

# COLLATERAL DAMAGE:

How illegal trade in totoaba  
swim bladders is driving the  
vaquita to extinction



## ABOUT EIA

EIA is an independent campaigning organisation committed to bringing about change that protects the natural world from environmental crime and abuse. As part of our work we have campaigned for three decades for effective protection for whales, dolphins and porpoises globally.

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COVER IMAGE:  
Vaquita © Todd Pusser

# INTRODUCTION

The vaquita (*Phocoena sinus*) is the world's smallest cetacean and the world's most threatened marine mammal.<sup>1</sup>

Between 2011 and 2015, the vaquita population decreased by an estimated 80 per cent as a result of bycatch in gillnets, many of them set illegally to capture a large and endangered fish called the totoaba (*Totoaba macdonaldi*). Fewer than 60 vaquitas remain and the species is on the brink of extinction.<sup>2</sup>


Known also as 'vaquita marina' or Gulf of California harbour porpoise, the vaquita has the smallest geographical range of any marine cetacean species. Its known distribution encompasses an area of only about 4,000km<sup>2</sup> in the northernmost Gulf of California. With adults reaching around 1.5m in length and weighing 55kg, the vaquita is the smallest member of the porpoise (*Phocoenidae*) family. Its conspicuous dark patches around the eyes and mouth make it one of the most iconic cetaceans, although difficult to see in the wild.

The cause of the vaquita's plight is not direct hunting or persecution. It is collateral damage, swept up indiscriminately and killed in the illegal gillnets used to poach totoaba. The totoaba is a large, long-lived species and is highly susceptible to overfishing, which has resulted in its current critically endangered status. All international trade in totoaba has been banned since 1977.

The demand for the dried swim bladder or 'maw' of the totoaba as an ingredient in Chinese traditional medicine has seen it dubbed 'aquatic cocaine' for the huge sums it commands on the black market. Commonly known in southern China and Hong Kong as 'money maw', totoaba maws are much sought after for the supposed benefits of treating circulatory and skin problems.

EIA investigations into the totoaba trade since 2015 have found persistent illegal trade in totoaba swim bladders to supply the main markets in southern China and Hong Kong. A surge in trade occurred around the beginning of the decade, peaking in 2014 and driven by speculators and criminal groups attracted to rapidly rising prices. By 2015, the value of totoaba had significantly dropped due to a market glut but trade continues in stockpiled maw, with large specimens still fetching more than \$50,000. EIA investigations reveal the emergence of the southern coastal city of Shantou as a hub for totoaba maw trade, in addition to the key trading centres of Guangzhou and Hong Kong. EIA has also documented significant sales in open seafood auctions.

While there are indications that some enforcement actions have taken place, much more needs to be done to effectively enforce against totoaba smuggling and sales, especially in the main consumer markets in China. Without such actions the vaquita is doomed to extinction.

A full-page background image showing a fisherman in silhouette, wearing a cap and a dark jacket, pulling a large, shimmering gillnet from the sea. The fisherman is positioned on the left side of the frame, facing away from the viewer towards the right. The net is partially submerged and catches the light, creating a sparkling effect. The sea is dark with some whitecaps, and the sky is a pale, hazy blue. The overall mood is somber and evocative.

**"THE CHOICE IS SIMPLE AND STARK:**  
either gillnetting in the Upper Gulf ends  
or the vaquita will be gone - the second  
entirely preventable cetacean extinction  
that the Committee will have witnessed  
in the last ten years."

Scientific Committee of the International Whaling  
Commission, the world's foremost scientific  
authority on cetaceans (June 2016)

Fisherman with gillnet.



# TOTOABA – A CRITICALLY ENDANGERED FISH

The totoaba (*Totoaba macdonaldi*) is a large and long-lived marine fish, endemic to the Gulf of California.<sup>3</sup> It is the largest species within the *Sciaenidae*, a family of fish commonly known as drums or croakers, which includes California white sea bass and corvina. It can grow to more than 2m in length, weighs up to 100kg and can live as long as 25 years.<sup>4</sup>

The totoaba is found only in the central and northern Gulf of California. The species spawns in the northernmost part of the Gulf in the Colorado River Delta, although historically it is thought to have also spawned further south on the eastern side of the Gulf, especially in the mouth of the Rio Fuerte.<sup>5</sup>

The totoaba fishery was the Gulf's most important fishery at the beginning of the 20th century. It originally developed in response to the demand for its swim bladder, which was exported to China and to Chinese communities in California.<sup>6</sup> A US market for whole

totoaba also developed and catches peaked in 1942 at over 2,000 tonnes, subsequently declining to 59 tonnes by 1975 when commercial fishing was banned.<sup>7</sup> The species has been listed as critically endangered by the International Union for Conservation of Nature (IUCN) since 1996, due to rampant overfishing, habitat degradation, bycatch and illegal fishing.<sup>8</sup>

Trade in totoaba or any part of a totoaba is illegal under both US and Mexican law. Totoaba fishing was banned in 1975 and two years later the species was placed on Appendix I of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), banning all international commercial trade.<sup>9</sup> In 1979, it was added to the US Endangered Species List.<sup>10</sup> Mexico included it on its list of Species in Danger of Extinction in 1994.<sup>11</sup>

No survey of the totoaba population has ever been conducted and its status is currently unknown.<sup>12</sup> While there have been some indirect indications of recovery, the main threat to the totoaba is illegal fishing, driven by the high prices paid for its swim bladder;<sup>13</sup> fishermen reportedly received as much as \$8,500 per kilogramme (kg) on the local black market at the height of the trade.<sup>14</sup>

Poachers use gillnets, which are prohibited for fishing activities in the upper Gulf of California, and fish in areas where all fishing activities are banned. Totoaba are captured in anchored, large-mesh gillnets set at night that are left for several days or even abandoned altogether after the catch is retrieved.<sup>15</sup>

Like other members of the croaker family, the totoaba is particularly vulnerable to overfishing due to its life history parameters, including longevity and aggregation spawning.<sup>16</sup> Given this, the additional market pressure from the illegal swim bladder trade and loss of spawning habitat from the degradation and conversion of the Colorado River Delta are both major causes for concern.<sup>17</sup> An updated stock assessment is urgently needed.



