

A Dive into Egypt's Ecotourist Future

THE CORALS OF RAS MOHAMMED

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Home to lush coral and vibrant fish that were first introduced to the world in 1968 by Jacques Cousteau in the pilot episode of *The Undersea World*, the Red Sea has emerged as a highly desired travel destination. Because of its potential for generating tourist revenue, the Red Sea is one of Egypt's most potent resources for economic development. Bordered by the Sinai Peninsula, the Red Sea features coastal cities like Aqaba, Eilat, and Sharm El Sheikh, the last of which exemplifies Egypt's new directions in the tourism economy—diverging from the Pyramids and holy sites of the pharaonic eras to feature new seaside paradises and resorts. Located between an arid desert, mountains, and a deep-blue sea, Sharm El Sheikh has capitalized on its status as a premier dive destination, a result of its close proximity to Ras Mohammed National Park, Egypt's oldest nature preserve.

Established in 1983 by the Egyptian Environmental Affairs Agency (EEAA), Ras Mohammed houses thousands of coral, fish, and bird species, many of which are native only to the Red Sea. It has become a popular day trip destination for divers whom Egypt is eager to court as it enters what President Abdel Fattah el-Sisi declared a new age of “ecotourism” in 2020.¹ Confirming and boosting its ecotourist aspirations, Ras Mohammed received its International Union for Conservation of Nature (IUCN) Green List certificate in late 2018, an award that recognizes Egypt’s conservation and governance of the park in relation to a global standard—celebrating its coral reefs, mangroves, and sea grasses. In an ironic twist, Minister of the Environment Dr. Yasmine Fouad received the award not in Ras Mohammed, but in Sharm El Sheikh, where coral health has deteriorated from years of rapid and highly unsustainable development.

Unlike the vast majority of corals which are highly susceptible to warming temperatures, hard corals in the Gulf of Aqaba have an unusually high tolerance for temperature variation. Beyond avoiding any major coral bleaching phenomenon, Red Sea coral are colorful and healthy, leading scientists to believe the region will become a major coral refuge from climate change.² As a result, the declining health of coral in both Ras Mohammed and Sharm El Sheikh—in spite of the relative imperviousness of the local corals to rising temperatures—can be directly attributed primarily to the anthropogenic stressors of the tourism industry, revealing development failures in monitoring and transnational accountability. Yet, with Red Sea tourism drawing these corals closer to what may be their resistance thresholds, it is imperative for Sharm El Sheikh to convert to a model of “hard ecotourism,” an environmentally dedicated strategy that would expand and improve current management strategies. For instance, while tourists have been able to access only twelve percent of the park, even tighter diver carrying capacities must be installed. Furthermore, local actors, including members of the indigenous Bedouin

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community of the Sinai as well as Egyptian and international NGOs, need to be given more involvement in tourism policy.

This paper draws upon academic studies, as well as tourist sources, especially websites associated with hotels, diver communities, and travel reviews. The central source is a report called the “Sensitivity and Zoning Plan of the Sharm El Sheikh Coral Reefs,” collaboratively written by Suez Canal University professors and Ras Mohammed park management, and sponsored by the United Nations Development Programme (UNDP) and the EEAA. Whereas this study’s academic sources explore ecotourism, management possibilities, and legislation, popular travel sources, such as TripAdvisor, help indicate where economic potential exists and what consumers are likely to prefer. Finally, all statistics will analyze trends in tourism as projected before the COVID-19 pandemic halted world travel in February 2020 on the grounds that this status quo will eventually be reinstated.

