

# Life in the middle of the Atlantic

by Andre Seale

The long journey over deep ocean seems to never end. At 6 knots, the Transmar, a small commercial fishing boat, cuts through waves, prompting flyingfish to glide away from the wake. The confinement of the tiny bunk-beds combined with the 82-85 hr long haul in open ocean produce an even greater expectation of the remote destination to come.

In the far reaches of the Equatorial Atlantic Ocean, rising up 4,000 meters from the sea floor, the Saint Peter and Saint Paul Islets or Rocks (ASPSP, the acronym for the official name in Portuguese, Arquipélago de São Pedro e São Paulo) emerge tenuously between sky and deep ocean. The islets, 1,010 Km away from the Brazilian coastal city of Natal, had been visited by adventurous sailors and explorers for centuries, including Charles Darwin who described them in his field annotations from aboard the Beagle in 1832:

“The rocks of St. Paul appear from a distance of a brilliantly white colour. (...)”

We only observed two kinds of birds—the booby and the noddy. The former is a species of gannet, and the latter a tern. Both are of a tame and stupid disposition, and are so unaccustomed to visitors, that I could have killed any number of them with my geological hammer.”

The ASPSP are part of Brazil’s territory but remained unmanaged for a long time, and tales of shipwrecks, sailing voyages and unchecked fishing from various nations abound. Over the last decade the islets attracted the interest of the government, since properly managing them secures 200 mile radius of exclusive economic zone, which include extensive

*(Top) Split image of rocks and Green algae, Caulerpa racemosa. Nikon D100, Nexus Master Housing, dual Sea & Sea YS-90DX strobes. 12-24mm Nikkor @ 12mm, 1/100th sec @ F13. ISO 200*

*(Right) Skiff confronts large swells at the cove in front of Belmonte Islet Nikon D100, 28-300mm @82mm, 1/60th @ F36. ISO 200*





*(Above) Brown booby, Sula leucogaster, foraging underwater in shallow tide pool*

*Nikon D100, Nexus Master Housing, dual Sea & Sea YS-90DX strobes. 28-105mm @ 48mm, 1/80th @ F4.5  
(Top right) Schooling mobula rays, Mobula tarapacana, in open ocean*

*Nikon D100, Nexus Master Housing, dual Sea & Sea YS-90DX strobes. 12-24mm Nikkor @ 14mm, 1/60th @ F9. ISO 200*

*(Right) Moray eels, Muraena pavonina, at the cove*  
*Nikon D100, Nexus Master Housing, dual Sea & Sea YS-90DX strobes. 12-24mm Nikkor @ 14mm, 1/60th @ F9. ISO 200*



and productive fisheries grounds, especially for tuna. In 1995, the old lighthouse was rebuilt, and in 1998 a field research station was assembled. Since then, periodic expeditions organized by SECIRM, the Office for the Inter-Ministry Commission for Maritime Resources (the navy's division responsible for managing the nation's oceanic outposts), allow researchers of different backgrounds to study the natural resources on site. Securing this outpost brought a formidable opportunity for fostering studies of the region. Navy-sponsored expeditions to the islands are carried out on small commercial fishing boats, which provide logistical



*Rare white morphotype of the queen angelfish, Holacanthus ciliaris*  
**Nikon D100, Nexus Master Housing, dual Sea & Sea YS-90DX strobes. 28-105mm @ 70mm, 1/60th @ F5.6, ISO 200**

support to the research team, and are allowed to fish in the adjacent areas. The stay at ASPSP lasts 15 days and is available for 3-4 scientific researchers at a time. Researchers must be affiliated to Brazilian Institutions and have been awarded grants for projects that are of interest to the area.

Due to its unique formation, location and biodiversity, the cluster of 10 islets attracts mostly the interests of geologists, oceanographers and biologists. Geologically, these islets, which are not of volcanic origin, sit on the top of a mid Atlantic mountain ridge, at the oceanic plate boundary, and were formed by means of gradual tectonic expansion resulting in a structure termed megamullion. The ASPSP is the only megamullion in the world to expose abyssal mantle above sea level. The exposed surface covers roughly a hectare and the size of the largest and only inhabitable



*Black durgon, Melichthys niger, schooling*  
**Nikon D100, Nexus Master Housing, dual Sea & Sea YS-90DX strobes. 12-24mm @ 15mm, 1/160th @ F6.3, ISO 200**

Islet (Belmonte) is 5,380 m<sup>2</sup>. Due to this nature, earthquakes can be frequent and for this reason the research station has been especially built over concrete dampers designed to withstand geological and weather adversities.

Aside from the temporary human visitors, red rock crabs (*Grapsus grapsus*), brown boobies (*Sula leucogaster*) and noddies (*Anous stolidus*) permanently inhabit the exposed surface of ASPSP. The sea bird population is dense and crowded next to the field station. Many of the rocks have a permanent white layer of guano on the surface. Researchers who visit the islets and settle into the 2 bunk beds of the northeast facing bedroom must quickly acclimate to the quacking sounds and pungent scents that are generated a few meters away. Among other maintenance tasks, the routine at the field station involves climbing up to the roof



*St. Paul's butterflyfish, Prognathodes obliquus, endemic deep water reef fish*  
**Nikon D100, Nexus Master Housing, dual Sea & Sea YS-90DX strobes. 28-105mm @ 98mm, 1/80th @ F5, ISO 200**

every 2 days and hosing down the bird droppings from the solar panels. These panels provide the necessary power to charge batteries that run the station's appliances, but in the case of it running out, or when the main seawater tank needs to be refilled, a diesel generator is available. Exploring the whole of Belmonte islet takes less than 1/2 hour and the main land-based "attraction" besides the small field station is the lighthouse, about 100 yards away, but in practice much further, due to the numerous nesting grounds and defensive boobies aiming their sharp beaks at your shin.