© Richard Herrmann/Minden Pictures/Corbis



## DEMAND FOR TOTOABA SWIM BLADDER

Dried fish swim bladder (commonly referred to as ‘maw’) is highly valued in China, alongside other marine products, most notably shark fin, abalone and sea cucumber. The highest levels of demand occur in southern China and Hong Kong, the latter a well-established trading centre.<sup>18</sup>

Commonly referred to as ‘*yu jiao*’ or ‘*yu du*’, fish maw is in demand for its supposed medicinal effects and for use as a tonic, although scientific studies supporting these properties are lacking.<sup>19</sup>

Around 34 different types of fish maw are found on the market. Value and desirability are determined by species, size, shape, dryness, thickness, age, colour and freshness. Larger and thicker maws are generally more valuable while male maws fetch higher prices than female.<sup>20</sup> Croaker species (such as totoaba) are the most popular fish maw.

The bahaba or giant yellow croaker (*Bahaba taipingensis*), which is found off the coast of China from the Yangtze River southwards to Hong Kong, is considered the best and most valuable of all fish maws.<sup>21</sup> The recent surge in the illegal trade in totoaba is connected to its perceived kinship to the bahaba, which has been overfished to such an extent that it is listed as critically endangered by the IUCN.<sup>22</sup>

Both bahaba and totoaba are known as ‘*jinqian min*’, meaning ‘money fish’, due to their high value based on rarity and alleged medicinal properties. Their maws are distinguished by the length of their tubules, which are short in the bahaba (its maw being referred to as ‘short whiskered jinqian’) and longer

in the totoaba (‘large whiskered jinqian’). Totoaba maw is also known as ‘San Francisco maw’, while the formal name for the totoaba in Chinese translates as ‘California croaker’ (加利福尼亚石首鱼).<sup>23</sup>

As bahaba maws rarely come to market, totoaba has replaced bahaba as the king of fish maws, prompting a massive increase in illegal fishing in Mexico during the past six years.<sup>24</sup>

Totoaba is marketed as a bahaba replacement and is claimed to stop bleeding, nourish the liver and kidneys, improve skin condition and invigorate circulation.<sup>25</sup> Small to medium totoaba are generally purchased for consumption, while larger maws are bought for investment purposes, as collectibles or as gifts.<sup>26</sup>

A booklet entitled “*In praise of fish maw*” by Chen Dankun, an expert on fish maw and President of the Shantou Swim Bladder and Dried Sea Food Association,<sup>27</sup> extols the virtue of totoaba maw, comparing it in efficacy to the bahaba, which is well known as the most valuable of all fish maw: “*Although the large-whiskered money maw [totoaba] comes from overseas, it is not inferior to the small-whiskered [bahaba] in terms of composition, effectiveness or reputation among the public. As there are very few small-whiskered money maws and they are very expensive, people often use large-whiskered money maw to treat illness.*”<sup>28</sup>

According to traders, the major consumers of fish maws are from Guangdong, Fujian and Zhejiang provinces, in southern and eastern China.

### ABOVE:

Dried totoaba swim bladder on sale in Shantou in June 2016.

“Totoaba has replaced bahaba as the king of fish maws, prompting a massive increase in illegal fishing in Mexico during the past six years.”



# EIA INVESTIGATIONS INTO THE TOTOABA TRADE

EIA monitored the market for fish maw products from April 2015 to July 2016, through online research including platforms such as Facebook, Tencent QQ and shopping sites such as Alibaba and Taobao. In addition, EIA carried out three on-site investigations, in May 2015 (Hong Kong, Guangzhou), November-December 2015 (Guangzhou, Shenzhen) and June 2016 (Shenzhen, Shantou).

These investigations, involving EIA undercover investigators posing as fish maw investors, reveal that the centre of the trade lies in Jinping District in Shantou, where 90 per cent of shops are run by members of the Shantou Swim Bladder and Dried Seafood Association. The shops in this area specialise in the wholesale distribution of fish maws nationwide and supply other key trading centres such as Guangzhou, in southern Guangdong.

Over the course of the investigations, traders in Guangzhou have become more wary as a result of local enforcement efforts. In May 2015 EIA saw hundreds of totoaba maws openly on sale in Guangzhou's Qingping market but none in December 2015; yet some traders were still able and willing to offer totoaba maw. In contrast, totoaba maws were on open sale in Shantou shops and markets in June 2016 and at least one trader indicated that only recently caught totoaba maw would be illegal.

## SURVEY OF RETAIL OUTLETS

In April-May 2015, EIA conducted an initial survey of 23 fish maw retailers in Hong Kong and Guangzhou, as well as online research to ascertain the availability of illegal totoaba products on the market. In Guangzhou, EIA saw more than 800 maws that traders claimed were totoaba maw openly on sale in six shops.<sup>29</sup> Generally, traders were aware that sale of totoaba is illegal, knew the fish were from Mexico and claimed that smuggling the contraband between Hong Kong and mainland China was easy, with no routine inspection of fish maw consignments by customs agencies. Hong Kong traders were more guarded, with only two shops displaying totoaba maw. EIA was told the main buyers were from mainland China, who purchased maws in Hong Kong due to the perceived higher quality of supplies from the city and the higher risk of fakes in Guangzhou.

EIA's survey uncovered a fall in the market price for totoaba maw since 2012 due to a spike in illegal trade causing oversupply in the market. While totoaba prices remain high compared to other fish maws, the decline from the record prices of previous years had led to stockpiling by traders hoping to push the price back up.

A second on-site investigation in November and December 2015 revealed further details of the trade. Investigators spoke with nine traders in the Qingping and Yide Road markets of Guangzhou. In contrast to the May 2015 trip, traders in Guangzhou were more cautious and totoaba maws were not openly sold.



Fish maw wholesaler in Shantou.



Totoaba maws offered to EIA investigators by Kangzhiyuan Chongcao Hong in Guangzhou, December 2015.

Some traders displayed a poster from Guangdong Oceans and Fisheries Administration which warned that the illegal sale of dried totoaba swim bladder would result in confiscation of specimens and illegally gained income, a fine and possible prosecution under the Criminal Law of the People's Republic of China. One trader told EIA that inspections had taken place, with some fined for failure to remove the totoaba maws from the shelves. Despite this, five (more than half) of the traders EIA spoke with confessed to holding totoaba stock; three traders showed totoaba maws to investigators and were willing to sell. Two of the traders were unwilling to sell the totoaba maws in their possession, explaining that they were banking on a future price increase which would allow them to recoup their investment. One trader in Qingping Market told EIA he had invested over 10 million RMB (approx. \$1,500,000) in 2013 and 2014, but with the price of totoaba dropping by 80 per cent he would not sell his remaining stock of 100-200 maws until prices rose again.

