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MARITIME DISASTERS IN SPANISH PHILIPPINES: THE MANILA-ACAPULCO GALLEONS, 1565–1815

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ABSTRACT

Naufragios or shipwrecks were calamitous events in the 250-year history of the line. Their disastrous impact was felt more in the western end of the line—in the Philippines. The present study seeks to understand why and how these disasters occurred. To answer these questions, the frequency, geographic distribution and causes of shipwrecks involving Manila galleons were examined in order to understand the interplay of various hazards along the Manila-Acapulco route. The study reveals that 90 percent of these disasters occurred in the western portion of the line—the Philippines, Japan and the Marianas—70 percent of which occurred within Philippine coasts and archipelagic waters. Marine hazards dot the entire stretch of the Manila galleon route from Cavite to San Bernardino with every step in the way being associated with a lost galleon. Along the archipelagic route, the San Bernardino Strait accounted for most of the wrecked galleons. Most, if not all, incidents of shipwrecks were attended by severe weather condition. However, the severe punishments inflicted on galleon officers and government officials involved in shipwreck incidents emphasised the human factor in the occurrence of maritime disasters. Generally, the Manila-Acapulco line operated under favourable winds and sea conditions until it reached the western end of the line underscoring the need for more stringent safety measures navigating these waters where weather, topography and human error combined to create catastrophic ending for many of the Manila galleons.

Keywords: Maritime disasters, Manila galleons, trans-pacific trade, shipwrecks, sea accidents

Naufragios or shipwrecks were spoken in the same vein as the other major disasters suffered in Spanish colonial Philippines (i.e., earthquakes and volcanic eruptions).[1] Reports, however, on shipwrecks involving Manila galleons are few, short and dispersed in various Spanish accounts. The multi-volume *The Philippine Islands, 1493–1898*, translated and annotated by Emma Blair and James Alexander Robertson (1908), provided much of

the information in identifying shipwreck incidents along with some detailed descriptions. Cross checked with Bruce Cruikshank's *Summary Information of Voyages and Ships, 1565 through 1815* (2013) and Tom Bennet's *Shipwrecks of the Philippines* (2010), the present study was able to come up with a fairly accurate listings of shipwrecks involving Manila galleons concerning dates of accidents and name of ships involved. With the details from Blair and Robertson and other contemporary accounts along with those provided in the secondary sources on the Manila galleons, particularly the seminal work of William Schurz (1936), the present paper explores to understand this aspect of maritime history in colonial Philippines.

The present study asks a very general question: why and how did these disasters occur? To answer this, the paper will look into the pattern of maritime disasters in the 250-year history of the Manila-Acapulco line. It will examine the frequency, geographic distribution of shipwrecks and causes in order to understand the interplay of various hazards prevalent in the Philippine archipelago in the occurrence of maritime disasters. Considering that maritime studies in general and studies on maritime disasters in particular have yet to take roots in the Philippines, the purpose of this paper is to provide an overview from a historical perspective on the incidence of maritime disasters in the Philippines.

THE "GALLEON ENVIRONMENT"

Writing on the Manila galleons, Schurz declares "in all the seas there was no line of navigation so difficult, so attended with perils and hardships, as that of the Manila galleons."[2] In order to understand this, one has to look into the environment under which Manila galleons operated for 250 years.

Monsoons and Typhoons

In the age of sails, wind patterns were an important part of navigation. Movements of people and goods were dependent on the prevailing pattern of atmospheric circulation. In the Philippines, navigation was governed by two regular monsoons: the northeast monsoon and the southwest monsoon, known to Spaniards as *brisas* and *vendavales*, and *amihan* and *habagat* to Filipinos respectively. The northeast monsoon began around September, strongest in October to December and blew until April. It was during the season of *amihan* that Chinese vessels would arrive in the archipelago to trade and Acapulco galleons bound for Manila left port. Galleons leaving the archipelago during this time through the San Bernardino Strait (or the

