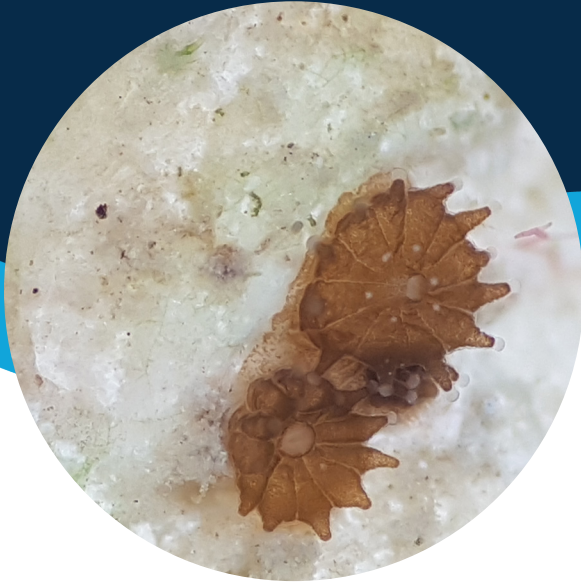




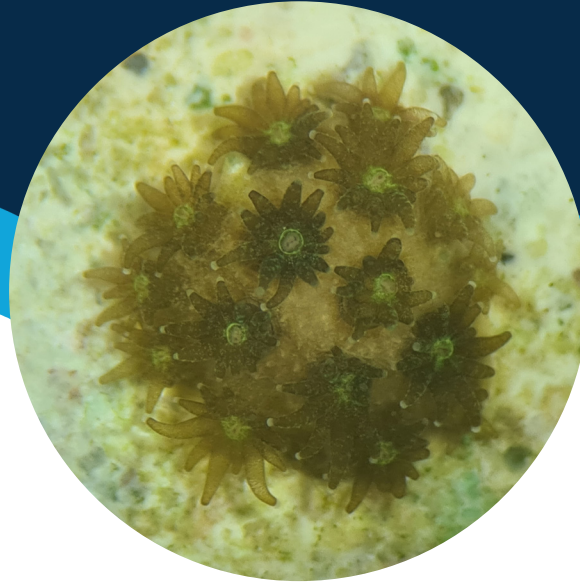
CORAL SPAWNING PREDICTIONS

THE BAHAMAS 2024

CORAL SPAWNING PREDICTIONS THE BAHAMAS 2024



Mountainous star coral recruit
Age: 6 months



Mountainous star coral juvenile
Age: 2.5 years



Mountainous star coral juvenile
Age: 3.5 years

Citation: Hurtado-López, N. Woodside, S. & Cargill, T. 2024. Coral Spawning Predictions, The Bahamas, 2024. The Bahamas Coral Innovation Hub, Cape Eleuthera Island School, Perry Institute for Marine Science, The Bahamas

Creative design: Cape Eleuthera Institute

Cover photo: Grooved brain coral (*Diploria labyrinthiformis*) juvenile

Photos: Natalia Hurtado-López

Spawning calculations: Natalia Hurtado-López & Taylor Cargill

Monitoring and data collection: Natalia Hurtado-López & Silia Woodside

The Bahamas Coral Innovation Hub

The Bahamas Coral Innovation Hub is a center for development, implementation, and dissemination of scalable coral restoration techniques to help counteract coral reef decline. The research facility, based at The Island School's Cape Eleuthera Institute, hosts a network of integrative people, such as coral scientists, conservation managers, local stakeholders, students, and educators from around the world. Located in South Eleuthera, The Bahamas, the Hub is a collaboration between the Perry Institute for Marine Science (PIMS), the Cape Eleuthera Institute (CEI), and The Nature Conservancy (TNC).

The Hub has been compiling coral spawning predictions for The Bahamas since 2020 based on past and current observations. The predictions have consistently proven accurate, pinpointing peak spawning dates for coral mass spawning events in the region. This booklet showcases examples of key Caribbean coral species and has become a valuable resource for local scientists, grassroots nonprofits, dive organizations, and volunteers.



Coral Spawning Predictions Team



NATALIA HURTADO, MSc

Research Scientist (CEI)
Research Associate (PIMS)
PhD student (Wageningen University)

Natalia is a Colombian marine biologist who has been actively monitoring coral spawning since 2009. She has been involved in many coral projects in Colombia, The Netherlands, Bonaire, Curaçao, and Qatar. Now, she is applying her expertise to the Bahamas Coral Innovation Hub project, hoping to help to rehabilitate threatened coral populations by using sexual and asexual propagation to grow and research different coral species.



