pristigenys alta* (Gill, 1862) | Short Bigeye | DROP | V | | | | |
| *RHINCODONTIDAE* |  |  |  |  |  |  |  |  |
| *Rhincodon typus* Smith, 1828 | Whale Shark | V |  |  |  |  |  | PAN |
| *SCIAENIDAE* |  |  |  |  |  |  |  |  |
| *Equetus lanceolatus* (Linnaeus, 1758) | Jackknife-fish | V | P | Yes | Yes | 10 | WA |
| *Equetus punctatus* (Bloch & Schneider, 1801) | Spotted Drum | P | Yes | Yes | 10 | WA |
| *Parrocites acuminatus* (Bloch & Schneider, 1801) | High-hat | P | Yes | 10 | WA |
| *Umbrina cortiata* Cuvier, 1830 | Sand Drum | V | P | Yes | Yes | 10 | WA |
| *SCOMBRIDAE* |  |  |  |  |  |  |  |  |
| *Acanthocybium solandri* (Cuvier, 1802) | Wahoo | V |  |  |  |  |  | PAN |
| *Euthynnus aloe* (Rafinesque, 1810) | Little Tunny | V | P | Yes | Yes | 10 | TA |
| *Katsuwonus pelamis* (Linnaeus, 1758) | Skipjack Tuna | V | P | Yes | Yes | 10 | WA |
| *Scorpaenidae* |  |  |  |  |  |  |  |  |
| *Scorpaena plumieri* (Bloch, 1793) | Blackfin Tuna | V | P | Yes | Yes | 10 | WA |
| *SERRANIDAE* |  |  |  |  |  |  |  |  |
| *Alphestes afer* Bloch, 1793 | Mutton Hamlet | V | P | Yes | Yes | 10 | TA |
| Species in families | English common name | New | DROP | Estapé | vK15 | DP17 | GBIF | OBIS | Plate | Zoo | Range | Deep |
|--------------------|--------------------|-----|------|--------|------|------|------|------|-------|-----|-------|------|
| Baldwinella vivanus (Jordan & Swain, 1885) | Red Barbier | DROP | V        |        |      |      |      |      |       | WA  | Yes   |      |
| Bathysquatia species A | Pugrose Bass | DROP | CP      |        |      |      |      |      |       |     |       |      |
| Balistichthys caribbeanus Rivas, 1971 | Grayshy | V | P | Yes | Yes | Yes | Yes | Yes | 10 | GC  | L     | Yes |
| Cephalopholis cruentata (Lacepede, 1802) | Coney | V | P | Yes | Yes | Yes | Yes | Yes | 10 | WA  |       |      |
| Cephalopholis fulva (Linnaeus, 1758) | V | (P) |        |        |      |      |      |      |       |   |       |      |
| Diplopterus bivittatus (Valenciennes, 1828) | Rock Hind | V | (P) | Yes | Yes | Yes | Yes | Yes | 10 | WA  |       |      |
| Epinephelus adscensionis (Osbeck, 1765) | V | P | Yes | Yes | Yes | Yes | Yes | Yes | 10 | WA  |       |      |
| Epinephelus guttatus (Linnaeus, 1758) | Red Hind | V | P | Yes | Yes | Yes | Yes | Yes | 10 | WA  |       |      |
| Epinephelus striatus (Bloch, 1792) | Pug Rose | DROP | V        |        |      |      |      |      |       |     |       |      |
| Gonionoctus hispanus (Cuvier, 1828) | Spanish Flag | DROP | V        |        |      |      |      |      |       |     |       |      |
| Hypoplectrus chlorurus (Cuvier, 1828) | V | P | Yes | Yes | Yes | Yes | Yes | 10 | GC  | L     | Yes |
| Hypoplectrus guttavarius (Poey, 1852) | Indigo Hamlet | DROP | V        |        |      |      |      |      |       |     |       |      |
| Hypoplectrus indigo (Poey, 1851) | Black Hamlet | V | P | Yes | Yes | Yes | Yes | Yes | 10 | GC  |       |      |
| Hypoplectrus puella (Cuvier, 1828) | V | P | Yes | Yes | Yes | Yes | Yes | Yes | 10 | GC  |       |      |
| Hypoplectrus unicolor (Walbaum, 1792) | Bluegill | Estapé | P |        |      |      |      |      |       |     |       |      |
| Liopropoma carabi (Randall, 1963) | Candy Basslet | DROP | CP |        |      |      |      |      |       |     |       |      |
| Liopropoma mowbrayi Woods & Kanazawa, 1951 | Cave Basslet | DROP | CP |        |      |      |      |      |       |     |       |      |
| Liopropoma olneyi Baldwin & Johnson, 2014 | Yellow-Spotted Basslet | DROP | CP |        |      |      |      |      |       |     |       |      |
| Liopropoma rubra Poey, 1861 | Peppermint Basslet | V | P | Yes | Yes | Yes | Yes | Yes | 11 | GC  |       |      |
| Mycteroperca interstitialis (Poey, 1860) | Yellowmouth Grouper | V | P | Yes | Yes | Yes | Yes | Yes | 11 | WA  |       |      |
| Mycteroperca tigris (Valenciennes, 1833) | Tiger Grouper | V | P | Yes | Yes | Yes | Yes | Yes | 11 | WA  |       |      |
| Mycteroperca venenosus (Linnaeus, 1758) | Yellowfin Grouper | V | P | Yes | Yes | Yes | Yes | Yes | 11 | WA  |       |      |
| Paranthias furcifer (Valenciennes, 1828) | Atlantic Creolefish | V | P | Yes | Yes | Yes | Yes | Yes | 11 | TA  |       |      |
| Plectropomus species A | Roughtongue Bass | DROP | CP |        |      |      |      |      |       |     |       |      |
| Pseudogrammus martinioculis (Guichenot, 1868) | Freckled Soapfish | DROP | CP |        |      |      |      |      |       |     |       |      |
| Ripturus listricepis (Mitchill, 1818) | Greater Soapfish | V | P | Yes | Yes | Yes | Yes | Yes | 11 | TA  |       |      |
| Ripturus spinosacru (Bloch & Schneider, 1801) | Orangeback Bass | DROP | V |        |      |      |      |      |       |     |       |      |
| Serrius annularis (Gunther, 1880) | Lantern Bass | V | P | Yes | Yes | Yes | Yes | Yes | 11 | WA  |       |      |
| Serrius baldwinii (Evermann & Marsh, 1899) | Twin spot Bass | V | Yes | Yes | Yes | Yes | Yes | Yes | 11 | WA  |       |      |
| Serrius flaviventris (Cuvier, 1829) | Twospot Sea Bass | DROP | CP |        |      |      |      |      |       |     |       |      |
| Serrius fuscida (Poey, 1861) | Crosshatch Bass | DROP | V |        |      |      |      |      |       |     |       |      |
| Serrius leucopetera Poey, 1852 | Saddles Bass | DROP | V |        |      |      |      |      |       |     |       |      |
| Serrius mooreli Longley, 1935 | Tattler | V | Yes | Yes | Yes | Yes | Yes | Yes | 11 | WA  |       |      |
| Serrius pheobe Poey, 1851 | Tattler | V | Yes | Yes | Yes | Yes | Yes | Yes | 11 | WA  |       |      |
