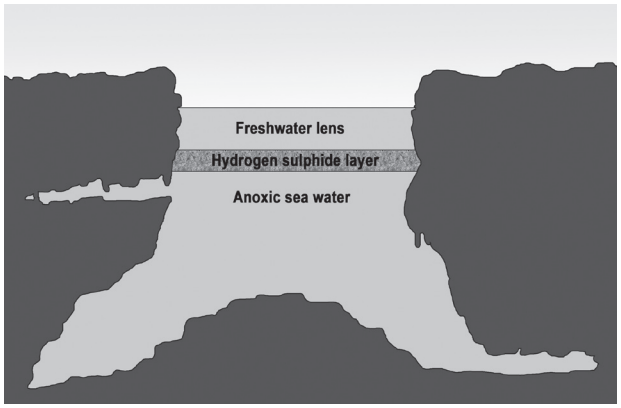
Ecosystems of the Bahamas



Artwork by Shelley Cant

Blue holes

OTHER NAMES
Sink holes, Ocean holes, Boiling holes

FORMATION AND DESCRIPTION
The most recent blue holes and caves lie within the top few hundred meters of the limestone and were formed during the Pleistocene period over the last million years as a result of the last ice age. Fresh water easily dissolves limestone, creating tiny holes throughout. First, little enclosed pockets formed and the moving water enlarged cracks in the rock forming an open passage. During the Ice Age, the ice caps spread over the world causing the sea water levels to slowly fall. Underground caves formed deep in the ground as a result. At the end of the ice age ice melted and sea level rose, filling the caves with water and forming what we know today as blue holes.

Blue holes come in many shapes and sizes. Often they are circular, but some are not. This circular formation is usually typical of either collapsed caverns or from the erosion caused by rain. Over time the rain wears away the irregular edges and forms a circle.

In contrast many of these similarly formed blue holes found in the sea are irregular in shape, presumably because they have not been subjected to surface erosion like the ones on land. Sea water is saturated with calcium carbonate and cannot do any further dissolving, so the shape of the offshore blue holes is probably much the same as when the sea rose to its present level.

However, the irregular shaped blue holes are most often formed from a large fracture (known as faulting) of the rock.

DISTRIBUTION
Blue holes are a unique feature of Limestone rock and are found in the areas of the world where limestone exists. As the Bahamas is made of pure limestone it contains the highest concentration in the world. All the major islands of the Bahamas have blue holes, but Andros has the greatest amount with 178 documented blue holes on land and at least 50 in the sea.

IMPORTANCE

Blue holes along with caves and banana holes are distinctive geological and ecological features that are usually poor producers of food but provide habitats for bats, owls, fresh water terrapin and some unique species like Blind Cave Fish. Leaves and other vegetable matter collect in them and this supports a few small fish and other creatures. Offshore, blue holes, are equally poor producers of food but are often well populated by all sorts of marine life and can be popular fishing sites.

Scientists have been discovering that deep down in the blue hole where the freshwater and saltwater meet a layer of leaves and detritus (broken up organic material) can be seen floating at that point. This is because the lower salt water is more dense and therefore the can "hold" some of these materials that have fallen into the hole. This layer is highly populated by bacteria feeding on the organic material which in tern supports many tiny creatures that are only found living at this point and nowhere else in the world. Essentially it is its own ecosystem.

THREATS

Blue holes and sinkholes have been historically used to dump garbage in the Bahamas. This poses a hazard to divers exploring these last frontiers but also certain contamination may result in a shift in the delicate chemical composition of these unique environments.

CONSERVATION

Blue holes themselves are not protected but many are protected within the National Park System of the Bahamas. For example the Blue hole National Park in Central Andros.

INTERESTING FACTS

The anoxic (oxygen poor) conditions at the bottom of blue holes helps to preserve organic material and has provided a great place for fossil discovery in the Bahamas. Extinct animals, archaeological artefacts and human remains have been found in blue holes.

The deepest blue hole in the world is Dean's Blue hole of Long Island at 201 metres (663 feet).

Some well-known blue holes in the Bahamas include:
Long Island: Dean's Blue hole is the deepest blue hole in the world at 201 metres (663 feet).
Andros: Captain Bill's Blue hole, Stargate, Uncle Charlie's Blue hole, Conch Sound Blue hole.
Abaco: Sawmill Sink, Ralph's Blue hole
San Salvador: Watling's Blue hole
Exuma: Angelfish's Blue hole, Bottomly's Blue hole
New Providence: R. M. Bailey Blue hole