The first section of this paper discusses Egypt’s past tourism strategy in the Red Sea, focusing on liberalized development that led to patterns of unlimited growth. Second, the paper turns to the situation today, assessing hotel options and general tourist activity, as well as narrowing down popular locations along Sharm El Sheikh’s coast, such as Shark and Yolanda Reef, the sunken SS Thistlegorm, or Blue Hole. Analysis of the coral reefs will follow next in order to gain a deeper understanding of the importance of Ras Mohammed reefs and to hone in on coral cover and the health of populations of key species such as butterflyfish and parrotfish. Looking at the dive sites established in the previous section, this will then form the basis for the comparison between Sharm El Sheikh and Ras Mohammed. The final two sections will be policy-driven, defining what ecotourism means to Egypt and examining the successful efforts of Egyptian tourism officials in securing a Green List designation. The paper will conclude by looking at private and public stakeholder involvement and

forming a long-term sustainability plan based on carrying capacity and tourist profile change. Egypt’s new enthusiasm for ecotourism calls for adequate funding and a genuine dedication to implementing plans to protect Sharm El Sheikh’s future vitality and appeal.

Background on Development

As a result of heavy investment in the Red Sea area, Egypt’s visitor boom over the past four decades has propelled tourism to become the country’s main source of foreign income. Previous scholarship has described Egypt’s tourist development as having four stages: first, as an “embryonic destination” before the 1980s; second, focused on mass tourism; third, involving the diversification of destinations; and the fourth and current stage of sustainable ecotourism.³ Since the nineteenth century, Egypt has attracted tourists to its pharaonic archeological sites, ranging from the Valley of Kings in Luxor to the Pyramids and Great Sphinx of Giza. Geographically, Egypt has benefitted from its location as the meeting point of Northern Africa, the Arabian Peninsula, and the Mediterranean. The Suez Canal, which opened in 1869, brought more international travel and established Egypt as an important transit zone for ships sailing to Europe.

Following President Anwar Sadat’s economic opening, or *al-intifah* in 1974 (marking a partial reversal of the Arab Socialist policies of the previous Gamal Abdel Nasser regime), liberalization and expansion policies attracted foreign investment in the private tourist sector. The Ministry of Tourism (MOT) gained control over the tourism sector in 1973 and, with the new ability to designate areas for expansion, they established a powerful influence over development, regulations, and incentives.⁴ Pushing for mass tourism and longer staying periods, the MOT began setting hotel standards, offering tax exemptions, and allowing duty-free imports. Breaking from Nasser-era land ownership policies, the MOT’s most impactful decision gave foreign hotels property rights, above and beyond the previously granted management rights and leases to chains like Hilton, Meridien, and Sheraton.⁵ These changes allowed the privatization of many poorly run state hotels and foreign companies were allowed to “repatriate profits overseas.”⁶ In the short term, foreign investment grew; however, the over-liberalization of

tourism without proper planning also incurred negative consequences.

In the 1990s, Egypt, under President Hosni Mubarak, realized the potential of commercial tourism beyond traditional arenas by increasingly focusing on the Sinai Peninsula and Red Sea coast as desirable tourist locations. Mubarak sought rapid growth in the South Sinai to generate income from tourism in a region that had avoided the violence and political instability present in other parts of mainland Egypt. In fact, Sharm El Sheikh had previously shown immunity to the violence cropping up elsewhere.⁷ Israel had actually initiated development in Sharm El Sheikh, having controlled the region from 1967 to 1982 following the Six-Day War. Egypt began planning to diversify and expand it into resort development even before Israel returned Sharm El Sheikh in 1983. In 1985, Egypt began selling Sinai land for \$6 to \$12 per square meter, liberalizing airlines to allow direct flights to resorts in Sharm El Sheikh, bypassing Cairo, and enabling international companies to develop autonomously.⁸ To avoid the mistakes made in Hurghada and Dahab, two other Red Sea towns where growth exceeded infrastructural design, Sharm El Sheikh’s hotels privatized desalination, power, and sewage and built on land explicitly designated for tourism. From 1988 to 1992, the local council sold the entirety of the fishing village’s coastline to developers, and by 1999, 90 percent of Egypt’s tourism investment was concentrated in the southern Sinai, resulting in a 300 percent increase in hotels over the following decade.⁹ While the shifts in policy and the influx of luxury resorts enabled Sharm El Sheikh to dominate Sinai tourism, private sector



One of Sharm El Sheikh's many resorts. (Sherif Ali Yousef via Wikimedia Commons)

growth came at the expense of the environment.