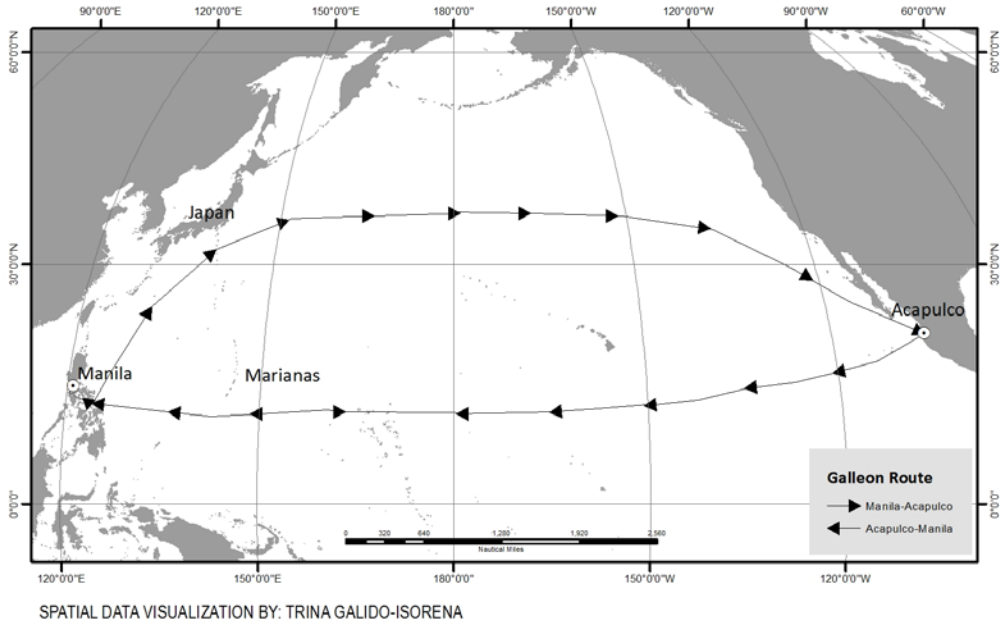
Embocadero to Spaniards) towards the Pacific in an east-northeast tack would have difficult time, if not rendered the passage would be totally impossible by this monsoon. By June, the *habagat* set in and blew from south-southwest to west. This was the time Acapulco-bound galleons left Cavite. This monsoon is very necessary to propel ships through the San Bernardino Strait out into the Pacific. Ships entering the strait from the east at this time would find it difficult and extremely dangerous. Late ships from Acapulco were advised instead to seek the nearest port in Luzon to winter.

Typhoon occurrences were frequent. The Northwest Pacific is an area of most active weather condition on earth, where many tropical cyclones are formed. The principal traffic area of hurricanes or typhoons lies between Manila and Southern Japan[3] making the country one of the most affected in the region. Typhoons begin to affect the country in February before increasing steadily through June to July, the period the galleons had to clear the archipelago to the Pacific, and peaking from August to October. Philippine typhoons generally originate from the east or southeastern seas of the archipelago, travel west to northwest traversing the islands, and out into the China Sea. Around 19 tropical cyclones entered the Philippine Area of Responsibility (PAR) and between six to nine made landfalls.[4] During the galleon era, 104 typhoons were documented: four in the 16th century, 23 in the 17th, 35 in the 18th and 40 in the first-half of the 19th century with their landfall tracks reconstructed by Ricardo Garcia-Herrera et al. (2007).[5] 80 percent of the recorded typhoon occurrences prior to 18th century were associated with disasters involving Manila galleons.[6] James Warren (2012) counted more than 40 incidents of shipwreck caused by typhoons.[7] Typhoons are more prevalent between July and October, the reason the galleons had to clear the Philippines before that season. The Manila-Acapulco ship, upon leaving the Embocadero and exposed to the open Pacific, was driven to the northeast before the southwest monsoon, and climbed to a certain latitude to catch the westerlies that would propel the ship to the Americas. Ship sailing late caught in this area by around August, the spawning season of typhoons in the area, would have a certainty of running into a very rough weather.

