**United Nations Environmental Programme**

TOPIC:Coral Reef Conservation and Restoration



# SOCOMUN XXVII



UN Environmental Programme

Coral Reef Conservation and Reservation

**Introductions**

Hey y’all! My name is Brendan Reeves and I am going to be your Chair for the UNEP. I am a junior at SMCHS, and this is my third year involved with the Model United Nations program. During my time in MUN, I have had the opportunity to travel to UCSB, Montreal, and next month I will be traveling to London for the Royal Russel MUN conference. Not only have I had many incredible travel experiences in MUN, but I have also gained invaluable speaking skills. In addition, it has allowed me to hear multiple new perspectives on world issues that challenge international leaders today. There is perhaps no school program that fosters the same level of collaboration and problem solving as Model United Nations does. If you require any assistance in the preparation process, feel free to contact me at [socomununep@gmail.com](mailto:socomununep@gmail.com).

I sincerely hope that you enjoy and benefit from our conference. I look forward to meeting you all!

Hello, I am Shuyi Niu and I will be your legal in the committee of UNEP at SOCOMUN this year! I am a senior at SMCHS, and this is my third year involved in MUN. I am passionate about singing, playing guitar and swimming. Also, I really enjoyed MUN and I found my happiness and strength through public speaking and working out resolutions in a group. SOCOMUN is a great chance for us to learn diplomacy, international relations, and present solutions to current global problems. Hoping forward to see you in the conference! Good luck!

Hello, my name is Cole Parker and I am currently a sophomore at Santa Margarita High School. For this conference, I am excited to serve as your secretary. I enjoy theatre arts, swimming, skiing and hanging out with my friends. This is my second year in MUN and I am so happy I joined! I have had many experiences I will never forget with MUN and I can’t wait to make more memories and become and better delegate.

**Background**

As the Global community continues its fight against climate change and its deleterious effects on the environment, there is perhaps no more overlooked casualty of this crisis then our Earth's coral reefs. Over 25% of all wildlife in the ocean receives food, shelter, and sustenance from our reefs.[[1]](#footnote-1) Today, our coral reefs are in serious danger due to multiple threats. These include but are not limited to: climate change, invasive species, increased levels of pollution, overfishing, unsustainable fishing practices, and dangerous levels of acidity in the ocean. Coral reefs are not merely a beautiful ascetic for people to admire, they have a serious role in the world economy as well. Worldwide, mostly in developing countries, more than five hundred million people depend on coral reefs in their daily life. Coral reefs play a viral role for these people in food security, basic income, costal protection, and other areas.[[2]](#footnote-2) Of the aforementioned stressors on coral reefs around the world, climate change and global warming are perhaps the scariest of all. This is due to the fact that even the most pristine, well-regulated and protected coral reefs, are still subject to fluctuations in CO2 concentration in the atmosphere and rising and falling ocean temperatures. That is why effective international policy that deals with the threats to our coral reefs must put a special emphasis on the effects of climate change.

Despite climate change being perhaps the scariest of all global threats to coral reefs, unsustainable fishing practices on the part of fisherman in these regions have been identified as the most pervasive of all local threats to coral reefs.[[3]](#footnote-3) One major facet of the coral reef conservation issue, is that many people currently residing in costal reef areas, rely on reef fisheries for food. However, even though the target of these fishing vessels is to catch fish, oftentimes waste that is dropped from these ships or direct abrasion with the coral floor, cause coral reefs to become unsustainable. One specific region of the world where unsustainable fishing practices cause significant damage is in Southeast Asia. In the oceans surrounding Southeast Asia, close to 95% of coral reefs are negatively affected by overfishing and other malpractices.[[4]](#footnote-4) This large number is largely due to a malicious fishing practice known as dynamite fishing. Dynamite fishing involves the use of actual explosives in the shallow coral reefs to kill or stun fish in the water through the shockwave the ripples through the water. This highly destructive method not only destroys coral but also shatters coral tissue that prevents coral from re-growing in areas where this practice occurs.

