

Ma' Áayin



★ Cenote Entrances

— Cave Passages







Page 161: Map showing Ma' Áayin, which was found at the bottom of a lagoon just 50 m (165 ft) from the ocean. When we started the project, this area had very little development and was seldom visited, but now contains Banyan Tree and Rosewood villas.

Page 162–163: Ivo and Matt swim through a saltwater section of Ma' Áayin. The large rocks that extended from the ceiling were a memorable landmark in this section.

Left: We sent up a drone to capture this aerial view of the entrance to Ma' Áayin, showing the scale of the vents in the floor of the lagoon relative to our boat.

Right: Having a laugh before we jump into the water.

Ma' Áayin, or “missing crocodile,” was one of the signature discoveries of this project. A system that extends across the south end of the property beginning just 50 m (165 ft) from the ocean, this cave contained passages that were darker and deeper than Burrodromo. Unlike Burrodromo, which was entirely filled with fresh water, Ma' Áayin has a halocline at around 15 m (50 ft), with salt water below. This deeper section of the cave could be accessed through the top layer of limestone which was perforated with crevices, holes, and key-shaped tunnels. Now longer than 1.6 km (1 mi), our exploration of this cave continues, and we're planning to release new versions of the map included in this book as we extend the cave.

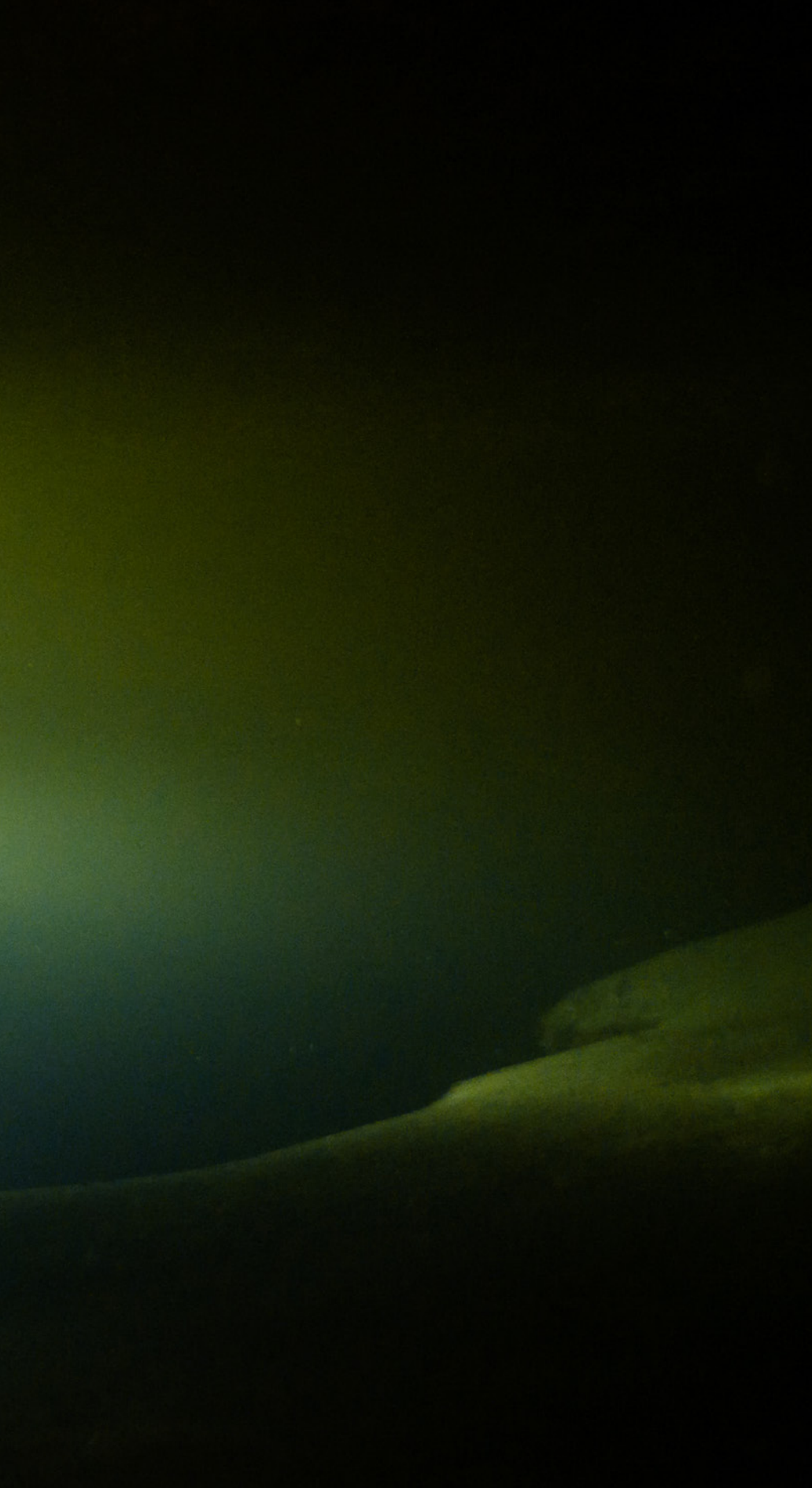
Finding Ma' Áayin was a dramatic moment. Today, the area around the cave's entrance is more developed, but at the time of the discovery, this was a remote area on the far south end of the property that was visited by very few people. Diving in the ocean parallel to this area, we'd observed a lot of cold, fresh water coming from the ocean floor. This made us wonder if a cave might be nearby, so we reviewed satellite images which showed a large lagoon that was trapped by dense mangroves, obscuring it from view when we were on land. Wanting to learn more, Matt talked with Mayakoba's biologist about the area. She wasn't sure if a cave would be found but warned us about large crocodiles that lived in the area.