SILIA WOODSIDE, BSc

Junior Research Scientist (CEI)
Research Technician (PIMS)

Born and raised in The Bahamas, Silia has always had a passion for the ocean. Based at the Bahamas Coral Innovation Hub, Silia contributes to coral restoration research, outreach, and education efforts in South Eleuthera. Silia joined the team as an intern supported by The Nature Conservancy back in 2019. She has been promoted to Research Technician, then Research Assistant, and is now a full-time researcher.



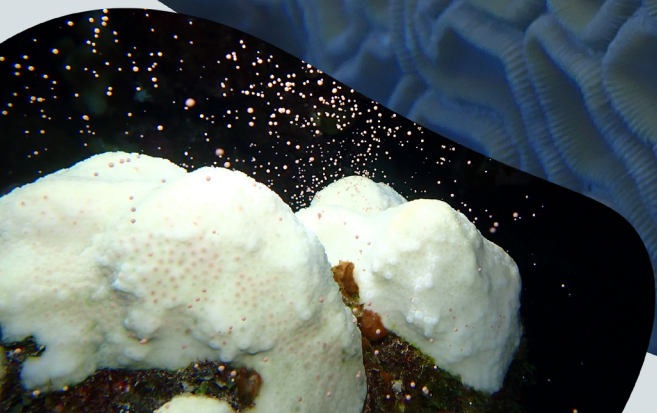
TAYLOR CARGILL, BSc

Research Technician (CEI)

Taylor is an aspiring conservation biologist from The Bahamas with an interest in climate resilience and sustainable systems. She is assisting with coral restoration research at the Bahamas Coral Innovation Hub. Taylor joined the Cape Eleuthera Institute as a sustainable systems intern, but given her lab skills and dedication to the coral restoration project, she joined the team as a Research Technician.

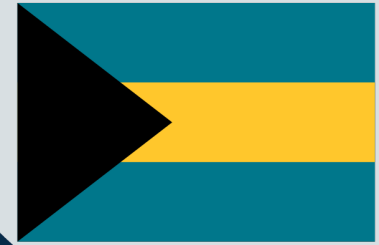
Tips & Notes:

- ✦ It is expected that spawning can be observed during the suggested times but there is no guarantee
- ✦ In 2023, a mass coral bleaching event affected The Bahamas—corals are still recovering and a decrease of spawning can be expected
- ✦ Predictions are based on previous observations in The Bahamas and the northern Caribbean.
- ✦ For monitoring dives, it is recommended to dive on the highlight dates, but spawning may occur the day before and/or after
- ✦ It is highly recommended to enter the water 10 minutes before predicted time
- ✦ Adjust personal watch to the local time
- ✦ Find a shallow area (Max. depth: 50 feet/15 meters) with high coral cover, plan your dives, and follow bottom times, respecting no-decompression times and diving rules
- ✦ Most of the species listed are hermaphroditic broadcast spawners, meaning their polyps release both egg and sperm contained in gamete bundles. Gonochoric species are also listed, these corals release either eggs or sperm
- ✦ It is possible to observe other reef creatures, such as soft corals, brittle stars, sea urchins, Christmas tree worms, fireworms, etc. releasing gametes. Please note any spawning observations
- ✦ Dive lights could attract worms, and some jellyfish are more active at night. It's highly recommended to be fully covered



Spawning Zones

The Bahamas



ZONE 1

ZONE 1

Bimini, Grand Bahama, The Abacos, The Berry Islands, Andros, Nassau, Paradise Island

ZONE 2

Eleuthera, Harbour Island, The Exumas, Ragged Island, Long Island, Musha Cay, Cat Island, Conception Island, Port Nelson

ZONE 3

San Salvador, Acklins & Crooked Island, Mayaguana, Great Inagua, Little Inagua Island

Grand Bahama

Bimini

Abaco

Berry Islands

Nassau

Andros

ZONE 2

Harbour Island

Eleuthera

Cat Island

Exumas

Conception Island

Musha Cay

Port Nelson, Rum Cay

Long Island

Ragged Island

ZONE 3

San Salvador

Crooked Island

Acklins

Mayaguana

Little Inagua

Great Inagua

The Bahamas has more 700 islands and cays with a variation in their longitudes. Zones were established and divided according to sunset times. For specific islands it is recommended to follow exact sunset times.