Another important way that coral reefs are in danger is through the growing threat of ocean acidification. Since hard corals rely on moderate ocean temperatures and a steady supply of calcium to build up their “skeletons,” when the pH levels in the ocean are too low (meaning more acidic) in inhibits the corals ability to calcify. Existing corals have evolved to be able to withstand fluctuations in pH levels and ocean temperature such as this, however coral polyps that are just beginning their life are far more susceptible to these threats. In fact, according to the National Academy of Sciences (PNAS), the cumulative impact on fertilization and settlement success is an estimated 52% and 73% reduction in the number of larval settlers on the reef.[[5]](#footnote-5) This makes ocean acidification one of the leading inhibitors that prevent the re-growth of coral reefs.

Despite the best efforts from the international community, recent statistics on coral degradation make the crisis seem very grim. Today, we have already lost 27 percent of all coral reefs in the world. Even more alarming, is the fact that using climate models of our current environmental trajectory, scientists expect that more than 90 percent of all coral reefs will be lost forever by the year 2050.[[6]](#footnote-6) That is, if we don’t take serious action to correct our current path.

Coral as we know it in many ways is not so much a single organism, but rather a collaboration between multiple organisms that work together. Corals are marine invertebrates that belong to the phylum Cnidaria; This phylum is characterized by the presence of cnidocytes, special cells that attach to the organism or become part of the organism usually for the purpose of catching pray. A single coral is actually made up of hundreds and sometimes even thousands of smaller organisms known as coral polyps. Each individual coral polyp undergoes a process by which calcium carbonate is built up in the base underneath it millimeter by millimeter. Each coral polyp does this by absorbing dissolved minerals floating around in the ocean and combing them with proteins. This gradual buildup of calcium carbonate, also known as limestone, underneath the polyps is what gives most coral its distinctive shape. Many corals have a growth rate of merely 0.3-2 centimeters a year. At this rate, a full coral reef may take a whopping ten millennia to fully grow.[[7]](#footnote-7) This fact further intensifies this issue. Considering the immense time that it takes for a coral reef to fully grow, a disaster scenario in which large swaths of coral reef completely die out would be nearly impossible to re-grow in time to save the countless species that rely on coral reefs for their habitat and their sustenance. This is the root cause of the fear among scientists that if we allow the coral reefs to die out, we would be writing a death sentence for the estimated 1 to 9 million species that live in coral reefs.[[8]](#footnote-8)

It is important to understand what is actually happening when a coral reef dies out. The phenomenon is known as coral bleaching. Coral bleaching is the consequence that takes place when the symbiotic relationship between the zooxanthellae algae, that live on the coral, and the coral host itself is lost.[[9]](#footnote-9) When this occurs, the coral polyps lose their vital source of food and energy that is required for them to continue building more and more limestone to replenish and sustain the coral reef in which they live. In addition, since the algae is the source of the coral’s color, when the algae are expelled from the coral, the polyps begin to starve and the white transparent skeleton of limestone that the previously living polyps had built up underneath is revealed.[[10]](#footnote-10) This creates a scene that could be drawn directly from a horror film; Multitudes of vast white eerie plains of death where life once flourished. However, all hope must not be lost. If conditions are able to return to normal, it is possible for corals to regain their zooxanthellae algae and thus return to back to the way they were. Unfortunately, every year that goes by, the barren limestone begins to degrade and decay without the protection and regrowth from coral polyps. That is why it is so important to take action now while there is still an opportunity to restore the barren limestone before it decays past the point of no return.

From the year 1876-1979, surprisingly, there were only three total bleaching events were recorded. Then a sharp increase occurred when 60 were recorded from 1980-1993. Finally, in the year 2002, 400 events were recorded alone, more than had occurred in all of recorded human history.[[11]](#footnote-11) In modern history scientists have recognized three major coral bleaching events that are important to note for our debate. The first of these events occurred in 1998. In 1998 the cataclysmic coral bleaching event was characterized by a heat wave that was responsible for the death of nearly 16% of corals in reefs around the globe.[[12]](#footnote-12) The second phenomenon of coral bleaching occurred after a particularly brutal El Niño event in 2010. The third coral bleaching event occurred from 2014-2017. This very recent coral bleaching event remains the longest and most widespread mass bleaching event of all time. What was most alarming to many scientists about this most recent wave of bleaching events was the fact that it affected reefs that had to date never experienced any bleaching before.[[13]](#footnote-13) Meaning that even the most well protected reefs still experienced negative affects from this bleaching event. This raises serious questions about the root causes of coral bleaching and what can be done by the international community about it.