The Passages

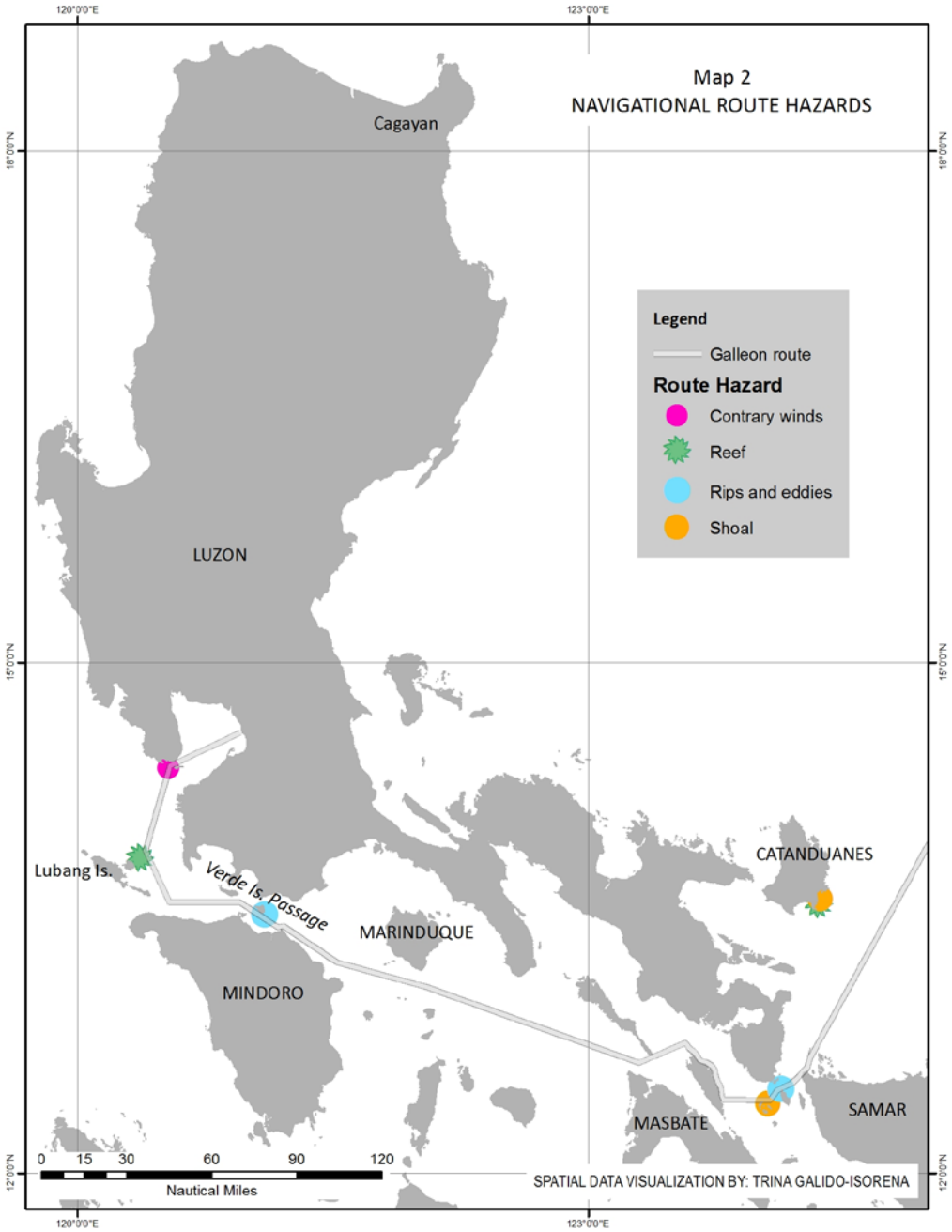
The Manila-Acapulco trade route circles around the paths between the equator and the 30th parallel (Map 1). The westward route rides the northeast trade wind band slightly above the equator and the eastern route was propelled by the westerlies in the 30th parallel. This atmospheric circulation pattern over northern Pacific was significant not only in the

establishment of the Manila-Acapulco galleon trade but also in the tendencies the Spanish colonisation in the Pacific proceeded.[8] Generally, the route was easy and fast except at the western end. Here, variables blew uncertainly between zones of the two primary winds made more difficult by the treacherous waters and navigational hazards along the Philippine archipelagic waters (Map 2). This condition accounted for many of the difficulties and disasterous incidents along of the galleon line.[9]



Map 1: The Manila-Acapulco galleon route.

The route within the archipelagic waters of the Philippines is among islands and through tortuous channels. There were two passages: the Manila-Acapulco passage took a southern tack from Cavite; and a general south-southeast-east tack to San Bernardino Strait (Embocadero). The Acapulco-Manila passage is the reverse. Coming from the east, the San Bernardino Strait is entered in a westward tack, and a general north-northwest-north tack towards Cavite.



Map 2: Navigational route hazards.