| Species in families       | English common name          | New | DROP | Estapé | vK15 | DP17 | GBIF | OBIS | Plate | Zoo | Range | Deep |
|--------------------------|------------------------------|-----|------|--------|------|------|------|------|-------|-----|-------|------|
| Semanus tabacarius       | Tobaccofish                  | V   | P    | Yes    | Yes  | Yes  | 11   | WA   |
| Semanus tigrinus         | Harlequin Bass               | V   | P    | Yes    | Yes  | Yes  | 11   | GC   |
| Semanus tortugarum       | Chalk Bass                   | V   | P    | Yes    | Yes  | Yes  | 11   | GC   |
| SETARCHIDAE              |                              |     |      |        |      |      |      |      |
| Serranus tabacarius      | Tobaccofish                  | V   | P    | Yes    | Yes  | Yes  | 11   | WA   |
| Serranus tigrinus        | Harlequin Bass               | V   | P    | Yes    | Yes  | Yes  | 11   | GC   |
| Serranus tortugarum      | Chalk Bass                   | V   | P    | Yes    | Yes  | Yes  | 11   | GC   |
| SPARIDAE                 |                              |     |      |        |      |      |      |      |
| Calamus bajnado          | Jolthead Porgy               |     |      |        |      |      |      |      |
| Calamus calamus          | Saucereye Porgy              | P   | Yes  | Yes    | 11   | WA   |
| Calamus penatula         | Pluma Porgy                  | P   | Yes  | Yes    | 11   | WA   |
| SPHYRAENIIDAE            |                              |     |      |        |      |      |      |      |
| Sphyraena barracuda      | Great Barracuda              | V   | P    | Yes    | Yes  | Yes  | 11   | PAN  |
| SPHYRINIDAE              |                              |     |      |        |      |      |      |      |
| Sphyraena mokarran       | Great Hammerhead             |     |      |        |      |      |      |      |
| SQUALIDAE                |                              |     |      |        |      |      |      |      |
| Squatius clarkae         | Gulf Dogfish                 |     |      |        |      |      |      |      |
| SYMPHYSCANODONTIDAE       |                              |     |      |        |      |      |      |      |
| Symphysanodon berryi     | Slope Bass                   |     | DROP | CP     |      | 11   | TA   | Yes  |
| Symphysanodon octoactinus| Insular Bunquelovely         | CP  | DROP | DROP   |      | 11   | GC   | Yes  |
| SYNGNATHIDAE             |                              |     |      |        |      |      |      |      |
| Amphelikurus dendriticus | Seahorse Pipefish            |     | Estapé| P      |      | 11   | WA   |
| Bryx dunckeri            | Pugnose Pipefish             |     |      |        |      |      |      |      |
| Cosmoampus albivittatus  | Whitenoise Pipefish          |     |      |        |      |      |      |      |
| Halicampus crinitus      | Banded Pipefish              |     | Estapé| V      |      | 11   | WA   |
| Hippocampus erectus      | Lined Seahorse               | P   |      |        |      | 11   | WA   |
| Hippocampus reidi        | Longsnout Seahorse           | P   |      |        |      | 11   | GC   |
| SYNODONTIDAE             |                              |     |      |        |      |      |      |      |
| Synodus poecilus         | Inshore Lizardfish           |     |      |        |      |      |      |      |
| Synodus intermedius      | Sand Diver                   | P   | Yes  | Yes    | Yes  | 11   | TA   |      |
| Synodus synodus          | Red Lizardfish               | P   | Yes  | Yes    | 11   | TA   |      |
| Tachinorostrus myops     | Snakefish                    | P   | Yes  | Yes    | 11   | TA   |      |
| TETRAODONTIDAE           |                              |     |      |        |      |      |      |      |
| Canthigaster jametleri   | Goldface Toby                |     | DROP | CP     |      | 11   | GC   |      |
| Canthigaster rostrata    | Sharpnose Puffer            | V   | P    | Yes    | Yes  | 11   | GC   |      |
| Sphoeroides dornalis     | Marbled Puffer              |     | DROP  | CP     | Estapé| 12   | GC   |      |
| Sphoeroides nephelius    | Southern Puffer             |     |      |        |      |      |      |      |
| Species in families                  | English common name       | New  | DROP | Estapé | vK15 | DP17 | GBIF | OBIS | Plate | Zoo | Range | Deep |
|-------------------------------------|---------------------------|------|------|--------|------|------|------|------|-------|-----|-------|------|
| *Sphoeroides spengleri* (Bloch, 1785) | Bandtail Puffer           |      |      | P      | Yes  |      |      |      |       |     | 12    | WA   |
| *Hoplostethus occidentalis* Woods, 1973 | Western Roughy            |      |      |        |      | Yes  |      |      |       |     | WA    | Yes  |
| *Hollardia hollardi* Poey, 1861      | Reticulate Spikefish      |      |      |        |      | Yes  |      |      |       |     | GC    | Yes  |
| *Bellator egretus* (Goode & Bean, 1896) | Streamer Searobin         |      | DROP | CP     |      |      |      |      |       |     | 12    | GC   |
| *Enneanectes altivelis* Rosenblatt, 1960 | Lofly Triplefin           |      |      | Estapé | P    |      |      |      |       |     | 12    | GC   |
| *Enneanectes boehlkei* Rosenblatt, 1960 | Roughhead Triplefin       |      |      | Estapé | P    |      |      |      |       |     | 12    | GC   |
| *Enneanectes jordani* (Evermann & Marsh, 1899) | Mimic Triplefin           |      |      | p      |      | Yes  |      |      |       |     | 12    | GC   |
| *Enneanectes matador* Victor, 2013   | Matador Triplefin         |      |      | Estapé | p    |      |      |      |       |     | 12    | GC   |