The limited available dry land quickly invites one to explore the depths of the surrounding blue waters and to admire and study the intricacies of life of such an inhospitable oceanic outpost.

A short boardwalk connects the field station to the small pier assembled in the least exposed portion of Belmonte Islet, forming a small cove with neighboring islets. Jumping off the pier with SCUBA gear sets you at 4 to 5 m deep over a sandy ravine bordered by large rocky boulders encrusted with zoanthids (*Palythoa caribaeorum*), extensive mats of green *Caulerpa* algae, and a variety of smaller invertebrates including sponges and ascidians. The depth gradually increases to 10-12 m towards the entrance of the cove, where it finally reaches a spectacular drop-off that will set you face to face with the depths of the Atlantic Ocean in hues that vary from dark blue to almost purple. The combination of crystal-clear visibility and spectacular pelagic marine life in a seemingly bottomless ocean makes this a truly astonishing site.

The boulders, cracks and crevices of the cove are home to an apparently disproportionate number of moray eels (there are 6 species, of which the most abundant is *Muraena pavonina*) and spiny lobsters, which are easily seen crawling under the rocks. Wrasses and damselfishes (mainly the St. Paul's Gregory, the sergeant major and the brown chromis) are also very common in the shallower depths, but the single most visually abundant fish appears to be the black durgon (*Melichthys niger*), which can be found aggregating by the thousands in mid water on the outer sides of the islets. From the steep drop-offs it is possible to see schooling blue runners, rainbow runners, black jacks, barracudas, large groups of *Mobula* rays, and with some luck a whale shark or two, all of which become attracted to plankton brought in by the strong currents. Green and hawksbill turtles are also often seen in the cove and around the islets, even though their nearest available nesting beach is 610 Km away



*Split image of rocks and underwater substrate near drop-off*

*Nikon D100, Nexus Master Housing, dual Sea & Sea YS-90DX strobes. 12-24mm @ 12mm, 1/125th @ F10, ISO 200*

in the islands of Fernando de Noronha, which also reminds people that stay in the islet how important it is to be extra careful with safety - the minimum evacuation time in the case of emergency is 2 days.

The isolation of ASPSP is believed to have prevented the settlement of many species (there are 75 recorded species of fish there, of which 58 are reef-associated) but favored endemism in the ones that made it, such as St. Paul's butterflyfish (*Prognathodes obliquus*), which can only be found at the drop offs below 35 m, and the rare blue and white morphotypes of the queen angelfish (*Holocanthus ciliaris*). Other new species of fish and invertebrates have been described in recent years which help fuel the ongoing research efforts in the region.

Due to the treacherous sea conditions and unpredictable currents, diving there is restricted to



Rocks encrusted with sponges, corals and ascidians

*Nikon D100, Nexus Master Housing, dual Sea & Sea YS-90DX strobes. 12-24mm @ 12mm, 1/60th @ F9, ISO 200*

those with advanced diving certifications and a pre-planned conservative diving schedule. All scientists that intend to go are subjected to a complete medical examination and must take a week long survival course at the Navy base in Natal tailored to the harsh environment of ASPSP and which includes, amongst other skills, unflipping a capsized rubber skiff. The lack of a safe mooring site next to the main islet means that all food supplies, water, fuel and equipment must be brought from the support vessel to land on a small inflatable skiff over often tricky surface conditions, that only the most experienced fishermen can cope. Sometimes, incoming expeditions must wait a day or two for conditions to settle before unloading. Independent live aboard vessels that intend to visit the ASPSP must have a special clearance by the Brazilian navy to approach the islets and to conduct diving



*Field research station at St. Peter at St. Paul's Islets*  
*Nikon D100, 12-24mm @ 12mm, 1/4 sec @ F4, ISO 200*

activities, which are restricted to offshore sites. Visitors are not allowed to disembark or visit the field station, unless in the case of emergency.

Although the islets are themselves an environmental protection area, where taking of any marine life is prohibited, a variety of pelagic species are exploited by commercial fisheries in nearby waters, especially yellowfin tuna, which are caught by attracting flying fish to the boat with strong lights at night. Other pelagic species such as wahoo, are caught by line trawl during the day, attracting false killer

whales and bottlenose dolphins from nearby waters. Occasionally, great hammerhead sharks can be seen foraging near the outer rocks, but unfortunately this has become an increasingly rare sight, since some commercial fishing vessels began setting long lines a few miles away from ASPSP to take everything they can.

On a brighter side, a variety of biological studies, from behavioral ecology to population genetics and microbiology, are now in place at ASPSP to understand the unique assemblage of marine organisms that

populate the Islets. These studies have been providing novel insights into the marine life's behavior, physiology and adaptation, as well as guidelines for its conservation and sustainable management of the nearby fisheries.

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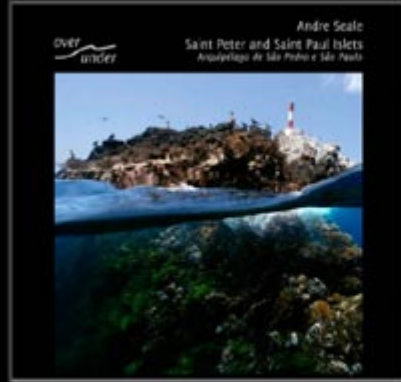
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*Official site for the ASPSP program (in Portuguese),*  
<https://www.mar.mil.br/secirm/>

*More Images can be found in the newly released book "Over/Under: Saint Peter and Saint Paul Islets" by Andre Seale available at*  
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