A third on-site trip in June 2016 to Shantou documented the open sale of totoaba maw in several shops and markets. While traders were aware that totoaba were listed on CITES Appendix I, one major trader falsely claimed that only newly sourced totoaba maws were illegal and maws of five to six years could be legally sold.





Totoaba fish maw documented on sale in Yonghengtai, Qingping Market, Guangzhou.



A bag of small totoaba maws on sale in Qingping market, Guangzhou, May 2015.



456g totoaba maw priced at 70,000 RMB (\$10,552) offered by Yong De Chang in Shenzhen in December 2015.



A totoaba maw weighing over 400g priced at 80,000 RMB (\$12,060), on sale in Guangzhou, May 2015.

Details of specific traders are outlined below:

#### Guangzhou City, Kangzhiyuan Chongcao Hang

Investigators met with the owner and his assistant, both originally from Chaozhou in Guangdong and were shown six totoaba maws from a nearby freezer facility. The traders explained there was less stock compared to a few years ago, when many were being caught in Mexico. One of the traders was concerned about the status of the totoaba, stating "It's not good if they go extinct. The Chinese bahaba is basically extinct." The same trader also stated he does not perceive the totoaba to have any medicinal efficacy: "big-whisker maw, to tell you the truth, has no effect".

#### Yonghengtai Chongcao Hang

Based in Qingping Market in Guangzhou, Yonghengtai showed four totoaba maws to investigators and claimed to have many more smaller maws at a nearby freezer facility.

The trader offered a 313g totoaba maw to EIA investigators for 65,000 RMB (\$9,794). She told them this was based on a price



Totoaba maw openly on sale in Shantou, June 2016. The red label indicates 'money fish', i.e. totoaba.

## EIA INVESTIGATIONS

of 100,000 RMB per 500g and that two years ago the price would have been 200,000 RMB per 500g. When asked if there were enforcement checks, given that it was a protected species, she said “nobody checks, aside from the document listing it as a protected species”, likely referring to the Guangdong Oceans and Fisheries Administration poster. When asked if she had been issued a copy, the trader said “No, I have just heard of it”.

### Yong De Chang Zibu Hang

Yong De Chang Zibu Hang is a major fish maw company with a 30-plus year trading history, run by the Ji family. The company is a member of the Shantou Fish Maw and Seafood Association, has a flagship shop in Shenzhen, a shop and factory in Shantou and recently opened a business in Guangzhou's Yide Road market. Yong De Chang trades almost exclusively in wholesale fish maws, although its Shenzhen and Guangzhou shops also sell sea cucumbers, birds' nests, shark fins and caterpillar fungus. The Shantou shop sold a variety of fish maws, including 'spider maws' from Vietnam and Indonesia, as well as maws from as far away as Brazil.

The Ji family has been involved in the totoaba trade for about six years, sourcing freshly frozen maws from Mexico. They claim to be one of the biggest wholesalers in Shantou, supplying to large businesses and other traders in Guangdong, Hong Kong, Fujian and further afield to Zhejiang province, Shanghai and Beijing.

In December 2015, EIA investigators visited the company's Shenzhen shop where at least 20 large totoaba maws in gift boxes and two shelves of smaller totoaba maws were displayed. The manager said that money maw is the best type and that the price was dependent on the size and quality.



Bag of approximately 20 small totoaba maws shown to EIA in Yongsheng Marine Products, June 2016.

## TOTOABA PRICES IN CHINA

According to traders in Shantou, the swim bladder is about one per cent of the weight of the fish, so a 50kg fish can produce a 500g maw.

Most totoaba maws now on the market are only 50-100g, and the value has dropped by up to 80 per cent since its peak in 2012.

Over the course of the investigations, EIA was offered totoaba maws ranging from 16,000 RMB (\$2,400) per kg to over 170,000 RMB (\$25,000) per kg (see Table 1). Traders consistently reported a 60-80 per cent drop in totoaba maw value since 2012-13 due to oversupply in the market.

**TABLE 1:** Examples of totoaba prices offered to EIA investigators in Nov/Dec 2015 and June 2016

Size of maw (g)	No of traders	RMB / maw	USD / maw	RMB / kg maw	USD / kg maw
50	2	800-1,000	120-150	16,000-20,000	2,400-3,000
100	4	4,000-5,000+	600-795	40,000-50,000+	6,000-7,950
150	1	5,700	855	38,000	5,700
250	1	10,000+	1,500	40,000+	6,000
308	1	32,254	4,838	104,721	15,708
500	5	54,000-85,000	8,100-12,750	108,000-170,000	16,200-25,500





Totoaba maws offered for sale by Yong De Chang in Shantou, June 2016.

Small maws up to 100g in size are sold wholesale by the 'jin' (500g) whereas larger maws are priced per 'liang' (50g) or per piece. For example, totoaba maws weighing 50g were priced wholesale at 10,000 RMB per 500g (approximately 1,000 RMB, \$151, per maw) and 100g maws were priced at 4,000-5,000 RMB (\$603-754) each, depending on the quality (fine versus coarse). Male maws are more valuable than female maws. A 100g male totoaba maw would fetch 5,000 RMB (\$754), compared to 4,000 RMB (\$603) for a female totoaba maw; however, male maws weighing more than 100g were very rare. A 250g maw might fetch over 10,000 RMB (\$1,507), while a 500g maw would be more than 80,000 RMB (\$12,060) if it was good quality. The trader showed EIA one 456g maw priced at 80,000 RMB (\$12,060).

In June 2016, Yong De Chang told EIA investigators it had a stockpile of about 600-700 totoaba maws. The traders told EIA they were selling only 30 large maws each month compared to more than 1,000 a month in 2014. Yong De Chang estimated that tens of thousands of pieces were in the market at the peak, but few were now being imported due to the drop in prices since the trade escalated and the market flooded. *"... the price [now] is 10,000-plus RMB per jin [500g]. Three years ago, 1-liang [50g] maw was 40,000-plus RMB per jin wholesale. After they [totoaba] were discovered, lots of them were caught and the market was flooded."*

#### Yongsheng Marine Products

Yongsheng Marine Products is situated within the lobby of the Shantou Junhua Haiyi Hotel. The company also has a wholesale shop at Fuhe Market in Shantou and its owner is a Director of the Shantou Swim Bladders and Dried Seafood Association.