Modern Sharm El Sheikh

Sharm El Sheikh has attained its status as the capital of the South Sinai, and perhaps Red Sea, tourism from the biodiversity gained through its proximity to Ras Mohammed National Park. Tourists in Sharm El Sheikh value the tropical climate that enables nearly year-round access to beaches, snorkeling, and scuba diving. Lined with bustling nightclubs, golf courses, and luxury restaurants, Na'ama Bay features nightlife, cafes, and a boardwalk constructed to give Sharm El Sheikh a sense of community. Old Town, Soho Square, and Mercato house the city's shopping centers, emulating historic markets. Beyond the city, tourists can visit the desert or enjoy a Bedouin dinner and camping experience. The Sinai also attracts many religious tourists: in particular, evangelical Christians, who can visit the renowned St. Catherine's Monastery at the foot of Mount Sinai where Moses is said to have received the Ten Commandments.

Located just 12 kilometers from Sharm El Sheikh, or an hour's boat ride away, Ras Mohammed National Park's breadth of sites, popularity, and wildlife makes it Egypt's primary source of tourism revenue and, therefore, its focus for future management policy. Over the years, the Ras Mohammed park has continued to expand from its original area of 97 square kilometers in 1983, to 480 square kilometers, and now 850 square kilometers, consisting of the Southern Sinai tip where the Gulfs of Suez and Aqaba meet, the coastline off

Sharm El Sheikh, and the Tiran and Sanafir Islands. Over 70 percent of the park is marine, home to over 330 coral species, 350 fish species, and 241 bird species, many of which are endemic.¹⁰ Ras Mohammed features the Red Sea's most decorated coral regions, and excellent visibility due to limited microalgae and tributaries, key ingredients for ideal diving. Shark and Yolanda Reefs, the Sinai's most renowned site, are vertical walls with depths of up to 800 meters teeming with coral gardens, moray eels, groupers, Napoleon wrasses, and angelfish. Often, dives begin in the shallow waters of the Anemone City, visited by turtles and inhabited by clownfish, before the current pulls drifting divers through Shark and Yolanda. For humorous pictures, divers explore the Yolanda shipwreck, which carried a cargo of ceramic toilets before capsizing.¹¹ Jackfish Alley, Ras Ghozlani, and Shark Observatory are touted wall dives, featuring sandy plateaus and small caves full of hard and soft coral, where divers can find black tip sharks, glassfish, and even whale sharks. North of the Strait of Tiran, visitors will find the sites pioneered by Jacques Cousteau, while further west, they encounter the wreck of the British World War II cargo ship SS Thistlegorm, which deposited jeeps, motorcycles, and more on the ocean floor. Beyond the reefs, the park houses important grounds for migratory white storks and nests for turtles, as well as healthy mangrove and seagrass habitats, protecting against coastal erosion.¹²

However, as Egypt comes to rely more heavily on Sinai tourism, which already represents more than a quarter of the country's tourism revenue, the high-volume tourism model threatens the dive sites that have made Sharm El Sheikh famous. Tourism accounts for over 12 percent of Egypt's GDP, providing over two and a half million jobs and \$12.2 billion in revenue in 2019.¹³ Although Sharm El Sheikh is a small city with a population of only 73,000, the city boasted over 50,000 hotel rooms in 2017, with tens of thousands more under construction, dominating the Sinai.¹⁴ While Sharm El Sheikh has not recently replicated the 27 percent annual increases in capacity it averaged from 1996 to 2003, during which the city grew from 81 to 221 establishments and from 6,979 to 35,782 rooms, its current 295 hotels and specialty lounges have created an excess supply.¹⁵ The MOT has