Notes:
1. *Pristipomoides*. This is *P. aquilonaris* and/or *P. macrophthalmus*. Statia is within the geographical range of both species.
2. *Chromis cf. enchrysura* is an undescribed species recorded as *C. enchrysura* in the GBIF database, where it is a DROP entry.
3. The *Balduinella “viviana”* population from the Caribbean likely is a separate species from *B. viviana*, which was described from specimens collected on the north coast of Cuba.

Photograph credits: B Brown: *A. nikkiae, B. barbata, C. Jamestyeri, D. puellaris, D. lombardii, Foetorepus sp, G. linkii, L. nubramyi, L. Rayi, L. regia, P grandoculus, S. fuscula, V. cephaloellatus, Z. mcgyntii*; M and R Bentley: *A. narinari, E. carybroa, E. adscensionis, G. cirratum, L. grisus, H. sciura*; M Harterink: *A. balearicum, E. carib, E. vitta, E. nigricans, G. vicinus, H. exostochius*; M Pistor (STENAPA): *A. afer, H. histrio*; all other photographs are by the two sets of coauthors during their respective expeditions in 2017 and 2020.
we noted whether each is a Greater Caribbean endemic, or is distributed more widely in the tropical western Atlantic (i.e., to the north and south of the Greater Caribbean, or on both sides of the Atlantic, or in the Indo-Pacific as well as the Atlantic). (b) Geographical range size – we noted which species have small geographical ranges within the Greater Caribbean, which we defined as ranges that span no more than one third of the area of that region (based on maps of their ranges in Robertson and Van Tassell 2019).