When EIA visited in June 2016, Yongsheng Marine Products had one large totoaba maw openly on display, priced at 85,000 RMB (approximately \$12,800) and the shop assistant showed EIA a bag of about 20 small totoaba maws measuring 12-15cm which were priced between 8,000-13,800 RMB (\$1,200-2,000) per 500g. She indicated that large maws were hard to find as they were bought up by private collectors.

She explained that small maws were used for personal consumption while the larger, thinner maws were given as gifts. She added that all their money maws were from Mexico.



Totoaba fish maw shown to EIA investigators in Yongsheng Marine Products in 2016.

## EIA INVESTIGATIONS

**TABLE 2:** Totoaba maw auctions recorded on Artron.net

Item Name (English)	Weight (g)	Age (years)	Reported origin
<b>Jinqian min maw</b> [totoaba identified by image]	120.8	No info	No info
<b>American jinqian min maw</b> [totoaba]	162	No info	US
<b>American jinqian min maw</b> [totoaba]	175	No info	US
<b>Jinqian min maw</b> [totoaba identified by image]	175	No info	No info
<b>American jinqian min maw</b> [totoaba]	268	No info	US
<b>American jinqian min maw</b> [totoaba]	291	No info	US
<b>American jinqian min maw</b> [totoaba]	296.5	No info	US
<b>Jinqian min maw</b> [totoaba identified by image]	334.3	No info	No info
<b>Jinqian min maw</b> [totoaba identified by image]	349.1	No info	No info
<b>American jinqian min maw</b> [totoaba]	447.5	No info	US
<b>2010 jinqian min maw</b> [totoaba identified by image]	340	5	Mexico
<b>Big-whisker jinqian min maw</b> [totoaba]	505	25	US

### Auction and online sales

Totoaba maws are openly sold online and at auctions in China, despite the illegality of the trade. A Chinese online platform created for the auctioning of art and antiques, Artron.net, records 25 'money' maws auctioned since mid-2015. With 14 regional offices across China, the platform claims to have over 2.6 million members. Eighteen of the maws were readily identified as totoaba, either via their listed name (e.g. 'big whiskered money maw' or 'American money maw') or through the images which clearly show the long tubules.

Twelve of the 18 totoaba maws were sold, with prices ranging from \$1,294 (for a 121g maw) to \$51,750 (for a 505g, 25-year-old totoaba maw). Values ranged from \$9,586 per kg (for a 162g maw) to \$110,603 per kg (for a five-year-old, 340g maw). The two maws which had ages specified (25 years and five years, respectively) fetched much higher prices than other maws (see Table 2).

The auctioning of fish maws has been recorded in the Artron database since at least 2012, but totoaba maws were not recorded until 2015. Different search terms show a mix of fish maws auctioned under a range of names and descriptions over the years. Totoaba maws are one of many high-value varieties of fish maws found to be auctioned. Their set prices, however, tend to be much higher than that of other varieties. This highlights the perceived higher status and value of the totoaba maw.



Totoaba maw also continues to be available online through e-commerce sites such as Taobao and Alibaba. In early August 2016, a search under the term 'money maw' found three advertisements on Taobao that appeared to be offering totoaba maws, with images showing the characteristic long tubules.<sup>30</sup> In addition, EIA identified two advertisements on Taobao and an additional three on the e-commerce site Alibaba that claimed to be offering bahaba maws for sale.<sup>31</sup> The images and price ranges (much lower than bahaba maws usually fetch) suggest that these may also be totoaba maws.



Auction House	Auction Date	Transaction worth (RMB)	Transaction worth (Cited USD)	USD/kg
Baoli (Xiamen) International Auction Co Ltd	16/01/2016	8,625	1,294	10,712
Baoli (Xiamen) International Auction Co Ltd	08/05/2016	10,350	1,553	9,586
Baoli (Xiamen) International Auction Co Ltd	08/05/2016	11,500	1,725	9,857
Baoli (Xiamen) International Auction Co Ltd	16/01/2016	12,075	1,811	10,349
Baoli (Xiamen) International Auction Co Ltd	08/05/2016	26,450	3,968	14,806
Baoli (Xiamen) International Auction Co Ltd	08/05/2016	31,050	4,658	16,007
Baoli (Xiamen) International Auction Co Ltd	08/05/2016	32,200	4,830	16,290
Baoli (Xiamen) International Auction Co Ltd	16/01/2016	41,400	6,210	18,576
Baoli (Xiamen) International Auction Co Ltd	16/01/2016	46,000	6,900	19,765
Baoli (Xiamen) International Auction Co Ltd	08/05/2016	74,750	11,213	25,057
Guangzhou Chinese Arts International Auction Co Ltd	23/05/2015	250,700	37,605	110,603
Guangzhou Chinese Arts International Auction Co Ltd	25/05/2016	345,000	51,750	102,475

This 25-year old 505g totoaba maw, reportedly from the United States, was auctioned for 345,000 RMB (over \$51,750).

# ENFORCEMENT EFFORTS AGAINST ILLEGAL TOTOABA FISHING AND TRADE

Totoaba is one of only 16 fish species listed on Appendix I of CITES, a classification which prohibits international commercial trade.<sup>32</sup> In addition, the species is listed on the IUCN Red List as “Critically Endangered” and under the US Endangered Species Act as “Endangered”.