employed break-even strategies to generate income during non-peak seasons, further driving down prices; ultimately, these practices have attracted sun and sand tourists and extended the average stay to 9.2 days, perhaps at the cost of creating a misperception of the city as a low-quality destination.¹⁶ Familiar North American hotel chains like Hilton, Hyatt, Marriott, and Four Seasons have held their prices at \$63, \$77, \$58, and \$270 per night, respectively.¹⁷ On the flip side, tourists can book heavily reviewed and heavily visited four-star resorts, offering all-inclusive packages, such as the Dive Inn Resort or the Falcon Naama Star, for a mere \$18 a night.¹⁸ The proliferation of all-inclusive packages has meant there is little domestic profit beyond the resort, attracting visitors with less purchasing power and minimal ecological concern. Even as the Sharm El Sheikh hosts 88 percent of five-star hotels in the South Sinai in 2003 and 77 percent of all three-, four-, and five-star hotels, the current approach of low pricing camouflages Sharm El Sheikh and homogenizes it as yet another beach destination. Experts in tourism and environmental quality alike therefore agree that going forward, it will be crucial for Sharm El Sheikh's tourist authorities to promote the unique local culture while protecting the landscapes and seascapes of Ras Mohammed.¹⁹

The Corals of Ras Mohammed

Coral in the Red Sea, in particular the Gulf of Aqaba, holds enormous value for biodiversity worldwide and Egyptian tourism diversification, which depends on the survival of the coral reefs just as Sharm El Sheikh depends on Ras Mohammed. Coral holds potentially valuable secrets for future medicines and antiviral drugs, sustains fisheries feeding coastal communities, acts as fish nurseries, and provides coastal protection. The Red Sea reef is one of the world's largest continuous reefs, spanning 4,000 kilometers, 1,500 of which belong to Egypt.²⁰ Ras Mohammed has two main reef structures: one, a shallower, lagoon-filled barrier reef system in the Gulf of Suez; the other, a deeper, fringing reef in the Gulf of Aqaba. Fringing reefs consist of productive narrow reef flats, before sloping off downwards,

where reef-building hard coral species like acropora, pocillopora, and porites proliferate and non-skeletal, soft coral species such as sinularia and xenia grow. Other reef types include patch reefs like Shark Reef and Yolanda Reef and discontinuous fringing reefs, though all provide similar habitats.

While the significant threat of climate change has already taken the treasures of major reefs (including the Great Barrier Reef in Australia), corals in the Gulf of Aqaba have thrived. This has led scientists to believe the region will be a refuge for coral, protecting against sea temperature rise and ocean acidification. In most places, a change of 1 to 2 degrees Celsius above the average summer maximum temperatures causes bleaching, a phenomenon in which coral expel their zooxanthellae, photosynthetic algae symbionts which provide coral with food and color. Such bleaching places coral under increased stress and leads to higher coral mortality rates, as the loss of zooxanthellae deprives the coral of nutrients. However, anomalously high water temperatures have not greatly damaged coral in the Gulf of Aqaba, which has an estimated bleaching threshold of 32 degrees Celsius, meaning they possess an incredible margin of 6 degrees Celsius of resilience above the average maximum temperature of 26 degrees Celsius.²¹ Moreover, coral symbionts have been twice as productive in warming waters and even more colorful.

Despite its ability to withstand higher temperatures, the coral of Ras Mohammed have nevertheless suffered from catastrophic human-induced impacts caused by development and direct tourist contact. Along the coast of Hurghada, 42 years of intense development from 1973 to 2015 resulted in a loss of over 6.21 square kilometers of coral cover, costing Egypt an estimated \$18 billion in potential revenue.²² Similarly, in the South Sinai, reefs sustained a 20 to 30 percent decrease in coral coverage from 1987 to 1996.²³ Urbanization, oil extraction, industrial production, and fishing pollution pose great threats to Ras Mohammed, but the alarming increase in damaged and broken coral colonies shows a clearer correlation with the growth of tourism.

