

## Recovery of tiger, bull, and reef sharks in Cabo Pulmo, Mexico

### SUMMARY

A bold decision from the local community – to give up their fishing rights and voluntarily extend the protection around their local reef – has played a critical role in the regeneration of one of Mexico’s most important shark hotspots.

### SPECIES PROFILES

The first three species are found in the north of Cabo Pulmo National Park, while tiger sharks are found throughout the area.

### LOCATION

Cabo Pulmo is the only coral reef system in the Gulf of California, Mexico. The Cabo Pulmo National Park covers 71km<sup>2</sup>.



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#### LEMON SHARK

The lemon shark is found in subtropical shallow-water habitats such as coral reefs, mangroves, bays and river mouths.<sup>1</sup>

**VU** IUCN RED LIST STATUS  
Vulnerable

**Aa** SCIENTIFIC NAME  
*Negaprion brevirostris*

**Kg** WEIGHT  
up to 183kg

**Fish** LENGTH  
up to 3.4m



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#### BULL SHARK

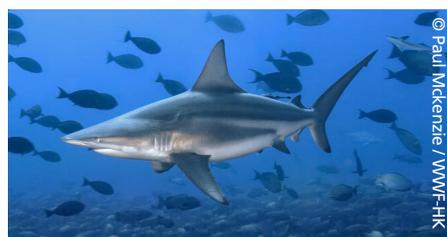
This large shark is a coastal species that occurs in tropical, sub-tropical and temperate waters. Bull sharks also often move into estuarine and fresh waters.<sup>2</sup>

**VU** IUCN RED LIST STATUS  
Vulnerable

**Aa** SCIENTIFIC NAME  
*Carcharhinus leucas*

**Kg** WEIGHT  
up to 315kg

**Fish** LENGTH  
up to 4m



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#### BLACKTIP SHARK

This medium-sized shark can be found globally in tropical, subtropical, and warm temperate seas.<sup>4</sup>

**VU** IUCN RED LIST STATUS  
Vulnerable

**Aa** SCIENTIFIC NAME  
*Carcharhinus limbatus*

**Kg** WEIGHT  
up to 25kg<sup>3</sup>

**Fish** LENGTH  
up to 2.8m



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#### TIGER SHARK

This species is highly mobile with a global range through the world’s warm and temperate oceans. It sometimes associates with coral reefs.<sup>5</sup>

**NT** IUCN RED LIST STATUS  
Near Threatened

**Aa** SCIENTIFIC NAME  
*Galeocerdo cuvier*

**Kg** WEIGHT  
up to 800kg

**Fish** LENGTH  
up to 5m



# HISTORICAL POPULATION TRENDS

Historically, seamounts and pinnacles in the Gulf of California were important shark aggregation sites.<sup>6</sup> In the 1970s, sharks and other large predatory fish were popular targets for a lucrative (and unregulated) tourism-based sports fishing industry out of Cabo Pulmo.<sup>7</sup> There was also a small artisanal fleet targeting sharks, and a fishery linked to the ornamental fish trade.

Mexico's shark fisheries were among the most productive in the world in the early 1980s, with 51 out of the 62 species found in its EEZ being commercially

exploited.<sup>8</sup> But even by this stage, shark numbers at Cabo Pulmo were declining to the point where the local fishers decided to refocus on reef fish. By the 1990s sharks were rarely caught in the area, and the reef fish showed signs of overfishing too. Fishing pressure outside Cabo Pulmo is likely to have caused the disappearance of migratory shark species.

Species-specific figures, however, are sparse. Despite the socioeconomic importance of sharks in Mexico since the late 19th century, landing statistics are

based on only two categories – *Cazón* (small, total length <150cm) and *Tiburón* (larger, >150cm). This prevents accurate population assessments.