In Mexico, the species is currently listed in the category of “Endangered” (P) under the standard NOM-059-SEMARNAT-2010, and an open-ended ban on its utilisation in the wild has been in force since August 1975.<sup>33</sup> Since the April 2015 Government announcement of a two-year gillnet exclusion zone in the Upper Gulf of California, the Mexican Navy (SEMAR) has deployed over 1,000 personnel who have seized or detained 122 small boats, 77 people, 20 vehicles, 79 totoaba specimens, 177 totoaba swim bladders, 600 gillnets or pieces of fishing gear and four larger vessels.<sup>34</sup>

In China, the CITES Appendix I listing of totoaba means it is treated as a species under first-class state protection, prohibiting trade, purchase and transport. According to the Guangdong Oceans and Fisheries Administration “Illegal sale of dried totoaba swim bladder will, according to Article 35 of the Wildlife Protection Law of the People’s Republic of China, result in confiscation of specimens and illegally gained income, and a fine. If the circumstances are serious and constitute a crime, the perpetrator will be pursued for criminal responsibility according to the Criminal Law of the People’s Republic of China.”<sup>35</sup>

An information document submitted by the CITES Management Authority of China to the January 2016 CITES Standing Committee meeting states that notifications were given to all relevant Chinese law enforcement and wildlife conservation agencies, including agriculture, fishery, customs, police, quarantine, border control and coastguard, requesting them to improve investigation of the smuggling and illegal sale of totoaba maw. In December 2015, a joint investigation by the CITES Management Authority of China, the CITES Scientific Authority, the

Ministry of Agriculture and the Chinese office of IUCN in Guangzhou’s Qingping Market was undertaken but no totoaba maws were found. Traders told officials they were reluctant to engage in the totoaba maw trade due to the high price and high risk, as well as the problem of fake products. In its document, China committed to take further steps to enhance inspection of the illegal entry of totoaba maw into China and effectively control the smuggling, as well as continuously improve supervision and inspection of major markets to eliminate open sale.<sup>36</sup> China also promised to cooperate with other countries on law enforcement and carry out investigations in response to information received.

Despite China’s stated commitment to enhancing inspection at entry points and markets, EIA’s investigations reveal that totoaba maws are still openly on sale in Shantou and available upon request in outlets in Guangzhou.

## TOTOABA SEIZURES

Comparisons of seizure records in source and consumer regions suggest significant discrepancies in terms of effort applied to enforcement. Recent seizures in Mexico have demonstrated efficient inter-agency collaboration between, among others, PROFEPA (Federal Attorney for Environmental Protection), SEMAR (Naval Secretariat), SEDENA (Secretariat of National Defense), CONAPESCA (Aquaculture and Fisheries Commission), and customs and federal police, suggesting a high degree of awareness among various enforcement agencies.

In contrast, only two seizures of a few totoaba products have been reported in Hong Kong and none in mainland China, the principal market for illegal totoaba.

The majority of publicly reported seizures of totoaba swim bladders have occurred in the areas of the United States and Mexico adjoining the Upper Gulf of California where the totoaba is found. Details of recent seizures indicate that totoaba swim

“Despite China’s stated commitment to enhancing inspection, EIA’s investigations reveal that totoaba maws are still openly on sale in Shantou and available upon request in Guangzhou.”



bladders are often transported by road from the coasts of the Upper Gulf towards the US-Mexico border, before being smuggled onwards to consumers. The July 2015 seizure of a large number of bladders from passengers' luggage at Tijuana Airport illustrates one method used to transport the bladders to consumer markets. Seizures further afield have included a series of recoveries from mailed parcels (in Mexico City and Hong Kong).

Seizures of bladders found in cool boxes in Ensenada, on Mexico's Pacific Coast and at the US-Mexico border indicate that bladders may be dried and processed some distance from their site of origin including, according to EIA investigations, by traders on-site in China.

EIA's records show 27 seizures since January 2013, totalling over 1,500 totoaba swim bladders. Figure 1 and Table 3 show totoaba seizures in Mexico and the US, indicating the main smuggling routes and locations where enforcement has been more effective in intercepting illicit shipments. Figure 2 and Table 4 show totoaba seizures and EIA trade observations in China.

Notable seizure incidents include:

- **in March 2016**, Mexican federal police seized 121 fresh totoaba swim bladders from a vehicle on the Mexicali-Tijuana highway. They had been concealed in plastic wrapping and hidden inside the vehicle's spare tyre. A male San Felipe resident, aged 28, was arrested; he had been transporting the shipment from the Gulf of Santa Clara to Tijuana on the Mexico-US border;<sup>37</sup> (see image)

- **in November 2015**, the Hong Kong Agriculture, Fisheries and Conservation Department (AFCD) issued summonses against the operators of two dried seafood shops, Kwok Tai Marine Products Company and Yue Hing Marine Products Trading Company, for illegal possession of totoaba. Fourteen pieces of suspect fish maw were seized and later confirmed to be totoaba.<sup>38</sup> The two stores were fined a total of HK\$ 110,000 in December 2015, reportedly the first conviction in Hong Kong relating to totoaba;<sup>39</sup>

- **in October 2015**, Mexican federal agencies reported the seizure of 543 totoaba fish as part of an ongoing operation against illegal fishing in the Gulf of California, resulting in 19 arrests;<sup>40</sup>

- **in July 2015**, Mexican federal police arrested three Chinese nationals

attempting to smuggle 274 totoaba swim bladders, weighing 35kg, through Tijuana International Airport en route to Shanghai. The swim bladders were found inside three suitcases, wrapped in blotting paper;<sup>41</sup>

- **in July 2015**, a businessman based in Los Angeles pleaded guilty to smuggling 58 totoaba swim bladders as well as protected abalone. In 2013 he used his furniture company as a front to move the illicit marine products from Mexico into the United States and on to a relative in China;<sup>42</sup>

- **in November 2014**, 385 totoaba maws were seized at Mexico City International Airport from three parcels sent from Mexicali, bound for China;<sup>43</sup>

- **in June 2013**, Jason Xie, resident of Sacramento, California, pleaded guilty to the illegal import of 270 totoaba swim bladders from Mexico. He admitted receiving the swim bladders in Calexico, in two separate consignments hidden in cooler boxes under a layer of fish, and paying \$1,500 in Mexico for each swim bladder. As part of his sentence, Xie forfeited a house worth \$350,000 in Seattle bought with the profits from his totoaba smuggling activities. He received a four-month prison sentence and an order to pay the Mexican Government \$3 million in restitution, the estimated value of the 270 swim bladders.<sup>44</sup>

- **in April 2013**, U.S. Customs agents inspected a vehicle belonging to Song Shen Zhen at the Calexico border crossing and found 27 dried totoaba swim bladders hidden in plastic bags placed under floor mats. The customs agents later found a further 214 swim bladders at Zhen's house. In 2014, Zhen was given a one-year prison sentence and ordered to pay the Mexican Government restitution in the amount of \$120,500;<sup>45</sup>

**"EIA's records show 25 seizures have been made in Mexico and the US since January 2013. In contrast, only two seizures have been reported in Hong Kong and none in mainland China, the principal market for illegal totoaba."**

**BELOW:**

One of 121 fresh totoaba swim bladders seized by Mexican federal police in March 2016.



