



Cousin Island Special Reserve Report on Algal Bloom October 2015 ©

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INTRODUCTION

On Friday, 23 October 2015, what looked to be an algal bloom was seen in the waters surrounding Cousin Island with dead fish seen washed ashore and dead fish floating in the water. Algal bloom likelihood increases with increase in nutrients (such as phosphorous and nitrogen). Potential sources such as industrial waste, urban and residential waste (farms, fertilizers, etc.), and nutrient-enriched rainfall can contribute these nutrients. The combination of excess elements, sunlight and temperature, and calm water then trigger these events. Algal blooms can suffocate aquatic animals by reducing the levels of dissolved oxygen in the water and/or be toxic. On Cousin, heavy rain was seen throughout September; October had rainfall daily with heavy rainfall at night from 19 October- 22 October and occasional rainfall in the afternoons. Friday, 23 October through 26 October was sunny with less wind (personal obs.).

According to an article in the Seychelles News Agency (October 26, 2015 @ 19:55) similar observations were seen throughout Praslin and the environment ministry confirmed reports of an algal bloom. This was also seen in June 2014 on Mahe, without the dead fish. The first report of the October 2015 algal bloom occurred on Fregate approximately a week prior to when it was seen on Cousin. The Seychelles Fishing Authority and the Marine Parks Authority have identified one type of plankton and are continuing to search for other plankton species, to see if there is any toxic plankton (Seychelles News Agency article, Uranie and Meriton-Jean).

OBSERVATIONS

Table 1 describes the observations and actions taken for the event and photos were taken along the beach (Figure 1-4) on Saturday 24 October. Fish were identified to the family level (Figure 5) then to the species level (Appendix) in most cases, although some taxonomic classification was already difficult due to fast decomposition and color loss. The breakdown to the species level should be taken lightly.

Table 1. Recording of events from 23 October - 26 October on Cousin Island.

Date	Observation	Action taken
Friday, 23 October	<ul style="list-style-type: none"> - 14:00 water was noticeably changing color and unusual amount of fish activity seen near the shore along the north and northwest side of the island. - 16:00 a few dead fish and shrimp seen on Anse Vacoa and Main Beach. - Water turning brown around entire island at 17:00, mostly small reef fish washing ashore. Fish already decomposing (pungent smell and bloated) and nearly all found with mouths open and bulging eyes. Eel's washed ashore from 30-60cm. 	Two water samples (lagoon and non-lagoon) taken. Fish count and species inventory taken. One of each species was collected, photographed and stored in salt water to be taken to the ICC the following day.
Saturday, 24 October	Dead fish observed around entire island along with floating fish in the water. Most fish smaller than 30 cm. Water clearer than Friday, but still a green/brown hue on SE side of island. Water on N and NW remained a thick green/brown color. Dead fish floating in water in the distance and dead fish being washed back and forth in swash zone.	The transplanted and healthy Reef Rescue sites were assessed. Dead fish were seen floating on the travel to and from the dive site. Visibility was near 8m; only a couple of dead fish and a dead octopus were found along entire transect. Based on observation, the reef remained healthy.
Sunday, 25 October	Water conditions remain as seen the 24 th with water on the NW side slowly clearing up. Additional species were observed washed ashore; Dead octopus and larger reef fish (parrotfish and titan triggerfish) observed. Dead fish floating in the water.	A second fish count and inventory was taken at low tide.
Monday, 26 October	Additional species not seen. Tides slowly washing fish away. Moray eel's and other fish seen floating back and forth in swash zone.	



Figure 1. Fish on NW side of island (location C-D), 24 Oct.



Figure 2. Dead fish on NW side of island. Dots in picture are dead fish (left) and piles of fish seen below the high tide waterline, 24 Oct.



Figure 3. Color of the ocean on NW side of island, 24 Oct.



Figure 4. Dead fish at low tide on SE side of island, 24 Oct.