"The alarming increase in damaged and broken coral colonies shows a clearer correlation with the growth of tourism"



A map of Sharm El Sheikh and the Ras Mohammed National Park. (Wikimedia Commons)

"Egypt should transition towards hard ecotourism to help keep its ecosystems intact while continuing to benefit economically from tourism"

With an estimated 3 million divers and snorkelers per year, amounting to over 6 million dives, reef injury by scuba divers and snorkelers exceeds 46 million incidents a year.²⁴ The catalog of direct damage from these incidents includes trampling, brushing with fins or scuba tanks, touching coral, and the resuspension of sediment, creating harmful clouds. On a dive of 45 minutes, an estimated 7.8 incidents occur.²⁵ Casual physical damage is common in shallow reefs, where snorkelers and swimmers frequently kick and stand on them. Heavily dived sites have shown greater damage than that of "virgin" sites—storms and harsh currents are unlikely causes of damage in the shielded Gulf of Aqaba. Broken coral also invites a greater chance of algal overgrowth and the subsequent death of an ecosystem. Sharm El Sheikh and Ras Mohammed have both endured broken coral fragmentation, although the unfortunate effects of beachgoers and divers has impacted the more frequently visited Sharm El Sheikh to a much greater degree, with nearly 70 broken colonies and fragments per sampled site compared to Ras Mohammed's 17.²⁶

As a result, the study performed by Professor Mohammed I. Ahmed of Suez Canal University demonstrates a profound need to maintain the current conditions of Ras Mohammed and avoid the wake of expanding tourism in Sharm El Sheikh.²⁷ Within the sampled region, the report identified Ras Mohammed as the most diverse habitat, and by consequence, the most sensitive based on four considerations: fish, coral, habitat, and potential of exploit and outbreak. Ras Mohammed boasts an average of 80 percent coral coverage in the sampled region, while in stark contrast, Sharm El Sheikh recorded 50 percent less coral coverage than its neighbor, with Na'ama Bay and Sharm El Maya, centers of downtown and resort beaches, entirely devoid of coverage and with negligible diversity. Survival rate, a factor indicative of regeneration and rehabilitation of corals, suggests the active decline of Sharm El Sheikh corals. While Ras Mohammed showed positive rates, affirming the success of large new colonies, heavy human impact and sedimentation caused all

Sharm El Sheikh rates to be negative. Ras Mohammed also sampled more corallivorous species of butterfly and angelfish, thus reflecting the health of their prey, in addition to more parrotfish, which maintain reef systems by grazing algae, together promoting the resilience to disease in Ras Mohammed colonies.

Beyond Sharm El Sheikh, Ras Mohammed greatly outperformed Egypt's other coastal cities, including Hurghada, Marsa Alam, and Shalatiem, foreshadowing Egypt's heavy future dependence on Ras Mohammed. Even further, recording 47 genera of coral, Ras Mohammed surpassed the 15 genera of the Caribbean Reefs, producing rather comparable numbers to the Maldives, with 50 genera, and the Great Barrier Reef in Australia, with 60.²⁸ Initially built to capture European markets travelling to sun and sand destinations in the Canary Islands, Bali, and the Caribbean, Egypt will benefit from recalibrating to highlight the competitive advantage of their noteworthy biodiversity.

Within the five popular dive sites listed earlier--Shark and Yolanda, Anemone City, Jackfish Alley, Shark Observatory, and Ras Ghozlani--the diversity and abundance of species are a testament to conservation efforts, but they also reveal a need for even greater protection. While one of the less accessible and visited dives, Shark Observatory, had the highest coral cover of 90 percent, the frequently visited dive Shark and Yolanda featured a coral cover of 75 percent. Jackfish Alley housed a diverse selection of 14 different genera. This number is consistent with its standing as the largest aggregation spawning ground in the whole of the Red Sea.²⁹ If not properly managed, increased dives to Jackfish Alley could disrupt the vital role in supporting the Red Sea's coral health. The study further found the least variety of both coral and fish in Shark and Yolanda and the shallower waters of Ras Ghozlani, reinforcing the argument that heavily dived sites reduce overall quality.