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**FIGURE 1:** Recorded totoaba maw seizures in Mexico and the US since January 2013

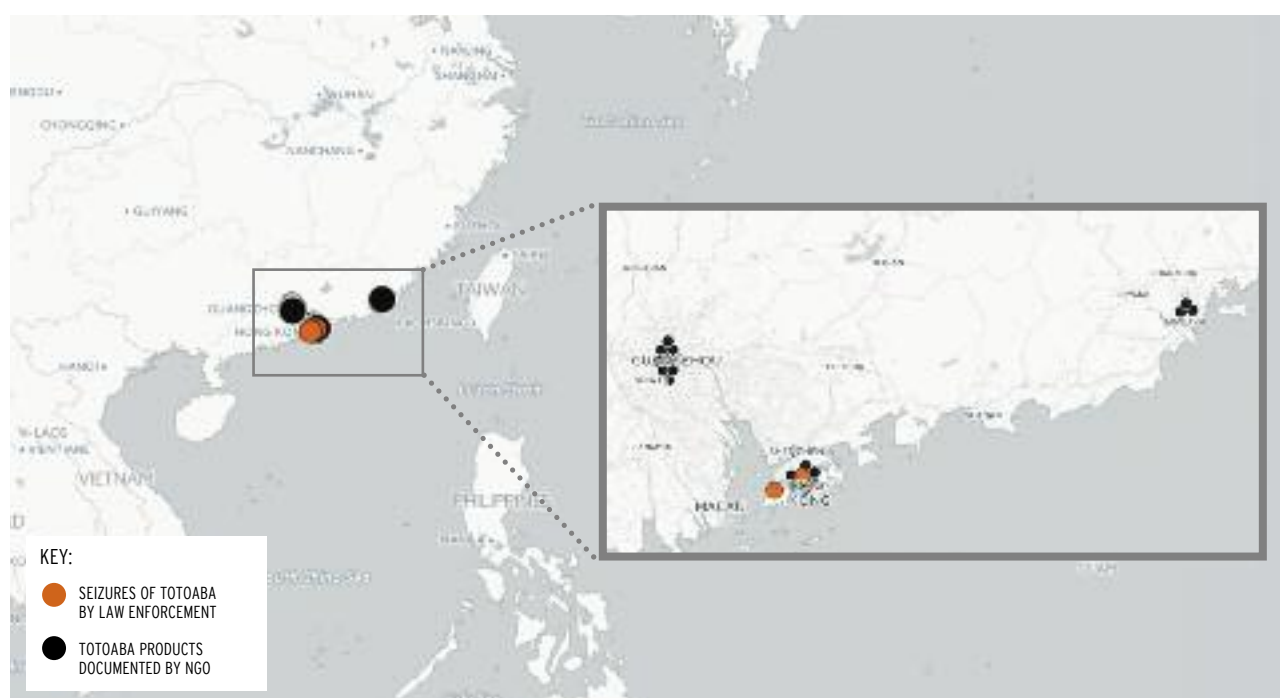


**TABLE 3:** Recorded totoaba maw seizures in Mexico and the US since January 2013

SEIZURES				
No.	Date	Country	Location	Items seized
1	Jan-13	Mexico	Entronque de Golfo Santa Clara	30 kg of totoaba fillets and a juvenile totoaba
2	Jan-13	Mexico	Federal Highway 5, south of Puertocitos	Unspecified amount of totoaba
3	Feb-13	Mexico	Golfo de Santa Clara	10 totoaba
4	Feb-13	USA	US-Mexico border	11 totoaba bladders
4	Mar-13	USA	Calexico	169 totoaba bladders
5	Apr-13	Mexico	US-Mexico border	28 totoaba bladders
6	Apr-13	USA	Calexico	241 totoaba bladders
7	Aug-13	Mexico	Ensenada	19 kg of totoaba fillets, nine bladders
8	Oct-13	USA	San Ysidro, San Diego	58 totoaba bladders
9	Nov-13	Mexico	Sonora	One totoaba bladder
10	Mar-14	Mexico	San Felipe	8.2 kg of totoaba bladders
11	Apr-14	Mexico	San Felipe	Unspecific amount of totoaba bladder
12	Apr-14	Mexico	Tijuana	2.76 kg dried totoaba bladder
13	Aug-14	Mexico	'El Chinero' checkpoint	34 totoaba bladders (23 kg)
14	Aug-14	Mexico	Tijuana	Three totoaba bladders
15	Nov-14	Mexico	Mexico City Airport	385 totoaba bladders
16	Jan-15	Mexico	'El Borrascoso', north Gulf of California	Two totoaba bladders
17	Mar-15	Mexico	Checkpoint on Golfo de Santa Clara - San Luis Colorado highway	86 totoaba bladders
18	Jul-15	Mexico	Tijuana International Airport	274 totoaba bladders (34.78 kg)
20	Sep-15	Mexico	Ensenada	22.18 kg totoaba bladder
21	Feb-16	Mexico	San Felipe-Puertecitos Highway	Six totoaba bladders
22	Feb-16	Mexico	San Felipe	61 totoaba bladders (7.1 kg)
23	Mar-16	Mexico	Mexicali-Tijuana Highway	121 totoaba bladders (39 kg)
24	Apr-16	Mexico	San Felipe	34 totoaba
25	Apr-16	Mexico	Unstated	4 kg totoaba bladder