**Ecological structure**

The research during 2017–2020 was aimed at documenting the reef-associated bony fishes of Statia. For analyses of the structure of the Statia20 fauna we assigned those species to the following ecological groups (following Robertson and Tornabene 2020): Reef-associated fishes include demersal and benthic species that use hard substrata (coral- and rock reefs), and soft bottoms (sand, gravel, mud, seagrass and macroalgal beds growing on sediment, estuaries and mangroves) immediately adjacent to or within the matrices of reefs. Benthic species are restricted to living on and in the bottom, while demersal species use both the bottom and the near-bottom water column. Cryptobenthic fishes are visually and/or behaviorally cryptic due to their form and coloration, and to their maintaining a close association with the benthos, directly on or within it. Small size (here maximum total length (TL) ≤10 cm) also is thought to be important for crypsis among such species. Core families of cryptobenthic reef fishes (Core CRFs) (see Brandl et al. 2018, 2019) found in the western Atlantic include the Apogonidae, Blenniidae, Bythitidae, Callionymidae, Chaenopsidae, Dactyloscopidae, Gobiesocidae, Gobiidae, Grammatidae, Labrisomidae, Opistognathidae, Syngnathidae, Tripterygiidae. To these families we added the Dinematichthyidae, which was split from the Bythitidae by Møller et al. (2016) shortly before Brandl et al. (2018) assembled their list of Core CRF families, and contains many shallow, reef-associated species. Species in the list are divided into two depth classes, based on their depth ranges: shallow species are those commonly found above 40 m depth, and deep species are those entirely or largely restricted to depths below 40 m.

In the Greater Caribbean region reef-associated bony fishes comprise ~ 900 species from 304 genera in 76 families (Robertson and Tornabene 2020). Reef-fish faunas of deep reefs down to ~ 250 m are dominated by the same set of families that are common on shallow reefs (Baldwin et al. 2018). At the regional level ~ 95% of those reef-associated species are non-pelagic, demersal and benthic forms, which were the focus of the 2017–2020 research at Statia. The relative abundance of the different ecological groups in the Statia20 fauna was compared to: (a) that of the regional fauna to assess similarities and differences; (b) that of the Statia fauna of Davies and Piontek (2017) (hereafter Statia17) to assess any changes; and (c) that of the Saba Exclusive Economic Zone (EEZ) (which includes Statia) (hereafter Saba17) prior to the 2017–2020 research to assess the identity and ecotypes of species that, although they are not on the Statia20 list, do occur very near Statia. Finally, we compare the relative abundances of the different ecogroups in the Statia20 fauna to those at one of the best sampled reefs
in the Greater Caribbean, which has the largest published fauna: Alligator Reef in the Florida Keys (see Williams et al. 2010). The Alligator reef faunal checklist was recently updated and expanded (Starck et al. 2017; Estapé et al. 2020; hereafter Alligator20), and, hence, should provide a useful comparison.

A list of reef-associated fishes known from Alligator Reef was extracted from the list in Starck et al. (2017), and Estapé et al (2020) by comparing it to the checklist of regional reef-associated fishes of Robertson and Tornabene (2020). A faunal list for the Saba EEZ (see Suppl. material 1: Figure S1) was obtained by using the “Species List Assembly” tool in Robertson and Van Tassell (2019) (https://biogeodb.stri.si.edu/caribbean/en/research/index/list), as follows: within the tool the following combination of factors was selected – all species/ political area/ Saba EEZ. The confirmed species on the list generated (those with actual records within that EEZ) were then used here. A few species represented solely by data from the 2017–20 research at Statia that were on the Saba EEZ list generated by that tool were excluded from that list for the present comparisons.