Blossoming into Ecotourism

As recently as September 2020, Egypt announced its

current and future dedication to protecting its natural resources at the UN Summit. However, for Egypt to demonstrate that its concern is authentic, it must define success as more than simply attracting short term investment. Taking a step in the right direction, President Abdel Fattah el-Sisi acknowledged the loss of biodiversity and resources at the hands of humans and climate change, announcing plans to "protect these resources and create more job opportunities" related to nature reserves and ecotourism.³⁰ While external pressure has historically motivated Egypt to apply international environmental standards, Egypt's current dedication to the international goal is likely due more to the desertification and water crisis it faces in the Nile. Even so, promises of conservation could prove invaluable to Sharm El Sheikh and Ras Mohammed, as the government promotes Egypt as an ecotourism destination in its new "Eco Egypt" project.³¹ The symbolism of announcing the initiative in Ras Mohammed suggests a more fruitful dedication to environmental awareness, promotion of nature reserves, and investment into the local population than the Green List announcement, and creates a crucial collaboration between the Ministry of Tourism, the Ministry of the Environment, and UNDP. The government has a clear priority for the economic benefits of ecotourism, but must not downplay the importance of social and cultural development.

The goal of ecotourism is to promote tourism while simultaneously protecting sensitive environmental reserves; it represents the intersection between conservation, local participation, and profitability. As defined by the IUCN, ecotourism signifies "travel



The coastline of Sharm El Sheikh with Tiran Island visible in the background. (Wikimedia Commons)

to relatively undisturbed natural areas to enjoy and appreciate nature...that promotes conservation, has low negative visitor impact, and provides beneficially active socio-economic involvement of local populations."³² For Ras Mohammed, involved local agents include the local Bedouins, fishing culture, natural coral reefs, mangrove forests, deserts, and mountains. Egypt's transition toward ecotourism reveals the failures of mass tourism and even sustainable tourism, demonstrating the need for a transition to an even more environmentally friendly form of tourism.

The success of ecotourism depends on proper planning and management, as well as distinguishing whether the country will pursue hard or soft ecotourism, both of which are viable options.³³ Hard ecotourists have an active level of environmental engagement and often contribute to the upkeep of the destination. They travel in small groups and adapt their own habits to enjoy the intrinsic values of the sites and local peoples, often opting for mentally and physically challenging activities. Soft tourists, on the other hand, have a more moderate environmental approach. They choose to leave the region as they encountered it, while still paying to maintain the aesthetic values of the destination. They often travel to accessible regions and enjoy them more superficially and for comfort. Egypt's Minister of Environment, Yasmine Fouad, hopes to increase investment in the environmental tourism sector by promoting ecotourism. Instead of mass tourism, Egypt should transition towards hard ecotourism to help keep its ecosystems intact while continuing to benefit economically from tourism.

The IUCN's 2018 designation of Ras Mohammed as a Green List site affirms Egypt and the EEA's ability to maintain a biodiverse region for tourists. Only 49 areas in the world share this designation. The certification process evaluates governance, management, planning, and conservation results and has concluded that Ras Mohammed is among the world's best marine ecosystems. Ras Mohammed in particular has been rewarded for its role in natural reefs, mangroves, sea grasses management, a "ridge to reef" approach to monitoring land-based pollution, 340 square kilometers of no-take fishing waters, and local Bedouin control over exclusive concessions.³⁴ According to manager Waleed Hassan, "the [certification] process

helped improve and really focus on the important values of the Park. [They] will now put in place a new management plan that will help keep [them] meeting the Green List standards in the future.”³⁵ Promoting ecotourism on an international scale will help Egypt as it develops its ecotourist goals, but it will also have to set more ambitious environmental controls due to the uniqueness of Ras Mohammed.