GROOVED BRAIN CORAL (*Diploria labyrinthiformis*)

Spawning window: 0 - 70 minutes before sunset
+10, +11, +12, +13 days after full moon



- Hermaphroditic broadcast spawner
- Spawning can be seen in daylight, as it happens before sunset
- Butterflyfish and sergeant major aggregations can be used as a cue for spawning
- Setting lasts a couple of seconds

DATES AND SUGGESTED DIVE TIMES			
Days After Full Moon (Peak)			
+10	+11	+12	+13
4 Apr	5 Apr	6 Apr	7 Apr
	18:25 - 19:35		
	18:15 - 19:25		
	18:05 - 19:15		
3 May	4 May	5 May	6 May
	18:40 - 19:50		
	18:30 - 19:40		
	18:20 - 19:30		
2 Jun	3 Jun	4 Jun	5 Jun
	18:55 - 20:05		
	18:45 - 19:55		
	18:35 - 19:45		
1 Jul	2 Jul	3 Jul	4 Jul
	19:00 - 20:10		
	18:50 - 20:00		
	18:40 - 19:50		
31 Jul	1 Aug	2 Aug	3 Aug
	18:50 - 20:00		
	18:40 - 19:50		
	18:30 - 19:40		
29 Aug	30 Aug	31 Aug	1 Sep
	18:25 - 19:35		
	18:15 - 19:25		
	18:05 - 19:15		
27 Sep	28 Sep	29 Sep	30 Sep
	17:55 - 19:05		
	17:45 - 18:55		
	17:35 - 18:45		

Highlighted dates when spawning is possible, likely or very likely

Bimini, Grand Bahama, The Abacos, The Berry Islands, Andros, Nassau, Paradise Island

Eleuthera, Harbour Island, The Exumas, Ragged Island, Long Island, Musha Cay, Cat Island, Conception Island, Port Nelson

San Salvador, Acklins & Crooked Island, Mayaguana, Great Inagua, Little Inagua Island

GREAT STAR CORAL (*Montastraea cavernosa*)

Spawning window: 0 - 35 minutes after sunset
+5, +6, +7, +8 days after full moon



M. cavernosa releasing sperm

- Gonochoric spawner
- Spawns right after sunset (late spawning has been observed)
- Gametes could be released during the entire spawning window

Possible to monitor both species in one dive

DATES AND SUGGESTED DIVE TIMES			
Days After Full Moon (Peak)			
+5	+6	+7	+8
26 Jun	27 Jun	28 Jun	29 Jun
20:10 - 21:10 20:00 - 21:00 19:50 - 20:50			
26 Jul	27 Jul	28 Jul	29 Jul
20:05 - 21:05 19:55 - 20:55 19:45 - 20:45			
24 Aug	25 Aug	26 Aug	27 Aug
19:40 - 20:40 19:30 - 20:30 19:20 - 20:20			
22 Sep	23 Sep	24 Sep	25 Sep
19:10 - 20:10 19:00 - 20:00 18:50 - 19:50			

BOULDER BRAIN CORAL (*Colpophyllia natans*)

Spawning window: 30 - 60 minutes after sunset
+5, +6, +7, +8 days after full moon



C. natans releasing gamete bundles



C. natans

- Hermaphroditic broadcast spawner
- Spawning early at night
- Larger gamete bundles compared with other species
- Setting lasts a couple of seconds

Highlighted dates when spawning is possible, likely or very likely

Bimini, Grand Bahama, The Abacos, The Berry Islands, Andros, Nassau, Paradise Island

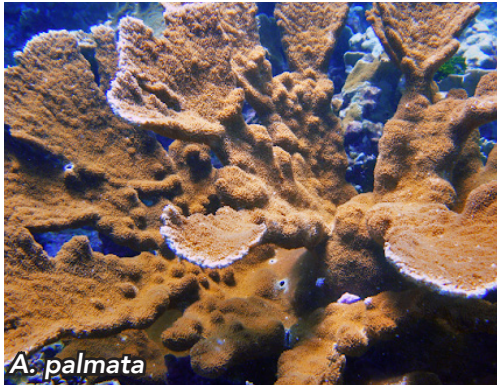
Eleuthera, Harbour Island, The Exumas, Ragged Island, Long Island, Musha Cay, Cat Island, Conception Island, Port Nelson