Undeterred by the crocodiles and wanting to see for ourselves, Matt and Henry worked with Mayakoba's boat crew to mount a discovery trip on January 9th, 2021. Motoring south, we identified the most promising lagoon, though the entrance was too narrow to access by boat. We tied up the boat to make a short reconnaissance dive. We rode scooters one hundred meters into the lagoon entrance and looked around.









Left: The floor contours of Ma' Áayin were wild, with vents and passages leading between the layered sections of cave. Visibility was unpredictable, with a cloud of particulate and hydrogen sulfide that floated up and down in the water column.

Remembering the biologist's warning about crocodiles, Matt circled the perimeter of the lagoon, looking for these big reptiles, knowing they would likely be sunning themselves at the surface. While crocodiles are relatively common in this part of Mexico, we generally don't think of them as a major hazard. Smaller than the saltwater or Nile crocodiles that are known for their aggressive feeding behavior, the crocodiles in Mexico generally leave humans alone, especially since they attack at the surface and wouldn't in theory see a submerged diver as food. But that is *in theory*. *In practice* on this day, we were visitors to an area known by the biologist as a danger zone, so we were a bit nervous.

Visibility was less than 6 m (20 ft), as the water was cloudy and dark. But it quickly became apparent that we'd found the right lagoon. Below the surface now, we could see huge faults that shot down through the limestone floor into the Earth below. The area was wild, with schools of huge tarpon and snook patrolling the cracks in Earth's mantle, sentries to the underworld.

Covering ground rapidly on our scooters, we got a sense of the lagoon. The huge fractures were oriented in a generally north/south direction, with passage development that appeared to mostly face the west, in the expected upstream direction. Given the close distance to the sea, we hoped we'd eventually find a downstream tunnel out to the ocean, but decided to focus on finding a good entry to the upstream passage.

Left: Air bubbles trapped in the ceiling create the illusion that we are exiting the cave. Matt deep inside Ma'Āayin.
Right: Ivo in the bedding plane at the far reaches of the cave. The demented coloration and tunnels in this section made visiting here like going to an alien planet.