Aside from the fishing pressure around Cabo Pulmo, shark numbers may also have been affected by unsustainable tourism significantly affecting the fragile reef ecosystem. The main impacts from years of diving, anchoring and boat strandings – damage to corals, disturbance and displacement of marine organisms – are likely to have contributed to the declining shark presence.<sup>9</sup>

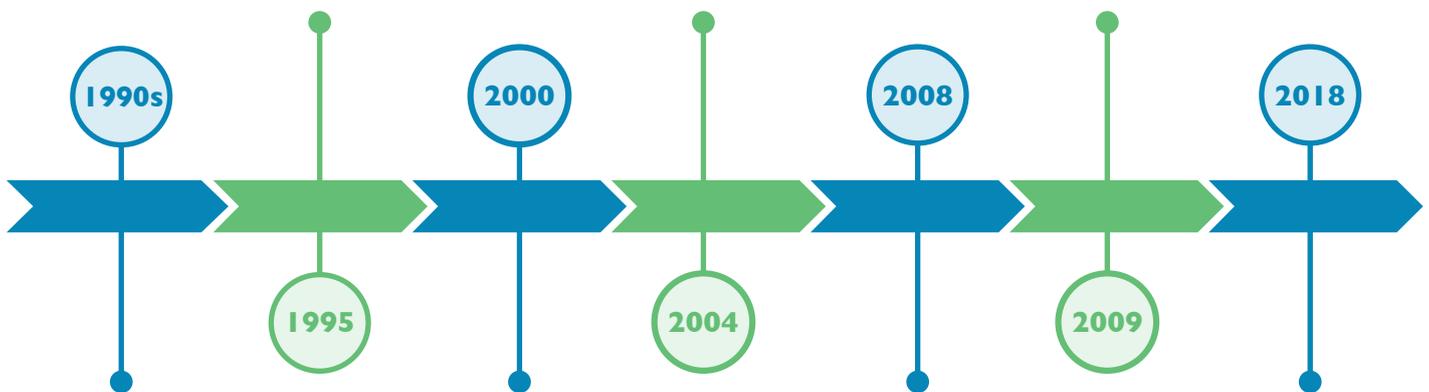


## RECOVERY TIMELINE

**1995** – The work of the Castros and the local villagers – backed up by scientific studies showing the deterioration of the richly biodiverse reef system – eventually paid off. The government agreed to declare Cabo Pulmo a federal NPA, with severe restrictions on fishing and other extractive activities.

**2004** – Efforts to preserve the reef were clearly paying off, and as a result of its rich diversity Cabo Pulmo was designated as a World Heritage site.<sup>13</sup>

**2009** – The first CPNP management plan was officially published. It was created following extensive consultations with all of the park's user groups, and identified needs and priorities for the conservation of biodiversity and sustainable resource use. Its general aim was to preserve the coral reef ecosystem and its wildlife community, and maintain the ecological functioning of the reef; while one of its specific objectives was to 'preserve and recover the populations of target species in commercial and sport catches that take place in areas contiguous to Cabo Pulmo'.



**1990s** – One of the local families from Cabo Pulmo, the Castros, had fished the reef for generations – but by the 1990s they were becoming increasingly concerned by the disappearance of the marine resources they depended on. Eventually, they realized that they'd have to stop fishing completely and find other livelihoods if they wanted to save the reef. At this point, they began working with specialists from the Autonomous University of Baja California Sur to approach the wider community to secure protected status for the reef.<sup>10</sup> Citizens began to lobby the federal government to use a legal framework to establish Natural Protected Areas (NPAs) and ban fishing.<sup>11</sup>

**2000** – The area was renamed as Cabo Pulmo National Park (CPNP). While it was one of the smallest MPAs in the region, on paper it had the largest no-take area (35%) – but the locals went a stage further, voluntarily enforcing a no-take policy throughout the whole of CPNP.<sup>12</sup> This provided vital extended protection for sharks and other marine life.

**2008** – The UNESCO accolade was followed four years later by Cabo Pulmo's listing as a Ramsar Wetland of International Importance.

**2018** – The CPNP management plan received a boost with Mexico's first deployment of the Marine Monitor (M2) radar system, helping to keep track of boat activity within and around the park, and enabling an effective design for patrols.<sup>14</sup> Illegal fishing activities within the park are being further targeted with long-range cameras, drones and SMART (Spatial Monitoring and Reporting Tool) patrols.