San Salvador, Acklins & Crooked Island, Mayaguana, Great Inagua, Little Inagua Island

ELKHORN CORAL (*Acropora palmata*)

Spawning window: 80 - 160 minutes after sunset

+3, +4 days after full moon



A. palmata

- Hermaphroditic broadcast spawner
- Few spawning observations recorded
- Setting time can last several minutes

STAGHORN CORAL (*Acropora cervicornis*)

Spawning window: 140 - 190 minutes after sunset

Highly unpredictable, observations on **+3,+4,+7,+8**

More observations needed



A. cervicornis

- Hermaphroditic broadcast spawner
- Highly unpredictable species
- Spawning peak has not been identified in The Bahamas
- Setting time can last several minutes

DATES AND SUGGESTED DIVE TIMES						
Days After Full Moon (Peak)						
+2	+3	+4	+5	+6	+7	+8
23 Jun	24 Jun	25 Jun	26 Jun			
	21:30 - 22:50					
	21:20 - 22:40					
	21:10 - 22:30					
23 Jul	24 Jul	25 Jul	26 Jul			
	21:25 - 22:45					
	21:15 - 22:35					
	21:05 - 22:25					
21 Aug	22 Aug	23 Aug	24 Aug			
	21:05 - 22:25					
	20:55 - 22:15					
	20:45 - 22:05					
	24 Jun	25 Jun	26 Jun	27 Jun	28 Jun	29 Jun
			22:30 - 23:20			
			22:20 - 23:10			
			22:10 - 23:00			
	24 Jul	25 Jul	26 Jul	27 Jul	28 Jul	29 Jul
			22:25 - 23:15			
			22:15 - 23:05			
			22:05 - 22:55			
	22 Aug	23 Aug	24 Aug	25 Aug	26 Aug	27 Aug
			22:05 - 22:55			
			21:55 - 22:45			
			21:45 - 22:35			

Your observations can help with improving predictions

Highlighted dates when spawning is possible, likely or very likely

Bimini, Grand Bahama, The Abacos, The Berry Islands, Andros, Nassau, Paradise Island

Eleuthera, Harbour Island, The Exumas, Ragged Island, Long Island, Musha Cay, Cat Island, Conception Island, Port Nelson

San Salvador, Acklins & Crooked Island, Mayaguana, Great Inagua, Little Inagua Island

LOBED STAR CORAL (*Orbicella annularis*)

Spawning window: 190 - 300 minutes after sunset

+5, +6, +7, +8 days after full moon



Bleached *O. annularis* spawning

- Spawn late at night
- Hermaphroditic broadcast spawner
- Setting time lasts a couple of minutes

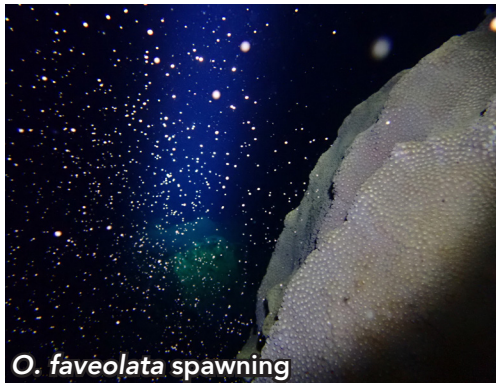
DATES AND SUGGESTED DIVE TIMES

Days After Full Moon (Peak)			
+5	+6	+7	+8
26 Jul	27 Jul	28 Jul	29 Jul
	23:35 - 01:05		
	23:25 - 00:55		
	23:15 - 00:45		
24 Aug	25 Aug	26 Aug	27 Aug
	23:10 - 00:40		
	23:00 - 00:30		
	22:50 - 00:20		
22 Sep	23 Sep	24 Sep	25 Sep
	22:40 - 00:10		
	22:30 - 00:00		
	22:20 - 23:50		

MOUNTAINOUS STAR CORAL (*Orbicella faveolata*)

Spawning window: 210 - 310 minutes after sunset

+5, +6, +7, +8 days after full moon



O. faveolata spawning

- Spawn late at night
- Hermaphroditic broadcast spawner
- Setting time lasts a couple of minutes