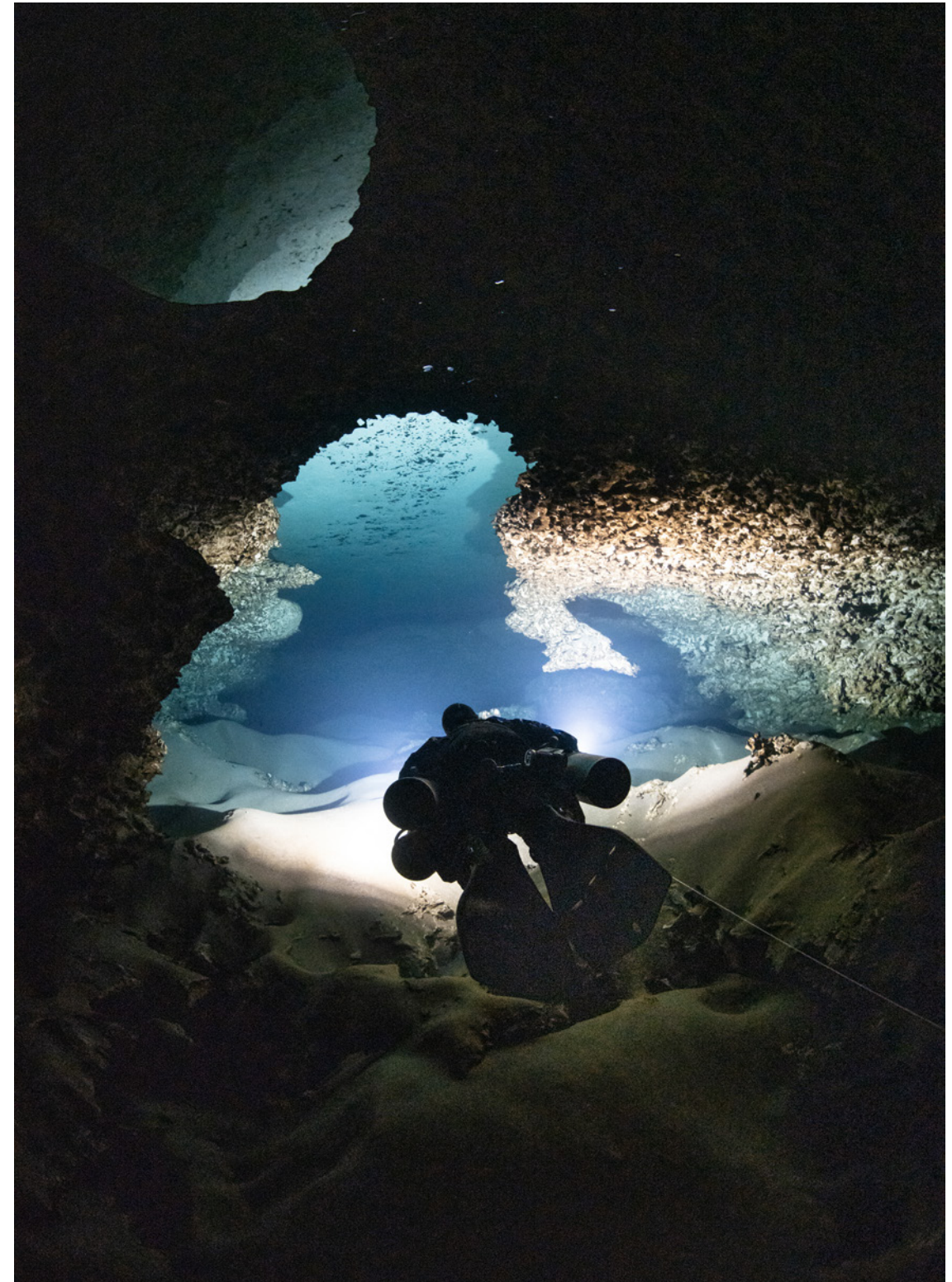
It soon became clear that the fractures were so long that even deciding where to tie in and enter the cave was a difficult choice. The cracks were filled with silt, and the low visibility made them seem menacing. Settling on the most benign looking part of the crack, Matt dropped down and made a primary tie-off, planning to take a quick look and come back with Henry for more. Making a secondary tie-off, Matt focused his breathing and pushed the thought of encountering a crocodile out of his mind. Huge tarpon stood their ground until the last moment, eventually yielding their space with a powerful tail whip that dispersed the silt into the water.

Now under the overhead, the visibility was getting worse. Very dark, the passage was so wide that Matt couldn't see the walls or ceiling as he hovered in space. In the dark water, with visibility obscured by what looked like bacteria on the ceiling, this was a very challenging entrance to navigate.

Though mostly limestone slab, there were few cave formations to use for tie-offs. Proceeding slowly and watching his compass heading, Matt descended farther into the cave, making wraps around the few precious rock outcroppings that existed.

Typically, the water in a cave becomes clear as the diver gets beyond the immediate entry area, where algae growth and silt tend to obscure visibility. But this didn't happen here, and the water inside the cave was still warm and cloudy like the lagoon.

Passing 9 m (30 ft) depth and some distance into the cave, the water became cooler, and visibility improved. In any other cave, the newly improved visibility would still be considered poor, but on this day, just 5 m (16 ft) of clarity was welcome. Taking his bearings, Matt could see that the cave was vast, a void that was so wide that blackness extended in every direction. With the line tied in and a bit of visibility from this point, he knew it would now be better to have a teammate in the cave, so Matt fastened the end of the exploration line to a rock and cut the line at the reel, preparing to pick up the exploration at this terminal point.









Left: The largest passage in Ma' Áayin contained a huge fault that ran down the center of the tunnel. We took this photo on a rare day in which the cloud had moved up towards the ceiling, giving us a clear view of the magnificent dimensions of this part of the cave.

Right: The "keyhole" passage that descended from the freshwater section in the far reaches of the cave down into the deeper saltwater level. This was one of the most interesting areas and a frequent spot for pictures.

Left: Bubbles on the ceiling added the illusion of sunlight in an area deep inside the cave.

Right: Saltwater passages are filled with an intricate matrix of limestone that looks a bit like dinosaur bones.

Page 174: The halocline created this wispy effect as Ivo passed through one of our favorite parts of the cave.