**FIGURE 2:** NGO trade observations of totoaba maw in China.



**TABLE 4:** Recorded totoaba maw seizures and NGO observations of totoaba maw offered for sale in China

SEIZURES				
No.	Date	Country	Location	Items seized
1	May-Jun 2015	Hong Kong	Hong Kong	14 pieces of totoaba maw
2	Aug-15	Hong Kong	Hong Kong International Airport	0.635 kg totoaba maw
NGO TRADE OBSERVATIONS				
No.	Date	Country	Location	Number of totoaba maws seen
1	Feb-Apr 2015	Hong Kong	Wing Lok Street*	4
2	Feb-Apr 2015	Hong Kong	Wing Lok Street*	5
3	Feb-Apr 2015	Hong Kong	Ko Shing Street*	2
4	Feb-Apr 2015	Hong Kong	Des Voeux Road West*	3
5	Feb-Apr 2015	Hong Kong	Des Voeux Road West*	3
6	Feb-Apr 2015	Hong Kong	Tsuen Wan*	3
7	May-15	China	Qingping Road, Liwan District, Guangzhou	1
8	May-15	China	Qingping Road, Liwan District, Guangzhou	2
9	May-15	China	Qingping Road, Liwan District, Guangzhou	3
10	May-15	China	Qingping Road, Liwan District, Guangzhou	3
11	May-15	China	Qingping Road, Liwan District, Guangzhou	Approx. 450
12	May-15	China	Qingping Road, Liwan District, Guangzhou	Approx. 310
13	May-15	China	Qingping Road, Liwan District, Guangzhou	Approx. 98
14	Nov-15	China	Qingping Road, Liwan District, Guangzhou	6
15	Dec-15	China	Qingping Road, Liwan District, Guangzhou	4
16	Dec-15	China	Xiameilin Agricultural Wholesale Market, Futian District, Shenzhen	30+
17	Jun-16	China	Jinping District, Shantou	20-25
18	Jun-16	China	Fuhe Market, Shantou	10+
19	Jun-16	China	Junhua Haiyi Hotel, Shantou	10+

\* Hong Kong trade observations were conducted by Greenpeace East Asia.<sup>47</sup> All other trade observations were conducted by EIA.



## IMPACT ON THE CRITICALLY ENDANGERED VAQUITA

Scientists have warned for more than two decades that the survival of the vaquita was dependent on eliminating bycatch in gillnets and entangling nets set for shrimp, finfish and sharks. Yet conservation programmes have never eliminated the main risk factor for vaquita – bycatch in gillnets which is pushing the species towards extinction.

The shocking decline in vaquita has been tracked for almost two decades by the International Committee for the Recovery of the Vaquita (CIRVA), created in 1997 at the request of the Government of Mexico to develop a recovery plan for the species. At its first meeting in 1997, CIRVA quickly identified bycatch in gillnets as the greatest threat to the survival of the vaquita.<sup>46</sup> It subsequently met six times between 1999 and 2016 – each time pronouncing a bleaker outlook for the survival of the vaquita.<sup>48</sup>

In 1999, CIRVA endorsed a vaquita abundance estimate of 567 individuals, based on surveys conducted in 1997.<sup>49</sup> By 2012, the population estimate had been reduced to about 200 animals and when CIRVA met for the fifth time in 2014 it issued its starkest warning yet: “The vaquita is in imminent danger of

extinction”.<sup>50</sup> Acoustic monitoring data indicated that likely fewer than 100 vaquita remained, with fewer than 25 reproductively mature females. CIRVA predicted that the vaquita would be extinct, possibly by 2018, unless fishery bycatch was eliminated immediately.

The 2014 CIRVA report noted that the resurgence of a major illegal fishery for totoaba was the most significant threat to the vaquita, due to an increased demand in Hong Kong and mainland China for the swim bladder (locally called *buche*). Totoaba are captured in anchored, large-mesh gillnets set at night, with fishermen reportedly receiving up to \$8,500 per kilogram for the bladders.<sup>51</sup> Vaquita mortality in totoaba nets has been documented in the past; of 128 vaquitas caught in gillnets between 1985 and 1992, 65 per cent were caught in totoaba nets.<sup>52</sup>

In response to the alarming conclusions of the 5th CIRVA meeting, on April 15, 2015 President Enrique Peña Nieto visited San Felipe to announce the *Program on the Comprehensive Care of the Upper Gulf*, a strategy to save both the vaquita and the totoaba involving a two-year gillnet exclusion zone covering the vaquita distribution, financial

“Results released in June 2016 estimated a vaquita abundance of just 59 animals, a tragic decline of 92 per cent between 1997 and 2015.”

compensation to fishermen and others involved in the fisheries production chain impacted by the ban,<sup>53</sup> a community-based surveillance and enforcement scheme and efforts to strengthen Mexico's capacity to combat illegal fishing for totoaba.<sup>54</sup>

At the start of the new measures, an extensive visual and acoustic survey of the vaquita population was carried out from September 28 to December 3, 2015. The results, released at the 7th CIRVA meeting in June 2016, estimated a vaquita abundance of just 59 animals, a tragic decline of 92 per cent in the core area of vaquita between 1997 and 2015.<sup>55</sup> Passive acoustic monitoring indicated that the vaquita population declined on average by 34 per cent per year from 2011-15, compared to 7.6 per cent per year between 1997 and 2008, demonstrating the catastrophic impact of the illegal totoaba fishery.<sup>56</sup> According to the CIRVA-7 report, the species is racing toward extinction and the Committee called on the Government of Mexico to immediately implement and enforce a permanent ban on all gillnets throughout the entire range of the vaquita and consider stopping all fishing there if illegal fishing continues.

In its June 2016 meeting, the Scientific Committee of the International Whaling Commission (IWC) endorsed the CIRVA-7 recommendations, stating: "The choice is simple and stark: either gillnetting in the Upper Gulf ends or the vaquita will be gone – the second entirely preventable cetacean extinction that the Committee will have witnessed in the last 10 years."<sup>57</sup>

Worryingly, extensive illegal gillnet fishing for totoaba was documented in both 2015 and 2016, particularly during the legal corvina (*Cynoscion othonopterus*) season which coincides with the totoaba season. Corvina gillnets are exempt from the ban, as they are used in a seine fishing method which involves encircling the corvina; however, the fishery is being used by fishermen to gain access to the totoaba fishing grounds, where they set illegal totoaba nets. During the March 2016 corvina season, three dead vaquita were found, all due to entanglement in gillnets.<sup>58</sup>

Between November 2015 and May 2016, patrols by the NGO Sea Shepherd Conservation Society retrieved 42 illegal gillnets. Observations showed that fishermen leave anchored totoaba gillnets in place for long periods, even

abandoning large gillnets as the cost is far outweighed by the profits obtained from selling totoaba.<sup>59</sup>