Highlighted dates when spawning is possible, likely or very likely

Bimini, Grand Bahama, The Abacos, The Berry Islands, Andros, Nassau, Paradise Island

Eleuthera, Harbour Island, The Exumas, Ragged Island, Long Island, Musha Cay, Cat Island, Conception Island, Port Nelson

San Salvador, Acklins & Crooked Island, Mayaguana, Great Inagua, Little Inagua Island

SMOOTH FLOWER CORAL (*Eusmilia fastigiata*)

Spawning window: 180 - 230 minutes after sunset
+6, +7, +8 days after full moon



E. fastigiata exposing tentacles



E. fastigiata holding eggs

- Gonochoric spawner
- Hold eggs in tentacles for several minutes
- Expose their tentacles at night

GREAT STAR CORAL (*Montastraea cavernosa*)

Spawning window: 190 - 240 minutes after sunset
+5, +6, +7, +8 days after full moon



M. cavernosa



M. cavernosa releasing sperm

- Gonochoric spawner
- Expose their tentacles at night
- Gametes could be release during the whole spawning window

Highlighted dates when spawning is possible, likely or very likely

Bimini, Grand Bahama, The Abacos, The Berry Islands, Andros, Nassau, Paradise Island

Eleuthera, Harbour Island, The Exumas, Ragged Island, Long Island, Musha Cay, Cat Island, Conception Island, Port Nelson

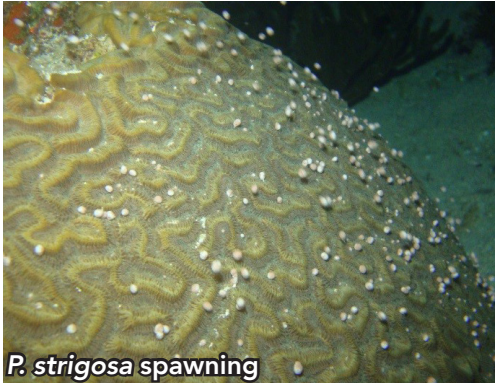
San Salvador, Acklins & Crooked Island, Mayaguana, Great Inagua, Little Inagua Island

DATES AND SUGGESTED DIVE TIMES

Days After Full Moon (Peak)			
+5	+6	+7	+8
26 Jul	27 Jul	28 Jul	29 Jul
23:05 - 00:05 22:55 - 23:55 22:45 - 23:45			
24 Aug	25 Aug	26 Aug	27 Aug
22:40 - 23:40 22:30 - 23:30 22:20 - 23:20			
22 Sep	23 Sep	24 Sep	25 Sep
22:10 - 23:10 22:00 - 23:00 21:50 - 22:50			

SYMMETRICAL BRAIN CORAL (*Pseudodiploria strigosa*)

Spawning window: 215 - 260 minutes after sunset
+5, +6, +7, +8 days after full moon



- Hermaphroditic broadcast spawner
- Could spawn earlier at night
- Setting lasts a couple of seconds

DATES AND SUGGESTED DIVE TIMES			
Days After Full Moon (Peak)			
+5	+6	+7	+8
26 Jul	27 Jul	28 Jul	29 Jul
23:35 - 00:25 22:25 - 00:15 23:15 - 00:05			
24 Aug	25 Aug	26 Aug	27 Aug
23:10 - 00:00 23:00 - 23:50 22:50 - 23:40			
22 Sep	23 Sep	24 Sep	25 Sep
22:40 - 23:30 22:30 - 23:20 22:20 - 23:10			

BLUSHING & SMOOTH STAR CORAL (*Stephanocoenia intersepta* & *Solenastrea bournoni*)

Spawning window: 210 - 240 minutes after sunset
+6, +7, +8 days after full moon



- Gonochoric spawner
- Tiny eggs

Highlighted dates when spawning is possible, likely or very likely

Bimini, Grand Bahama, The Abacos, The Berry Islands, Andros, Nassau, Paradise Island

Eleuthera, Harbour Island, The Exumas, Ragged Island, Long Island, Musha Cay, Cat Island, Conception Island, Port Nelson

San Salvador, Acklins & Crooked Island, Mayaguana, Great Inagua, Little Inagua Island



THANK YOU

We invite readers to share their observations and pose any questions by reaching out to our lead scientist on site, Natalia Hurtado (nataliahurtado@islandschool.org or nhurtado@perryinstiute.org)