Page 175: SJ captured this shot of Matt and Ivo ascending from an area we called the “Hell Hole,” the deepest part of the system. The holes in the lower-left part of the image reminded us of the iconic mask from the movie *Scream*.

Matt turned to exit and slowly glided along the line, retracing his path in. Relaxed now, he took in the breadth of the project that lay before us and wondered if what had been planned as a two-year project might turn out to be too short.

Back on the boat, Henry and Matt celebrated their latest find, enjoying for a moment the thrill of discovery that keeps us going through the hours of tough work that this sport subjects us to each time we go diving.

With the end of our January trip in sight, we took a week to wrap up the long and painstaking dives needed for our full cartographic map of Burrodromo before we allowed ourselves to go diving in the new cave again.

We returned to this task with one glorious day left for diving. Now friendly with the boat crew, Matt and Ivo hitched a ride down to the cave to start our dive. Visibility in the lagoon was as bad as Matt had remembered, rendering the vast crevices nearly indistinguishable, and it took about 30 minutes just to find the arrow that marked the start of where we had left our line before. After completing a short dive in which we confirmed that the cave was big, dark, and *going*, we cleaned up our exploration line and prepared to come back in April, for a proper exploratory push.

Back again at Mayakoba in the spring, we surveyed more than 1.5 km (~1 mi) in April, revealing our new cave to be a truly incredible place. We found that the water became clearer and cooler as we dipped below 10 m of depth (33 ft), a few hundred feet into the cave, opening our exploration to the use of scooters which became important as we pushed things farther.















Page 176–177: We shot these photos of “the catacombs” on days with radically different visibility. The large hole in the floor leads to the deep saltwater section below this upper leve of cave.

Left: Matt and Ivo scoot through the big passage at Ma’Áayin on a day with little visibility.

Right: A day with clear water allowed us to capture the dark walls and scalloped silt dunes that were a distinctive characteristic of the cave.

Page 180–181: We mounted our most powerful video lights on the scooters to capture this shot of Ivo and Matt heading deeper into the system.



The cave made us think of a foreign planet, with an eerie water tint, and walls that were very dark. The cave existed across several layers, like floors of a house, with freshwater in the upper layer and a saltwater basement that was separated by a persistent cloud of yellow haze, made from hydrogen sulfide and other particulates. Over the course of the more than a year we dove this cave, this cloud would move up and down in the water column making each dive a gamble about where we’d find the best visibility.

In the upper layer of the cave, we floated above a floor made of huge silt dunes and dark limestone pierced by long fractures, boreholes, and a Swiss-cheese matrix that revealed the world beneath us. There were many different zones to the cave, with wide *bedding planes* shifting to tall and deep canyons, and mysterious tunnels carved from limestone that led to saltwater passages that popped with red and blue colors in a fireworks display just for us.

The cave branched in many directions, but the trunk passage was mostly heading northwest as it moved upstream under the jungle and eventually under the golf course. We wrapped up our April trip with some photo dives in which we did our best to capture what it felt like to be in this strange place. These were challenging shoots, and with the black walls, vast spaces, and cloudy water, even our bright Keldan video lights weren’t enough to punch through the din.









Left: Matt and Ivo dropping our scooters on the line before we head back into the tighter bedding plane section at the 5th T into the cave.

Top: A hole in the floor of the upper level of the cave reveals the guideline we ran through the passage that crosses below.

Bottom: Matt descends into the “Hell Hole” saltwater section at the southern branch of the cave.







Left: The saltwater passages were incredibly colorful, here on a day with relatively clear water.

Right: The bedding planes in Ma' Aayin provided little vertical room but were very wide in some places.





Left: Ivo descends into the deep section at the back of the cave. The green wispieness was created by a powerful video light we placed in a passage that intersected this area.

Center: Ivo swims through a particularly dark and scalloped passage.

Right: Matt at a T intersection in the deep saltwater section.

Left: Matt gets a halo. The cloud descended all the way into the deeper parts of the cave on some days, obscuring the visibility but creating a kaleidoscope of colors.

By July, we were back on the property and now joined by SJ Alice Bennet. An incredible cave photographer, we were thrilled to have her join our team. Working with SJ, our photos finally started to capture the magic of this cave, helped along also by some new ultra-powerful Keldan lights we were able to add to our kit.

With so many amazing things to photograph, and later to capture in video, we paused our exploration of the cave and planned to come back to it after publishing our book.

All told, we spent more than 100 hours in this cave and visited about 20 times. And never once did we see a crocodile. Our last step would be to name this system. We decided to call it Ma' Áayin, the Maya translation for "Missing Crocodile," after the wild location in which we found the cave, and the crocodiles we never did find. ♦