Planning and Discussion

IUCN has created the framework that Ras Mohammed and Sharm El Sheikh will follow to evolve within the bounds of the park. Sharm El Sheikh will need to consider deeper public and community collaboration, expand local reinvestment, and impose stricter reef rules and regulation. IUCN’s original diagnosis, above all, highlights the park’s need to clarify its marine management plan to retain its Green List status. To meet the high demand for tourism, a “strong consensus” called for an expansion of staff in both quantity and authority.³⁶ Stakeholders have complimented park rangers for their transparency and advocated for the staff’s expanded ability to enforce laws themselves, rather than filing police reports and going to court. The ability for park rangers to independently enforce conservation laws will be essential for the protection of coral assets. Despite having a multitude of plans in place in case of future policy changes, the park is also a microcosm of greater Egypt, where the decentralization of the policy-making process may compete with development pressures. The collaboration brought by “Eco Egypt,” however, may quell this concern. The park also requires significant budgetary investment for research and monitoring as well as more routine matters, like a standard uniform for park rangers.

Maintaining Ras Mohammed and improving the quality of Sharm El Sheikh will depend on cohesive stakeholder input from government agencies, private sector tourism, NGOs, and local community boards. While governmental environmental regulations exert a heavy influence over conservation efforts, the private sector dominates tourism conversation and regional development. In other Red Sea cities like El Gouna and Hurghada, the private sector has provided better environmental infrastructure by actively participating in shoreline and city cleanup. However, as

profit-oriented entities, they cannot be the sole actors. To incentivize responsibility in the private sector, the government should encourage a shift to sustainable tourism by offering the Green Star Hotel Certificate (GSH). Egypt showcases GSH certification as an indicator of lower utility costs, higher environmental transparency for guests, and a demonstration of social dedication. Although it is a fairly recent project, Sharm El Sheikh already holds 14 of the country’s 76 GSHs.³⁷ Collaboration between private and public efforts beyond trying to secure new investments in the ecotourism realm, requires Egypt to continue exerting itself as a “planner/regulator and promoter/facilitator.”³⁸

Although Sharm El Sheikh lacks a guardian organization like Hurghada’s Environmental Protection and Conservation Association (HEPCA), the growth of private environmental NGOs will also be necessary. Founded by a group of former dive center owners to address deteriorating reefs, HEPCA was intended to establish a permanent “mooring buoy system,” a method that prevents boats from destructively anchoring on reefs. Since its founding, HEPCA’s efforts have birthed the largest mooring buoy system in the world, with over 1000 moorings throughout the Red Sea.³⁹ By 2009, they had successfully lobbied for the change of 32 laws.⁴⁰ HEPCA’s impacts have been felt in the north in Sharm El Sheikh with the Red Sea Governorates eliminating single-use plastics per HEPCA’s suggestion. The success of HEPCA strongly suggests that Sharm El Sheikh could benefit from its own internal advocacy organization.⁴¹ One potential avenue would be a greater inclusion of local Bedouins, who have been alienated from Sharm El



A clownfish swims through a coral reef near Naama Bay (Hannes Grobe via Wikimedia Commons)

"Sharm El Sheikh must distinguish itself using its competitive advantage provided by Ras Mohammed"

Sheikh’s tourism development planning and rewards. IUCN’s Green Listing may overstate the proliferation of Bedouin operations and their cultural acceptance, especially because listing protected areas as Bedouin satisfies the cultural aspect of ecotourism. Sustainable development depends on Bedouins maintaining territorial sites, offering camps, and navigating boat tours, especially given the detrimental effects of tourism on their ecosystem and indigenous culture.