I will briefly cover UN action on this topic, however, in our debate, excessive discussion of previous UN action is highly frowned upon. The specialized branch of the United Nations Environmental Programme that deals with coral reef conservation is the UNEP’s Coral Reef Unit. The main purpose of the this working branch of the UN is to enforce the commitments of the three major summits on coral reef conservation. These are the Earth Summit and subsequent Convention on Biological Diversity (CBD) in 1992, the World Summit on Sustainable Development and the subsequent Johannesburg Declaration in 2002, and finally the Rio+20 Earth Summit in 2012.[[14]](#footnote-14) This branch of the United Nations frequently collaborates with several non-governmental organizations, most notably the World Wide Fund for Nature (WWF).[[15]](#footnote-15)

**Possible Solutions**

Solutions that I am about to share with you are just general ideas about steps that the international community and by extension the United Nations can take to combat this issue. Specific solutions I do provide should not be copied and instead built upon in order to foster a higher level of debate. Continuing with our advanced committee’s standard of high-level debate, delegates are expected to respect and stay true to their countries policy on the issue. For example, Australia would not be in favor of handing over its coral reefs and the rights pertaining to them to the United Nations for governance. Another example would be, if your country heavily relies on coral reefs for fishing, they would certainly not be willing to eliminate fishing from coral reefs altogether. In short, your solutions must be both realistic, and optimistic. This way, we can foster a real-life debate that would be no less then real discussion that occurs in the halls of the UN Headquarters in New York City. The exception to this rule is that the discussion of funding of any kind is highly frowned upon, as our conference operates on the assumption that all funding will be supplied by various NGO’s, the World Bank, and the United Nations Administrative and Budgetary Committee (Fifth Committee).

One possible solution to aid in the conservation and restoration of coral reefs is the utilization of coral nurseries. Many international organizations have already started implementing this solution across at-risk coral reefs in the pacific. A coral nursery is a structure that bears resemblance to a tree and is made out of PVC pipe. Divers then attach small pieces of coral from a healthy donor coral to the artificial structure. There, the corals become stronger and grow.[[16]](#footnote-16) After a period, the coral will be strong enough to support itself. This solution is a great way to re-grow coral where previous corals have since died.

Another possible solution that the international community could adopt to aid in the conservation and restoration of coral reefs is attempting to regulate chemicals that enter the oceans through commercial and industrial products. One overlooked toxin that has a negative effect on coral reef ecosystems is sunscreen. According to the U.S. National Park Service, somewhere between 4,000 and 6,000 tons of sunscreen enters coral reef ecosystems around the world every single year.[[17]](#footnote-17) Common chemical sunscreen ingredients such as oxybenzone, pose a significant threat to the longevity of coral reefs. Therefore, finding ways to limit the chemical exposure to coral reefs would be highly beneficial.

**Questions to Consider:**

Note that these questions are not actually for you to answer in committee, rather their purpose is rhetorical; We are trying to get you thinking critically about the topic and expand your perspective.

1. What specific action, if any, has your country taken on this issue? Is your country directly affected by this issue?
2. What causes greater levels of acidity in the ocean? What can be done to stop it?
3. What can the international community do to stop individual countries such as many in Southeast Asia who promote fishing practices such as “Dynamite Fishing?”
4. There is a common theme of coral bleaching events becoming more and more severe over the centuries. What is causing this increase in severity over time? What policies can be implemented to stop it?
5. Coral Nurseries are already being used to help re-grow coral. What other new and more innovative methods could be used to re-grow coral where significant coral bleaching has occurred?