## KEY SUCCESS FACTORS

Although not the primary target of conservation efforts in the area, sharks have been among the key beneficiaries. Protection of the reefs is fundamentally important for their reproduction, feeding and habitat.<sup>15</sup>

As for how this protection was achieved, the local community have

played a vital and unique role: voluntarily extending the already extensive no-take zones in their traditional fishing grounds was a brave and visionary move. Evidence from other areas shows that MPAs that incorporate more than 20km of coral reef can provide significant protection to most reef-associated sharks,<sup>16</sup> so by

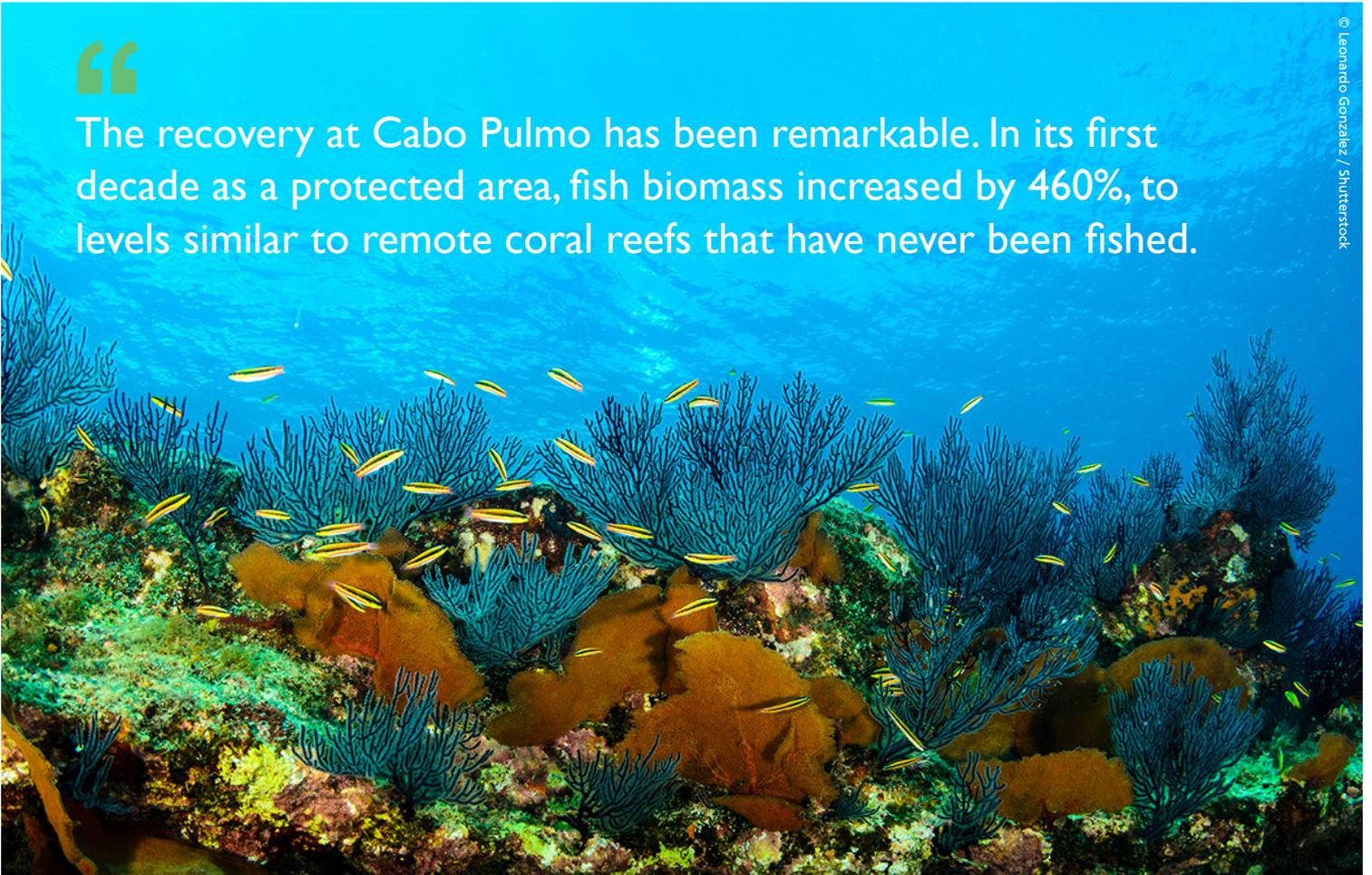
taking the step they did, the villagers moved the project to the next level.