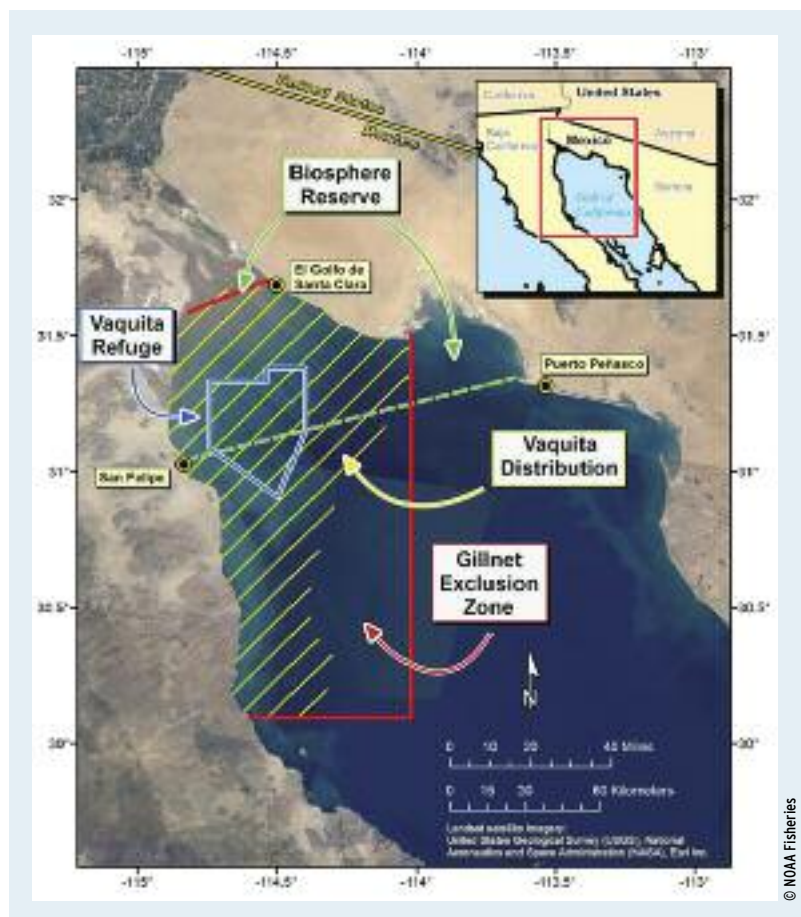
On July 19, 2016 the head of CONAPESCA announced additional measures, including a permanent ban on entangling nets (gillnets) that affect the vaquita from September, a ban on night fishing before the end of 2016 and a restriction on the docks fishermen can use in order to further aid enforcement.<sup>60</sup> Several days later, the White House announced the outcome of the US/Mexico bilateral meeting which, according to the US, agreed that "Mexico will make permanent a ban on the use of gillnets **in all fisheries** [emphasis added] throughout the range of the vaquita in the upper Gulf of California."<sup>61</sup>

Unfortunately, the fishing authorities in Mexico intend to continue to allow the corvina fishery, based on the assertion that gillnets do not directly impact vaquita when used to encircle corvina.<sup>62</sup> However, it is abundantly clear that the corvina fishery provides a cover for illegal totoaba fishermen, significantly increasing the enforcement challenge. Only a full ban on all fisheries in the area will give the vaquita hope of survival.

"It is clear that the corvina fishery provides a cover for illegal totoaba fishermen. Only a full ban on all fisheries will give the vaquita hope of survival."

#### BELOW:

Satellite view of the northern Gulf of California with the vaquita distribution shown by yellow cross hatching. The gillnet exclusion zone for the two-year ban is within the area bounded by the red line. The Vaquita Refuge, which remains a no-fishing zone, is outlined in blue.





# CONCLUSIONS

The vaquita is on the brink of extinction and its only hope for survival rests with the elimination of illegal totoaba fishing through a strong, coordinated effort by Mexico, the United States and China, the main market for the illegal totoaba products.

The surge in illegal imports of totoaba into China during the past six years has flooded the market, resulting in a significant drop in the value of totoaba. Yet EIA's investigations reveal ongoing sales of totoaba maws, while illegal totoaba fishing in Mexico has recently caused the death of at least three vaquita.

EIA's investigations reveal that Shantou in eastern Guangdong is the main hub for the fish maw trade and is where most totoaba maws can be found. The open illegal trade in Shantou shows a lack of enforcement and while traders in Guangzhou are more discreet, it is still easy to find and purchase totoaba swim bladders in the city.

Despite the drop in price of totoaba maws in China, the perceived status of totoaba is still high, evidenced by the continued

auctioning of totoaba maws since at least mid-2015 alongside other high-value fish maw varieties. Also, the pattern of seizures since 2013 indicates that illegal fishing and smuggling has continued despite the lower market price in China. Some traders are holding on to large totoaba stockpiles, waiting for a price rise which they believe is inevitable. The Chinese Government must crack down on the existing trade, work with the fish maw industry to raise awareness of the implications of the totoaba trade and undertake coordinated enforcement activities with Mexico, the US and other transit countries to prevent future trade.

Unless the demand for high-value totoaba maw is addressed and enforcement against the illicit trade stepped up, there is little hope for the survival of the vaquita.



# RECOMMENDATIONS

China must immediately enforce against illegal totoaba trade through:

- targeted surveillance of seafood markets and fish maw traders in Guangdong (including Shantou and Guangzhou), Hong Kong and other potential markets;
- seizure of suspect fish maw products, arrests and prosecutions of offenders;
- surveillance of seafood auctions and seizure of totoaba products;
- surveillance of e-commerce sites and swift action to remove advertisements for totoaba products;
- training of customs and other enforcement officials to recognise totoaba maw;
- increased border inspections and prioritisation of cooperative enforcement efforts with Mexico, the US and adjoining potential transit countries;
- awareness-raising activities in key fish maw markets and with fish maw and dried seafood trade associations to bring about a reduction in demand for totoaba maw.

Mexico must ensure the entire vaquita range is free of gillnets through:

- enacting a permanent ban on all fishing, including corvina gillnets, in the entire range of the vaquita;
- increasing enforcement efforts towards eliminating the illegal trade in totoaba swim bladders;
- banning all boats at night in the area of the gillnet ban and prohibiting, confiscating and destroying gillnets on land or at sea in all areas adjacent to the gillnet exclusion zone;
- significantly and effectively increasing penalties for illegal totoaba fishing and smuggling;
- implementing a plan to swiftly and permanently remove ghost gillnets from the vaquita range.

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The 17th Conference of the Parties to CITES in September 2016 is an opportunity to agree to a series of time-bound actions which will strengthen international cooperation to eliminate the illegal trade of totoaba. All CITES Parties must support Mexico and China to take the necessary action to prevent the extinction of the vaquita.





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