Works Cited

Shinzato, Chuya. "Global Climate Change vs. Coral Reefs." Nikkei Asian Review, 01 Apr. 2017. Web. 02 Apr. 2017. ([http://asia.nikkei.com/Tech-Science/Science/Global-climate- change-vs.-coral-reefs?page=2](http://asia.nikkei.com/Tech-Science/Science/Global-climate-%20%09change-vs.-coral-reefs?page=2))

In the article *Global climate change vs. coral reefs*, Chuya Shinzato argues the severity of the current climate crisis on a scientific basis. Since coral reefs serve as a habitat for nearly 30% of all marine life, the extinction of coral reefs will ultimately cause a staggering rate of biodiversity to be lost. Shinzato closes the article offering her own solutions on the matter based on her own research and experience. She argues that it is critical to do further research in to the genomics-based approach offered by a recent Japanese, Israeli scientific investigation. He also compares and contrasts the effects of anthropogenic intervention using genome sequence data and other resolutions such as planting coral fragments. Therefore, this is an excellent resource that provides a very interesting approach to finding a solution to this pressing issue.

Ming, Chou Loke. "Southeast Asia' Coral Reef Biodiversity." Cover Story 10.1 (2011): 36-39. EBSCOhost. Innovation. Web.

(<http://web.a.ebscohost.com/ehost/results?sid=68bec3d7-0879-4a54-938a-6f3233af1d4d%40sessionmgr4008&vid=0&hid=4112&bquery=Coral+Reef+Conservation+and+Restoration&bdata=JmRiPWtoaCZkYj1sZmgmZGI9c2NoJmRiPWVyaWMmZGI9dHRoJmRiPW5maCZkYj1oeGgmY2xpMD1GVCZjbHYwPVkmdHlwZT0wJnNpdGU9ZWhvc3QtbGl2ZQ%3d%3d> )

In Southeast Asia is the hub of coral reefs on our planet. Likewise, many people who live in the vicinity of these coral reefs often rely on them for their livelihoods (usually in the form of a food supply or tourism). However, many locals of neglected their responsibility to these reefs. That is why restoration is extremely important at this point, contrary to the belief that coral reefs can recover from illness naturally. By taking an active role in the restoration of these reefs, we will exponentially increase their chance of survival and recovery. This report is written by the professor Chou Loke Ming, a marine biologist who has been studying the adverse effects of climate change. He has put a specific emphasis on coral reef restoration for the past 4 years. He is an active participant and expert for the World Bank and the European Commission. He is an authoritative and reliable source for information.

C.B. "Rescuing the REEFS!" Discover Magazine. Kalmbach Publishing CO., July 2008. Web. 2 Apr. 2017.

(<http://web.a.ebscohost.com/ehost/detail/detail?sid=2fda4e2d-4763-4e78-b8ca-b3c311aab975%40sessionmgr4006&vid=2&hid=4112&bdata=JnNpdGU9ZWhvc3QtbGl2ZQ%3d%3d#AN=32580470&db=sch> )

This article is published by the Discover Magazine and edited by professors of repute in this area of study. This magazine mainly publishes current issues about the environment that empower scientists, researches, and involved citizens with the greatest ideas and perspectives in science. This specific article is a rallying cry for all citizens of the world to save the environment by taking actions to protect endangered coral reefs. She listed several points and examples, such as eating animals that hold a low place on the food chain, the use of organic fertilizers and plant frees. This report also elucidates on the ways that the public could make a difference in regard to the conservation of coral reefs.