After giving up the short-term benefits of fishing in the hope of creating a better long-term future, the villagers have become proud guardians of their park, voluntarily patrolling, cleaning beaches and educating people about the regulations in place.



The recovery at Cabo Pulmo has been remarkable. In its first decade as a protected area, fish biomass increased by 460%, to levels similar to remote coral reefs that have never been fished.

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## BENEFITS OF RECOVERY

The recovery at Cabo Pulmo has been remarkable. In its first decade as a protected area, fish biomass increased by 460%, to levels similar to remote coral reefs that have never been fished. The average biomass of fish in the CPNP is more than four times greater than the average in open access areas and core zones of other MPAs in the Gulf of California.<sup>17</sup> Top predators including sharks also become far more abundant, with their biomass seeing a ten-fold

increase. During a 2009 study, large sharks were commonly observed at the reefs.<sup>18</sup>

Another study collected shark sighting data for the decade following 2004 recorded the return of the four shark species mentioned earlier on (p.1) as well as five others.<sup>19</sup> A more recent study shows at least five species are common residents, with sufficient numbers present to be a tourist attraction in themselves.<sup>20</sup>

The conservation of CPNP has had direct socioeconomic results. It's now one of the main shark diving destinations in the Gulf of California, with dive-related jobs compensating for the loss of fisheries livelihoods and providing incomes well above the average for Mexico.<sup>21</sup> Some 84% of divers who visit the region say its sharks are the most attractive animals for sightings.<sup>22</sup>

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## CHALLENGES

For the first 14 years after the establishment of CPNP there was no official management plan in place, which meant the park remained largely absent from national and international programmes, and didn't receive much technical or financial support from NGOs. The lengthy hiatus was attributed to a lack of budget and political will, as well as government restructuring. Locals did their best to develop regulations and plan security, but the lack of formal management certainly held back progress.

Today there are still only limited financial and human resources to effectively manage CPNP, and it remains under pressure from commercial fishing in surrounding waters, and extraction and damage by uninformed visitors.<sup>23</sup> When legendary oceanographer Sylvia Earle visited the area in 2016, her Mission Blue expedition encountered illegal shark fishing.<sup>24</sup>

Cabo Pulmo also narrowly escaped falling victim to Mexico's tourism and development policies, which have attracted large-scale developers and investors to the region. An enormous real-estate and tourism project was proposed at nearby Cabo Cortés, which would have seen the construction of at least 30,000 room units, three golf courses, a marina and an airport just north of Cabo Pulmo. Experts warned that the construction and operation of the project would cause irreparable harm to the coral reef and the wildlife of CPNP.<sup>25</sup> Fortunately, the tireless local community sprang into action again, and thousands of citizens rose up in opposition to the development, ultimately convincing the government to revoke its authorization.

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## LESSONS LEARNED

- Transitioning from fishing to nature-based tourism is difficult but can ultimately lead to conserved resources and a better quality of life.
- Involving the community at every step of the way is fundamental to the process.<sup>26</sup> Giving all stakeholders an opportunity to contribute to the management plan was very important, and it's widely supported as a result.<sup>27</sup> Today, through strong leadership and effective self-enforcement, locals both support and directly benefit from the marine reserve.
- The sustainable mindset needed to create CPNP has opened doors to create other sustainable business models in the local community.
- Modern, efficient monitoring systems are vital for halting all illegal extractive activities.



This factsheet was produced by the Shark and Ray Recovery Initiative (SARRI), a partnership between ElasmO Project, James Cook University, Wildlife Conservation Society, and WWF, working together to recover some of the most threatened sharks and rays in their last refuges around the world.

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**FOR FURTHER INFORMATION:** To learn more about the Shark and Ray Recovery Initiative and discover the other factsheets from this series, visit [www.sarri.org](http://www.sarri.org).

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