**Results**

**Modifications to the list of Davies and Piontek (2017)**

We reduced the number of species on the list of Davies and Piontek (2017) (which is unchanged from that of Davies and Piontek 2016) from 307 to 304 through three deletions. Those included *Emblemariopsis occidentalis* Stephens, 1970, *Pterois miles* (Bennett, 1828) and *Enneanectes pectoralis* (Evermann & Marsh, 1899). Those authors recorded *E. occidentalis* and provided a photograph (on p 75 of Davies and Piontek 2016) of the fish they gave this name. However, *E. occidentalis* is now known to be restricted to the Bahamas (B Victor pers. comm., 26 May 2020). Authors CJE and AME photographed two species of this genus at Statia, *E. bahamensis* and *E. carib*. While *E. carib* (and *E. occidentalis*) has a simple ocular cirrus, *E. bahamensis* lacks such a cirrus. As the fish in Davies and Piontek’s (2016) photograph clearly has an ocular cirrus it cannot be *E. bahamensis*. B Victor (pers. comm., 26 May 2020) examined that photograph and concluded it is of either *E. carib* or possibly *E leptocirris* Stephens 1970, which has an ocular cirrus and is known from the Puerto Rican plateau, 185 km from Statia. Hence, we deleted *E. occidentalis* from the list but did not include *E. leptocirris* due to the uncertain identification of that photograph. The Indo-west Pacific lionfish *P. volitans* apparently is a hybrid of two Indo-west Pacific species, and the West Atlantic population of this lionfish appears to be composed almost entirely of *P. volitans* (Wilcox et al. 2018). Hence, we excluded *P. miles* from the list as it is unlikely to be present at Statia and any such an occurrence has not been confirmed genetically. Davies and Piontek (2017) included both *Enneanectes pectoralis* and *E. jordani* on the list. However, we excluded *E. pectoralis* as it recently has been shown to be a synonym of *E. jordani* (see Victor 2017). In addition, we changed the names for two of Davies and Piontek’s (2017) species: Davies and Piontek (2017) recorded *L. campechanus* (Poey, 1860), which is now known to be restricted to the Gulf of Mexico and US area. The
taxonomic separation of *L. purpureus*, which ranges from the Caribbean to Brazil, from *L. campechanus* was recently confirmed by da Silva et al. (2020). Davies and Piontek (2017) recorded *S. mitsukurii* Jordan & Snyder, 1903. However, the Greater Caribbean population was recently renamed *S. clarkae* (see Ehemann et al. 2019) and *S. mitsukurii* is now regarded as restricted to the Eastern Atlantic and Indo-west Pacific. Those changes reduced the Statia17 list from 307 to 304 species.

**Additions from other sources**

The Van Kuijk et al. (2015) list of 106 species contained one species (*Chilomycterus schepfi*) not included by Davies and Piontek (2017) in their list. FishNet2 supplies data based on museum records to GBIF and all 34 species records from FishNet2 were also in the GBIF list and are not separately indicated in Table 1. The GBIF list included 103 species, and, after discounting the 27 DROP2017 collection records included therein, none of the 76 remaining species represented “new” records that are not on the Davies and Piontek (2017) list. OBIS, which also supplies data to GBIF, produced 37 records, 13 of which (all common, widely distributed species) were not in the GBIF list, but only one of which (*Coryphaena hippurus*) was not in any other database.

DROP recorded a total of 120 species, 59 of which were not in any other list, except for two new records it shared with the Estapé 2020 list. Eight of those 59 records are of species that have yet to be described and named. The Estapé 2020 list includes 244 records, 40 of them new, plus two other new additions they share with DROP. Summing the deletions and additions from various sources produced a total of 406 species for the Statia20 checklist (see Table 1).

**Photographic plates**

The 13 photographic plates (Suppl. materials 4–16; Plates S1–S13) include images of 280 species, 69% of those on the Statia20 list. In addition, Davies and Piontek (2017) provided images of *Chimaera cubana*, which are not included in the supplemental plates. Of the plate images, 40 species come from DROP collections, 226 were taken by CJE and AME and 14 were provided to them by local divers and fishers at Statia (Table 1). Images are available from other sources for all remaining species listed in Table 1 (except the seven species of macrourids), on their individual species pages at https://biogeodb.stri.si.edu/caribbean/en/pages.

**Structure of the Statia20 reef-associated bony fish fauna**

**Global geographical ranges**

Greater Caribbean endemics represent the largest group of species in the Statia fauna, and, together with more widely ranging western Atlantic endemics, constitute almost three quarters of the species. Trans-Atlantic species and species found outside as well as
inside the Atlantic represented only a quarter of the fauna (Table 1, Figure 3). The relative abundances of species with different types of large-scale geographic ranges are very similar to those of species in the well documented fauna of nearby St. Croix (Smith-Vaniz and Jelks 2014). Species found in Brazil constituted one third of the Statia fauna, while those extending northwards from the Greater Caribbean represented only 1%, a reflection of the greater effects of temperature limitation on northward extension of ranges as compared to effects of the Amazon-Orinoco outflow on limitation of range extension much further south of the Greater Caribbean.

**Extent of geographical ranges within the Greater Caribbean**

The vast majority of species are widely distributed within the Greater Caribbean, with only nine (2.25%) of them having ranges limited to a restricted part of the Caribbean. Among those nine, five are deep-living species, and five belong to Core CRF families (Table 1). The four shallow species with restricted ranges are all Core CRFs. None of the species were micro-endemics, restricted to Statia or that island plus immediately surrounding islands, and no micro-endemics are known to exist in that general area.
Ecology – Depth

The number of deep species increased from 44 on the Statia17 list to 86 in the Statia20 fauna (Table 1), representing an increase from 14.5% in the former to 21.2% in the latter. Among the reef-associated bony fishes (Table 2) the number of deep species increased from 6 (2.7%) to 39 (11.7%) in those two lists.