"Conservation Reef Restoration." Nature Research Highlights. Restoration Ecology, 2009. Web. ([http://web.a.ebscohost.com/ehost/pdfviewer/pdfviewer?sid=68bec3d7-0879-4a54-938a -6f3233af1d4d%40sessionmgr4008&vid=2&hid=4112](http://web.a.ebscohost.com/ehost/pdfviewer/pdfviewer?sid=68bec3d7-0879-4a54-938a%09-6f3233af1d4d%40sessionmgr4008&vid=2&hid=4112) )

This article offers an interesting and mostly untested method to allow marine sponges to reattach themselves to coral reef beds. The article states that most marine sponges have little to no chance of reattaching to a reef naturally. Some of reasons that he author supplies for why this is so include, fishing lines, ship groundings, and storms. The article sites another study that argues that found that when the sponges secured to a reef's limestone bed, it helped transplanted sponges reattach successfully to the reefs. This article is published by the Macmillan Magazine. In this magazine, there many different articles talking about endangered animals and possible resolution to protect them with strong credibility. The research was conducted by two reputable scientists Steven McMurray and Joseph Pawlik.

US Department of Commerce, National Oceanic and Atmospheric Administration. "NOAA's Ocean Service's Education Professional Development: Coral Reef Conservation." Professional Development - Coral Reef Conservation: NOAA's National Ocean Service Education. N.p., 19 Dec. 2005. Web. 02 Apr. 2017. (<http://oceanservice.noaa.gov/education/pd/corals/coral_reef_conservation.html> )

This is a source website that I have used several times throughout my research. The National Oceanic and Atmospheric Administration has some of the most cutting-edge research and date that exists on this issue. In addition, this organization provides link to other institutions that pertain to the protection and monitoring that is currently being conducted by the UN and other NGOs. It also shows the data regarding the number of endangered and sick corals on the earth today. Most importantly, this resource provides shocking statistics that deal with the general trend of coral population loss. As I mentioned earlier, this report is provided by the National Ocean Education Program. The NOAA is an education group that engages both informal and formal audiences and supports teachers through Web-based avenues and professional development opportunities.

“Coral Reef Conservation and Restoration.” Coastal Ecosystem-Based Adaptation, 29 Jan. 2016, web.unep.org/coastal-eba/content/coral-reef-conservation-and-restoration.

This important resource discusses the benefits and importance of coral reef conservation. This includes some key issues that should be addressed when solving the problem. Although this resource does not specifically delve into any specific part of the topic, it is an extremely important starting point of any research on the topic. The study on the Adaptation of Coral Reefs was conducted and facilitated by the United Nations Environmental Programme. Therefore, this reputable source is an excellent first read before you begin your research.

“The Status of Coral Reefs 2004.” Edited by Clive Wilkinson, <Http://Www.icriforum.org>, Australian Institute of Marine Science, 2004.

[www.bing.com/cr?IG=C3B88683955E494F9DD0E4ECDF696EC6&CID=160D84F1E25D6C3320078F2BE3976D54&rd=1&h=NQ44FvDD-LlWrSrBXHb6I9es9gxr3cfsS7PlYOPDbxM&v=1&r=https%3a%2f%2fwww.icriforum.org%2fsites%2fdefault%2ffiles%2fscr2004v1-all.pdf&p=DevEx.LB.1,5070.1](http://www.bing.com/cr?IG=C3B88683955E494F9DD0E4ECDF696EC6&CID=160D84F1E25D6C3320078F2BE3976D54&rd=1&h=NQ44FvDD-LlWrSrBXHb6I9es9gxr3cfsS7PlYOPDbxM&v=1&r=https%3a%2f%2fwww.icriforum.org%2fsites%2fdefault%2ffiles%2fscr2004v1-all.pdf&p=DevEx.LB.1,5070.1).

In a nutshell, this resource serves as the “bible” on this topic. It is a roughly 300-page synopsis of all research and progress that has been made on this topic, as well as a great guide for future action. The paper is forwarded by the General Assembly of the United Nations. It differentiates itself from many other sources on the issue because it takes a very practical approach to the topic. For example, instead of merely denigrating all fisherman in Southeast Asia for their horrible malpractices, it offers ways that these farmers could continue to make profits, while simultaneously leaving coral reefs alone. By offering these kinds of practical and helpful solutions, this paper does a lot to help with solutions on the topic.