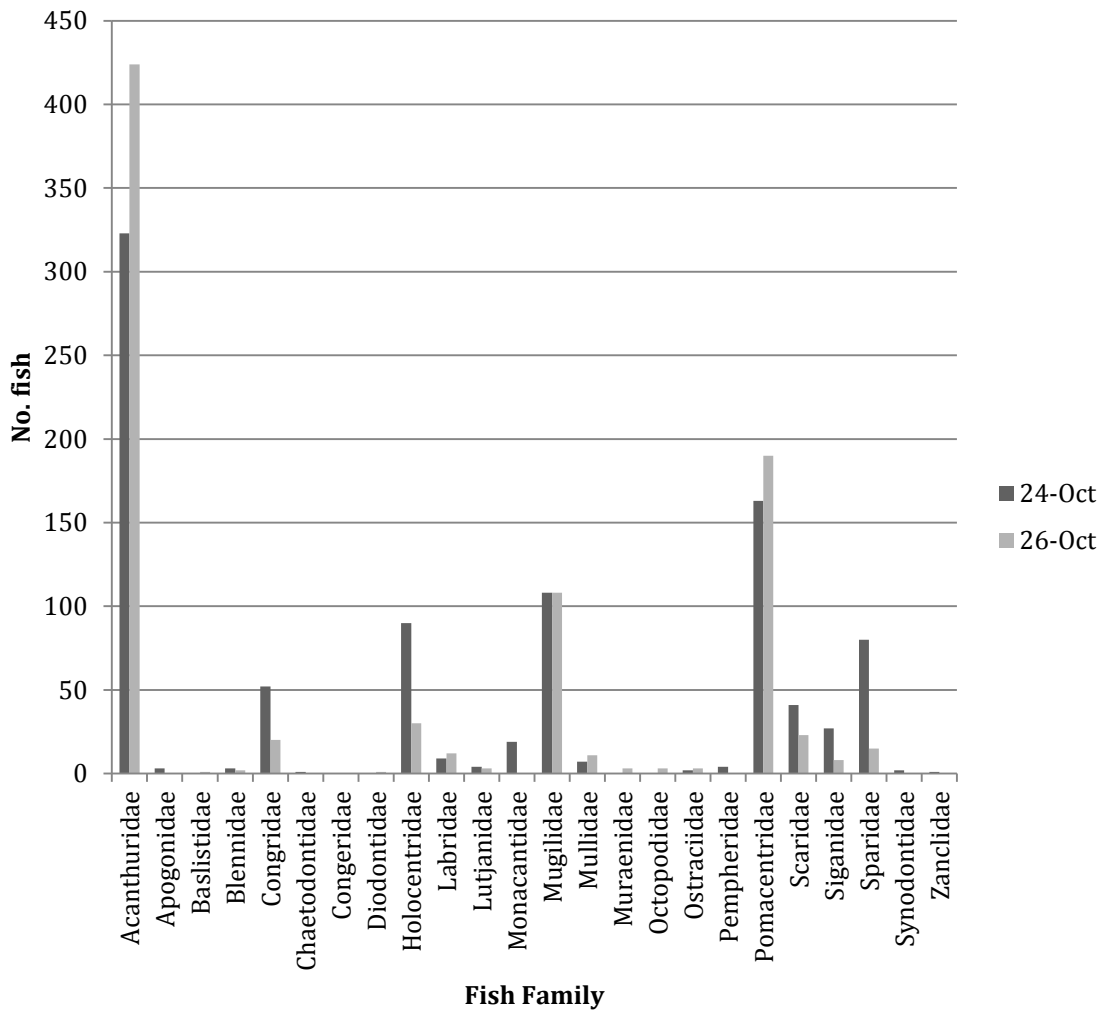


Figure 5. Number of fish found in each family on two different days (24 and 26 October). These numbers for both days should not be added together (could be double-counting fish) since fish were not collected and removed from the beach.

CONCLUSION

By 27 October, 2015, the worst of the algal bloom around Cousin Island appears to be over. Smaller fish were seen in the first day while larger fish, including parrotfish, titan triggerfish and octopus were seen on the 25th October. Surgeonfish (family Acanthuridae) seemed to be affected the most on Cousin, and were seen immediately on the 23rd October and throughout the weekend, mostly dominated by the convict surgeonfish (*Acanthurus triostegus*). These fish are herbivores (along with the parrotfish and rabbitfish) and are a primary control on coral-algal dynamics (Obura and Grimsditch, 2009). Combining fish numbers between islands to the family level may prove beneficial towards determining the impact of the event.