The Manila-Acapulco passage

From *Puerto de Cavite*, the ships were fitted and prepared for the long voyage to Acapulco. The port had a good anchorage and was protected from both the southwest and northeast monsoon by the small hook-shaped peninsula jutting out northeastward to Manila bay.[10] The only way a ship could be in danger or, worst, wrecked in the waters around the port is during

strong typhoons or the ship is simply unseaworthy. In the long history of the Manila-Acapulco line, four ships were reportedly wrecked in the port of Cavite—two in 1589 due to "unusually severe tempest of wind and water" which battered the city,[11] one in 1631 and another in 1734, both due to faulty construction design and had sunk as soon as they left port. But these incidents were not uncommon in the history of any ports. Berthing and launching are always considered dangerous part of the voyage, that even the safest of the ports could have such an accident. But the route from Cavite to the San Bernardino and back was a virtual death trap for ships working the line.

From Cavite, the ships sailed out through one of the *bocas* of Manila Bay, generally between Mariveles and Corregidor.[12] For outgoing ships of the line, the Mariveles shores were generally safe until June with the still mild southwest monsoon interchanging with variable winds. But the ship that sailed for Acapulco in June of 1696 sailed barely for three leagues in five days from Cavite due to contrary southern wind and was forced to anchor in Mariveles.[13] From the *boca*, a south-southwest tack was taken towards the reef fringed Island of Lubang. Two richly laden galleons of the line were wrecked one after the other, the *San Felipe*[14] in 1691 and the *San Jose* in 1694[15] within the waters of this island.

From Lubang, the ship sailed past Cape Santiago on the southeast of Luzon, through the channel between Mindoro and Maricaban by the *Punta de Escarcero*, otherwise known as "Tide-Rip Point."[16] In this area, the current ran strong, coming from the northwest and southeast beginning in Isla Verde producing violent rips and eddies between Malabrigo Point and *Punta de Escarcero*[17] which the flagship Nuestra *Señora de la Vida* in 1620 failed to negotiate resulting to its grounding on the rocky shores of the island.[18] The only anchorage in this area that could offer ships in distress relief is the Varadero. Here, the King's galliot lay awaiting for the arrival of the Acapulco-bound ships and immediately serviced their needs for the supplies of wood and water. After the resupply, the ships sailed on southeast tack past the island of Marinduque where the almiranta bound for Acapulco in 1590 was caught by storm and wrecked near the Island.[19] The six ships sent here for repair in 1617 suffered the same fate along this route.[20]

The last stopover was in the bay of San Jacinto in Ticao Island before exiting the *Embocadero* to the open sea of the Pacific.[21] In the port of San Jacinto, the ships waited for a favourable wind (southwesterly or westerly wind) and brought on aboard final resupply of wood and water and did final accounting of cargo and passengers for the long eastward crossing of the Pacific. The San Jacinto Bay afforded good anchorage, was well protected except from the east, and had ample swinging room for small boats.[22]

A storm coming from the east with winds changing direction every hour caught the *Santo Cristo de Burgos* on this port in July 1726. The officers and crew of the ship were all experienced sailors but they were no match against the fury of the storm. Even the "ample swinging room" for the ships to manoeuvre were insufficient against the tempest, thus the ship was wrecked.[23]

The Ticao-Pacific runs through the Embocadero, takes on an eastern tack for eight leagues passing between the Naranjos on the right and the shoal of Calantas on the left. For several leagues, shifting to northeast by east-northeast tacks around Capul. The dangers along this route lie on numerous swirls and eddies that are formed in the north entrance of the Naranjo Pass. Modern-day vessels are cautioned navigating the Pass because of the cross currents especially during stormy weather.[24] The Calantas on the other hand are surrounded by shoals and rocks extending between 0.25 to 0.75 miles into the sea.[25] Capul Pass is most dangerous with Diamante Rock and Rubi Shoals along the way. Strong eddies and tide rips are encountered along these dangers.[26] After rounding Capul, for seven leagues it would then veer northeast with Sorsogon on the left and San Bernardino on the right. The San Bernardino Strait is known for rips and strong tidal currents attaining a rate of four to eight knots causing strong eddies and whirlpools.[27] The channels between Luzon and Capul were described as having "numerous swirls and eddies… the water seeming to boil up from beneath, the centre of the eddy in some cases, appearing to be at least a foot higher than the edge."[28] To go past these channels, a strong gale of wind from the south or southwest would be needed for the necessary push, for there the "currents are always impetuous without a wind that is stronger than they."[29] The Ticao-Pacific section of the route claimed the Acapulco-bound galleons *San Juanillo* (1578), *Santiago* (1608), *Nuestra Senora de la Guia* (1740), *Nuestra Senora del Pilar de Zaragoza* (1750) and the capitana that sailed in 1756.