Becatoros, Elena. “More than 90 Percent of World's Coral Reefs Will Die by 2050.” The Independent, Independent Digital News and Media, 13 Mar. 2017,[www.independent.co.uk/environment/environment-90-percent-coral-reefs-die -2050-climate-change-bleaching-pollution-a7626911.html](http://www.independent.co.uk/environment/environment-90-percent-coral-reefs-die%09%09-2050-climate-change-bleaching-pollution-a7626911.html).

This is an article that does not provide any new research but offers important facts about the topic. In addition, the author of the article includes very insightful solutions in her conclusion that should help in your research. The article was written by Elena Becatoros of the UK Independent, a prolific writer who focuses on environmental issues for the publication. The other benefit to this source is how recent it is. Since it was published in 2017, it offers a very accurate picture of the current state of coral reefs.

Australian Government. “Coral Bleaching.” Australian Government - Great Barrier Reef Marine Park Authority, [www.gbrmpa.gov.au/managing-the-reef/threats-to-the-reef/climate](http://www.gbrmpa.gov.au/managing-the-reef/threats-to-the-reef/climate) -change/what-does-this-mean-for-species/corals/what-is-coral-bleaching.

This resource has special credibility since it comes directly from the Australian Government. This government approved, and re-tested information is important background information for the topic. Since Australia is home to the Great Barrier Reef, the largest of all the worlds coral reefs, they are able to offer unique perspective and spin to the evidence and facts that they have collected over the years.

MicroDocs Project. “Species Living in Coral Reefs.” Microdocs: Species on Coral Reefs, Stanford University, 11 Apr. 2012, web.stanford.edu/group/microdocs/species.html.

This resource is a compilation of research conducted by graduate students studying at Stanford University in California. It offers all the background on the topic that is relevant from the past 30 years. The website the students created not only reiterates important information on the topic but includes their own ideas on solving the problems at hand for coral reefs. In my personal opinion, many of the solutions that they provide are quite shortsighted and are not applicable in the real world. Regardless, they are extremely well thought out and well worth the read.

1. http://wwf.panda.org/about\_our\_earth/blue\_planet/coasts/coral\_reefs/ [↑](#footnote-ref-1)
2. http://www.icriforum.org/sites/default/files/scr2004v1-all.pdf [↑](#footnote-ref-2)
3. http://www.reefresilience.org/coral-reefs/stressors/local-stressors/overfishing-and-destructive-fishing-threats/ [↑](#footnote-ref-3)
4. http://www.reefresilience.org/coral-reefs/stressors/local-stressors/overfishing-and-destructive-fishing-threats/ [↑](#footnote-ref-4)
5. http://www.pnas.org/content/107/47/20400 [↑](#footnote-ref-5)
6. https://www.independent.co.uk/environment/environment-90-percent-coral-reefs-die-2050-climate-change-bleaching-pollution-a7626911.html [↑](#footnote-ref-6)
7. https://oceanservice.noaa.gov/education/kits/corals/coral04\_reefs.html [↑](#footnote-ref-7)
8. https://web.stanford.edu/group/microdocs/species.html [↑](#footnote-ref-8)
9. https://www.britannica.com/science/coral-bleaching [↑](#footnote-ref-9)
10. http://www.gbrmpa.gov.au/managing-the-reef/threats-to-the-reef/climate-change/what-does-this-mean-for-species/corals/what-is-coral-bleaching [↑](#footnote-ref-10)
11. http://wwf.panda.org/about\_our\_earth/blue\_planet/coasts/coral\_reefs/coral\_facts/ [↑](#footnote-ref-11)
12. http://www.globalcoralbleaching.org/ [↑](#footnote-ref-12)
13. https://coralreefwatch.noaa.gov/satellite/analyses\_guidance/global\_coral\_bleaching\_2014-17\_status.php [↑](#footnote-ref-13)
14. http://coral.unep.ch/Global\_Policy.html [↑](#footnote-ref-14)
15. https://www.worldwildlife.org/ [↑](#footnote-ref-15)
16. http://www.dive365cayman.com/coral-nurseries [↑](#footnote-ref-16)
17. http://time.com/4080985/sunscreen-coral-reefs/ [↑](#footnote-ref-17)