From a reef-oriented perspective, Sharm El Sheikh must distinguish itself using its competitive advantage provided by Ras Mohammed, primarily by changing its tourist profile, setting more stringent carrying capacity limits, and expanding its research development. Sharm El Sheikh initially relied on German and British visitors before shifting to Italians and then Russians. In the past decade, Russians represented the largest percentage of visitors, but numbers fell drastically after the crash of a Russian passenger plane over North Sinai in 2015 that killed 224 passengers. Russians have since been replaced by Ukrainian and Polish visitors.⁴² As a result of this shift toward mass tourism, the dominant nationalities have reflected lower purchasing power and decreased environmental awareness, leading to a less experienced population of snorkelers and beach tourists who, in turn, are more liable to damage coral. With a poor knowledge of and potential lack of interest in reef ecology, nearly 40 percent of visitors on guided tours to Ras Mohammed do not know corals were animals, although recent visitor groups have shown greater satisfaction with reef health and exhibited less concern for crowding beaches. The comparative lack of snorkeling skills—nearly 40 percent of recent visitors qualifying as beginners—has often led to a violation of park regulations, as newer visitors were more likely to trample reefs and feed fish.⁴³ Ras Mohammed has the opportunity to train less experienced snorkelers and divers, who are willing to pay more for a guided trip along a snorkeling trail than those who are more experienced. This will help expand future carrying capacities. Likewise, higher entrance and rental fees

(more than Ras Mohammed’s current \$5 fee) will help promote a self-sustaining system and move closer to a form of hard ecotourism.

To properly manage tourism and generate economic benefits in the future, Egypt should establish defined carrying capacities, divide reefs into zones, and carry out annual research to document tourism’s impact on the reefs. Social carrying capacities quantify the damage reefs can tolerate before degrading and losing their ability to attract visitors. Heavily dived sites in the Red Sea have long overestimated their reefs’ carrying capacities, resulting in damaged reefs. Currently, Ras Mohammed’s carrying capacities have been established based on the number of moorings of a site, with a limit of three boats per mooring.⁴⁴ This approach severely undermines the park, since most dives are tidal-dependent drift dives or snorkeling hot spots, both of which are independent of the number of boats. Ras Mohammed should instead establish its carrying capacities by setting ecological limits, ensuring that coral cover, diversity, damage, health, and fish populations stay within a defined range. Sites like Jackfish Alley, a prominent spawning ground, should be off limits during their spawning season. Periodic closures, like the closure at Ras Ghozlani for turtle laying, have contributed to the beauty of coral. Dividing reefs into zones can help minimize impacts: for example, closing the shallow and sensitive reef flat where fragile branching acropora grow to limited snorkel tours by certified guides, while allowing access to the back reef as the main ecotourism region.⁴⁵ Lowering the stress on heavily dived regions will allow coral to safely regenerate. To update these standards as necessary, Ras Mohammed must install proper research and monitoring programs to generate more frequent and responsive data, as these coral may hold secrets for the rest of the world.

Conclusion

Egypt’s rapid development in the Red Sea has allowed Sharm El Sheikh to become one of the most popular dive sites in the world. At the same time, this

development has attracted tourists with a lower level of environmental awareness and purchasing power—and a lower level of appreciation for the fragility of the Red Sea corals. By employing practices of economic liberalization and focusing on mass tourism, Egypt has created an oversupply of opportunities that has lowered its tourist profile and its visitors' concern for the environment. Egypt will be tempted to continue lowering its prices, especially now that the COVID-19 pandemic has drastically depressed tourism worldwide. However, it should instead see this period as an opportunity to reset and evolve into an ecotourism destination. Rather than competing with Mediterranean counterparts like Greece, Italy, and Turkey, or Red Sea cities like Hurghada and Eilat, Egypt should aspire to capture the markets of the Maldives or Australia, two places that have traditionally attracted divers and coral-seekers as tourists. Egypt can capitalize on the decline of other marine ecosystems and rebrand itself from a beach destination to a coral reef capital. Egypt must be intent on establishing proper regulations and streamlining research systems to not push the Gulf of Aqaba coral past its bleaching thresholds. Such reforms will also help Egypt gain a better understanding of how to monitor tourism's effects by measuring environmental markers such as coral health. If Egypt is intent on securing investment in a new environmental tourism, then its officials should focus on raising prices, growing educational opportunities, and moving into the hard ecotourism sphere to attract visitors who are more likely to respect the value and fragility of its corals and unique ecosystems.

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A beach located on Naama Bay. (Marc Ryckaert via Wikimedia Commons)

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