Ecology – Reef-associated bony fishes

The Statia20 fauna of such species is 38.3% larger than the Statia17 fauna, with numbers of shallow species increasing by 24.8% (from 214 to 267) and of deep species increasing 6.2-fold (from 6 to 39). This led to substantial increases in the relative abundance of deep-reef species, and of benthic, cryptobenthic, small cryptobenthic and core CRFs on both shallow and deep reefs. The Saba17 fauna was 71% larger than that of Statia17, with greater percentages of deep-reef, benthic, cryptobenthic, small cryptobenthic and Core CRFs. The Saba17 fauna was 23% larger than the Statia20 fauna and had a greater proportion of shallow species and fewer deep species, and higher proportions of shallow members of cryptobenthic, small cryptobenthic and Core CRF groups. Thirty-two percent of the Saba17 species were not in the Statia20

Table 2. Characteristics of assemblages of reef fishes at different locations in the Greater Caribbean region. Percentages of ecotypes in the entire regional fauna, the entire faunas from each local area, and within each of two depth subgroups refer to number of species as a % of the entire fauna and of each depth subgroup. Assemblages include those at Statia in 2017 and 2020 (Statia17 and Statia20), in the Saba EEZ in 2017 (Saba17), of species in the Saba17 fauna that are not currently known to occur at Statia (Saba17–Statia20), of the Saba EEZ in 2020 (Statia20 + Saba17), and of Alligator reef in 2020 (Alligator20). Small species are those with ≤ 10 cm maximum total length. Percentage values for individual sites that are greater than the regional value are shown in red, those below the regional value are in blue.

| Region            | ALL SPECIES (n) | Demersal species% | Benthic species% | Cryptobenthic species% | Small cryptobenthic species% | Core CRF species% |
|-------------------|-----------------|-------------------|-----------------|------------------------|-----------------------------|-------------------|
| Region            | Statia20 | Statia17 | Saba17 | Saba20 | Alligator20 | Saba17 – Statia20 |
| Demersal species% | 35.0     | 55.1     | 66.8   | 47.5   | 46.1   | 49.4   | 19.0  |
| Benthic species%  | 65.0     | 43.1     | 33.2   | 52.5   | 53.9   | 50.6   | 81.0  |
| Cryptobenthic species% | 59.2 | 40.8     | 30.9   | 49.1   | 50.1   | 46.4   | 73.6  |
| Small cryptobenthic species% | 41.6 | 24.8     | 15.5   | 30.2   | 31.9   | 24.8   | 49.6  |
| Core CRF species% | 45.8     | 28.8     | 20.5   | 33.4   | 35.1   | 27.6   | 48.8  |
| SHALLOW SPECIES%  | 85.1     | 87.3     | 97.3   | 93.4   | 88.0   | 95.3   | 90.1  |
| Non-cryptic species% | 40.8 | 59.6     | 68.1   | 50.3   | 47.6   | 58.6   | 23.9  |
| Cryptobenthic species% | 59.2 | 40.4     | 31.3   | 49.7   | 52.4   | 41.1   | 76.1  |
| Small cryptobenthic species% | 41.3 | 23.2     | 15.4   | 30.7   | 31.9   | 25.8   | 53.2  |
| Core CRF species% | 46.2     | 28.5     | 21.0   | 34.1   | 35.4   | 29.0   | 52.3  |
| DEEP SPECIES%     | 14.9     | 12.7     | 2.7    | 6.6    | 12.0   | 4.7    | 9.9   |
| Non-cryptic species% | 40.3 | 56.5     | 83.3   | 60.0   | 54.9   | 75.0   | 50.0  |
| Cryptobenthic species% | 59.7 | 43.5     | 16.7   | 40.0   | 45.1   | 25.0   | 50.0  |
| Small cryptobenthic species% | 43.3 | 35.6     | 16.7   | 24.0   | 31.4   | 5.0    | 16.7  |
| Core CRF species% | 44.0     | 38.5     | 0      | 24.0   | 33.3   | 0      | 16.7  |

Notes: see methods for classification of ecotypes. For lists of species in the Saba EEZ and Statia2020, and their ecotypic classifications see Suppl. material 2: Table S1. Pterois volitans and Pristipomoides spp are excluded from Suppl. material 2: Table S1 and the calculations in Table 2. The former is non-native and the specific identity of Pristipomoides at Statia is uncertain.
fauna. Those 121 species comprised mainly shallow cryptobenthic types, including small-cryptobenthic and Core-CRF species. When those are combined with the Statia20 fauna the resultant Saba20 fauna has substantial increases in the proportions of shallow cryptobenthic, small cryptobenthic and core CRF species compared to the Statia20 fauna. Relative to the regional fauna, however, the faunas of Statia17, Statia20, Saba17, and Saba20 all had deficits of deep species of all types and of shallow cryptobenthic species, including small- and Core-CRF species. The Alligator20 fauna of reef-associated species is the same size as the Saba20 fauna. It has the same characteristics as the Statia17 and Saba17 faunas: a large deficit of deep-reef fishes and deficits of shallow cryptobenthic species, including small- and Core-CRF species. Although there has been some collecting at Alligator reef of shallow cryptobenthic species there has been no submersible-based collecting there.