APPENDIX

Family	Species	Common name	24-Oct-15		26-Oct-15	
			n	Comments	n	Comments
Acanthuridae	<i>Acanthurus leucosternon</i>	powderblue surgeonfish	1		1	
Acanthuridae	<i>Acanthurus lineatus</i>	striped surgeonfish	21	all over 15 cm	12	
Acanthuridae	<i>Acanthurus nigrofuscus</i>	dusky/brown surgeonfish	11		0	
Acanthuridae	<i>Acanthurus triostegus</i>	convict surgeonfish	290		410	
Acanthuridae	<i>Naso elegans</i>	orangespine unicornfish	0		1	
Apogonidae	<i>Archamia fucata</i>	orange lined cardinalfish	2		0	
Apogonidae	<i>Apogon taeniophorus</i>	reef-flat cardinal	1		0	
Baslistidae	<i>Balistoides viridescens</i>	titan triggerfish	0		1	
Blennidae	<i>Cirripectes filamentosus</i>	filamentous blenny	3		2	
Carangidae	<i>Trachinotus bailloni</i>	small spotted dart	6		0	
Chaetodontidae	<i>Chaetodon trifasciatus</i>	Indian redfin	1		0	
Congridae	<i>Ariosoma</i> spp.		52		20	
Diodontidae	<i>Diodon hystrix</i>	common porcupinefish	0		1	
Holocentridae	<i>Myripristis violacea</i>	soldierfish	90		30	
Labridae	<i>Anampses caeruleopunctatus</i>	bluespotte wrasse	4		5	
Labridae	<i>Cheilinus trilobatus</i>	triple tail wrasse	5		7	
Lutjanidae	<i>Lutjanus fulviflamma</i>	blackspot snapper	4		3	
Monacantidae	<i>Cantherhines dumerii</i>	barred/whitespot ted filefish	19		0	
Mugilidae	<i>Crenimugil crenilabis</i>	fringelip mullet	108		108	
Mullidae	Unknown		1			
Mullidae	<i>Parupeneus barberinus</i>	dash and dot goatfish	5		11	
Mullidae	<i>Parupeneus macronemus</i>	longbarbel goatfish	1		0	
Muraenidae	<i>Gymnothorax javanicus</i>	giant moray	0		3	
Octopodidae	<i>Amphioctopus aegina</i>	marbled octopus	0		1	15 cm
Octopodidae	<i>Octopus cyanea</i>	red octopus	0		4	all around 45 cm
Ostraciidae	<i>Lactoria fornasini</i>	thornback cowfish	2		3	
Pempheridae	<i>Pempheris vanicolensis</i>	Vanikoro sweeper	4		0	
Pomacentridae	<i>Abudefduf vaigiensis</i>	Indo pacific sergeant	150		190	

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			n	Comments	n	Comments
Pomacentridae	<i>Dascyllus</i> spp.		4		0	
Pomacentridae	<i>Chromis nigrura</i>	blacktail chromis	8		0	
Pomacentridae	<i>Pomacentrus sulfureus</i>	sulphur damsel	1		0	
Scaridae	<i>Leptoscarus vaigiensis</i>	marbled parrotfish	1		6	
Scaridae	<i>Scarus rubroviolaceus</i>	ember parrotfish	18	all over 30 cm	10	
Scaridae	<i>Scarus frenatus</i>	bridled parrotfish	11		3	
Scaridae	<i>Scarus niger</i>	dusky parrotfish	11		4	
Siganidae	<i>Siganus argenteus</i>	forktail rabbitfish	7		1	
Siganidae	<i>Siganus stellatus</i>	brown-spotted	12		5	
Siganidae	<i>Siganus sutor</i>	streamlined spinefoot	8		2	
Sparidae	<i>Scolopsis frenatus</i>	bridled monocle bream	80		15	
Synodontidae	<i>Sinodus</i> spp.		2		0	
Zanclidae	<i>Idol maure</i>	moorish idol	1		0	