**Discussion**

The efforts of van Kuijk et al. (2015) and Davies and Piontek (2017) substantially increased our knowledge of the known ichthyofauna of Statia, from 215 to 304 species. The information added through the research in 2017 and 2020 has produced a further significant increase, by 33.6%, to 406 species. While the size of the Statia17 fauna was similar to that known for other islands in the Caribbean (Williams et al. 2010; Davies and Piontek 2017) the Statia20 fauna is distinctly larger. That can be attributed to the combination of research on deep-reef fishes by DROP in 2017 and on shallow species by CJE and AME in 2020. Williams et al. (2010) compared the size of the Saba Bank fauna to the faunas of various Caribbean sites and two in the Florida Keys. The size of the large known fauna at one of those Florida sites, Alligator Reef, has increased by ~20% since the Williams et al. (2010) study (see Starck et al. 2017; Estapé et al. 2020). However, the current state of knowledge for the other Caribbean sites referred to by Davies and Piontek (2017) and Williams et al. (2010) is unclear.

Zoogeographically the two largest groups of species in the Statia20 fauna are Greater Caribbean endemics and western Atlantic endemics, and the smallest group is of species found in the Indo-Pacific as well as the Atlantic. This mixture is fairly representative of the Greater Caribbean fish fauna as a whole (Robertson and Cramer 2014), and similar to that of nearby St. Croix (Smith-Vaniz and Jelks 2014). The vast majority of the species in the Statia20 fauna are widely distributed in the Greater Caribbean. Among the very few (2.25%) with restricted ranges most information on range-size is available for the shallow species, which belong to two of the most speciose Core CRF families in the Greater Caribbean, the Gobiidae and Chaenopsidae. High levels of local endemism is a feature of some CRF taxa (Brandl et al. 2018) and regionally those two families have substantial proportions of species with restricted ranges, as defined here: 78.7% of 47 chaenopsids and 42.4% of 139 reef-associated gobies (see species maps in Robertson and Van Tassell 2019).
Most species recorded in the Statia17 fauna are readily visible reef fishes, demersal and non-cryptic benthic species commonly found on wider Caribbean reefs, and the proportions of cryptobenthic (particularly small ones) and deep-reef species were relatively low. Davies and Piontek (2017) recognized that both those groups were probably underrepresented in their checklist due to inadequate sampling. Aspects of data collection that affect the adequacy of sampling at a location include its spatial distribution, techniques used, and the depth of sampled habitats. Of all research efforts to date at Statia only the shallow BRUV sampling by van Kuijk et al. (2015) can be regarded as spatially representative, as it was well dispersed around both exposed and sheltered sides of the island. SCUBA-based sampling by Davies and Piontek (2017) and both DROP and the Estapés was largely limited to the more sheltered platform on the western side of the island, and the submersible sampling by DROP was restricted to one small area at the southwest corner of the island shelf. Hence, there are large areas of habitat on the seaward platform and on deep reefs around three quarters of the island that remain unsampled. Furthermore, roving SCUBA surveys are largely limited to providing information on larger, more readily visible demersal and pelagic species (Ackerman and Bellwood 2000; Smith-Vaniz et al. 2006; Alzate et al. 2014). BRUVs are similarly limited: only 10.3% of the 106 species recorded by van Kuijk et al. (2015) are cryptobenthic forms, and only 2.8% are small cryptobenthic species (see Suppl. materials 2, 3: Tables S1, S2).

Rotenone is an ichthyocide commonly used in small quantities by researchers to extract cryptobenthic fishes hiding within reef structures or buried in soft bottoms, and is an important tool for elucidating the contribution of such species to reef-fish faunal assessments (Ackerman and Bellwood 2000; Smith-Vaniz et al. 2006; Robertson and Smith-Vaniz 2008). Davies and Piontek (2017) indicated that sampling using ichthyocides to extract cryptobenthic species hiding within the matrix of the reef at Statia likely would increase the size of the fauna. Rotenone sampling has been employed on shallow reefs of Saba Bank by Williams et al. (2010), and can account for the large numbers of small cryptobenthic species encountered there that are not on the Statia20 checklist: 60% of the 142 species collected by Williams et al. (2010) at Saba bank using that ichthyocide are cryptobenthic forms. Given that that bank is very close to Statia (the two shallow platforms are < 20 km apart) and, since it lacks mangroves, seagrasses and intertidal habitats, the bank may have even lower habitat diversity than Statia. Hence, it seems quite likely that many of the cryptobenthic species, particularly the small ones, found on that bank will be encountered at Statia when appropriate sampling has been done. However, the increase in numbers of shallow cryptobenthic species at Statia from 2017 to 2020 does show that organized searching by skilled citizen scientists can contribute substantially to knowledge of cryptobenthic species. The activities of CJE and AME added 33 shallow cryptobenthic species to the checklist, 31% of the total and 85% of the new records for that ecogroup in the 2020 fauna, and equivalent to 49% of the number present in the Statia17 fauna (Tables 1, 2).

The DROP submersible-based sampling is the only organized research on deep-reef fishes conducted to date at Statia or in the Saba EEZ. It produced more than half
the new records in the Statia 2020 fauna, including records of eight recently discovered species that currently lack scientific names. It dramatically increased the numerical and proportional abundance of deep-reef species in the general fauna and in the reef-associated component. A lack of such research at Saba bank and Alligator Reef accounts for the very low abundance of deep-reef fishes at those sites.

The proportional abundances of shallow cryptobenthic species, including small species and core CRFs, are also distinctly lower in the Statia20 fauna than the regional fauna. Even if all 121 reef-associated species in the Saba EEZ that are not known from Statia are assumed to be at Statia those proportions still remain below the regional levels. Some of that difference is probably due to sampling artifacts. However, the proportional abundances of those ecotypes in a local fauna like that of Statia, or Alligator Reef, may always be lower than the regional level. In the Greater Caribbean small cryptobenthic species, particularly Core-CRF species such as blennioids and gobies, often have small geographical ranges (see above), which are scattered in different parts of the region (see Robertson and Van Tassell 2019). While the regional level of the proportional abundance of such taxa is based on an aggregate of many such species from a large area, only a subset of species in those taxa will be found at any single site and their proportional contribution to local faunal richness most likely will be lower than the regional level. The Statia20 fauna includes 33.9% of the Greater Caribbean’s reef-associated fish fauna. That percentage rises to 47.3% in Saba20. Whether a tiny island with a small area of a limited range of habitats is likely to support many more species, and whether pelagic recruitment of reef fishes from nearby islands found around three sides of Statia helps sustain the Statia fauna are both debatable issues that bear on the size of its marine fish fauna.

**Conclusions**

The research reported in the present study substantially increased our knowledge of the size of the marine fish fauna of Statia and resulted in the discovery of a significant number of undescribed deep-reef species. Although that island fauna is now one of the best documented in the Greater Caribbean there is still much to do to provide a thorough assessment of its diversity. Collecting with ichthyocide (or anesthetics) is essential for effective sampling of the fauna of small, shallow cryptobenthic reef fishes present there, and sampling of both deep and shallow reef fishes needs to be more effectively distributed across the range of habitats present at the island. No single site in the Caribbean Sea has been subject to sufficiently thorough sampling to provide a clear understanding of the size of its entire marine fish fauna, the size of its reef-associated fish fauna, or even the size of its shallow, reef-associated fauna, let alone its deep-reef fish fauna.

**Permits**

Collecting by DROP was performed under Saba/Statia BES Permit No. 120317 to the Foundation Curacao Deep Reef Research Centre.
Animal-Care Permission

DROP collecting was approved by a Smithsonian Institution Animal Care and Use Committee, approval No. 2014-13 to CCB.

Acknowledgements

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Supplementary material 1

Figure S1
Authors: David Ross Robertson, Carlos J. Estapé, Allison M. Estapé, Ernesto Peña, Luke Tornabene, Carole C. Baldwin
Data type: Map of EEZ
Explanation note: Map of Saba EEZ.
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Link: https://doi.org/10.3897/zookeys.1007.58515.suppl1

Supplementary material 2

Table S1
Authors: David Ross Robertson, Carlos J. Estapé, Allison M. Estapé, Ernesto Peña, Luke Tornabene, Carole C. Baldwin
Data type: Dive site list
Explanation note: List of dive sites with dates and georeferenced coordinates.
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Link: https://doi.org/10.3897/zookeys.1007.58515.suppl2
Supplementary material 3

Table S2
Authors: David Ross Robertson, Carlos J. Estapé, Allison M. Estapé, Ernesto Peña, Luke Tornabene, Carole C. Baldwin
Data type: Occurences
Explanation note: Fish species occurrences at Saba and Statia.
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Supplementary material 4

Plate S1
Authors: David Ross Robertson, Carlos J. Estapé, Allison M. Estapé, Ernesto Peña, Luke Tornabene, Carole C. Baldwin
Data type: Photographs
Explanation note: Voucher photographs of fishes.
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Supplementary material 5

Plate S2
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Data type: Photographs
Explanation note: Voucher photographs of fishes.
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Supplementary material 6

Plate S3
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Data type: Photographs
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Supplementary material 7

Plate S4
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Data type: Photographs
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Supplementary material 8

Plate S5
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Data type: Photographs
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Supplementary material 9

Plate S6
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Data type: Photographs
Explanation note: Voucher photographs of fishes.
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Supplementary material 10

Plate S7
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Data type: Photographs
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Supplementary material 11

Plate S8
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Supplementary material 12

Plate S9
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Supplementary material 13

Plate S10
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Supplementary material 14

Plate S11
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Supplementary material 15

Plate S12
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Supplementary material 16

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Data type: Photographs
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