Out of the Embocadero, the ships went past the Cape of Espritu Santo in Palapag, Samar, on the right, and into the open sea. The galleon then rode the Southwest monsoon and took on an east-northeast tack going past Catanduanes on the left. The voyage then climbed up to 15th parallel where storms could overtake them anytime. It was here the Acapulco-bound ships *San Geronimo* (1601) and *San Antonio de Padua* (1603) met misfortunes. The former was driven by strong wind and current to the southeastern shores of Catanduanes, described as rugged with large reefs and rocky shoals,[30] while the latter was lost and never heard from again. At the 15th parallel the voyage catches the Japanese *Kuroshio Current* moving northeast. Normally, the Manila-Acapulco ships sailed eastward in the

Pacific without seeing land until they reached the California coast. However, those caught by storm along this route were either driven to the Marianas or the Japanese coasts. Acapulco-bound ships that foundered in the Marianas were the flagship *Santa Margarita* (1600), *Nuestra Senora del Rosario* (1690), *Santo Cristo de Burgos* (1693) and the *Nuestra Senora de la Santisima Trinidad* (1755). Those wrecked in the coasts of Japan due to storm were the *San Felipe* (1596), an unnamed ship dispatched from Cebu in 1597, the *San Francisco* (1609) and the *Santisima Trinidad* (1616).

Past Japan, the current veered on an eastern tack along the 30th parallel where the westerlies of the high latitudes propelled the ships to the Americas. This ascent towards the higher latitude, after surviving the difficulties leaving the archipelago, caused sudden change of temperature and exposed passengers and crew to respiratory illnesses made extremely contagious by the crowded galleon space.[31] The entire voyage from Manila to Acapulco took from five to eight months and some even extending to 12 months. The galleon's long, and more often extended, duration of voyage made the conservation of food the biggest problem.[32] Lack of fresh, nourishing foods weakened the resistance of passengers and crew to infectious-contagious diseases which the galleon atmosphere created with its *stagnant water in the holds, excrements, stored food and body effluvia* all in a very limitted space.[33] Scurvy, due to lack of vitamin C, was the common and considered *deadliest nautical disease in long distance navigation* causing an average death of 33–40 percent.[34] It plagued the earlier Spanish expeditions in the Pacific[35] which could have significantly contributed to their failures. These health hazards along with typhoons and nautical hazards made the eastward to Acapulco passage the most arduous and perilous of the two passages.

Acapulco-Manila passage

The Acapulco-Manila voyage has three stages: the first stage was from Acapulco to the Ladrones; the second stage, from Ladrones to the *Embocadero*; and the third, from the *Embocadero* to Manila (with several stops along the way depending on the condition of the vessel). The entire voyage, sans unexpected delays caused by Dutch or English threats or severe weather disturbance, takes two-and-a-half to three months.[36]

The king decreed that ships for the Filipinas must leave port during the Northeast monsoon in the northern Pacific, called *brisas* by the Spaniards, which prevailed from November to March. Preferably, Manila-bound galleons must clear the port by February. However, since ships must await the proceeds of sales from the Acapulco fair which concludes on the

same month, they were given allowance to set sail until the 20th of March being the latest. The reason for this is to avoid reaching the Filipinas by the time the southwest monsoon had become regular in June for this would make the entry to the Philippine archipelagic waters through the *Embocadero* difficult, if not impossible.[37]

The Acapulco ship bound for Manila was normally lightly laden—only with the proceeds of the sale of the merchandise from Manila and the *situado* along with reinforcements for the colony. The voyage took on a west-southwest route upon leaving port from 17th parallel dropping to 13th until it hit the northeast trade winds within 10 or 11 degrees latitude and veered westward for 1,800 leagues, steadying between nine to 13 degree latitude, to the Ladrones (Marianas).[38] Here, the ships took on supply of fresh water and provisions and unloaded the supplies for the Spanish outpost. Manila-bound ships arriving in the Ladrones between May and June to early July from Acapulco were careful not to tary in the islands as storms could break out anytime and they could suffer the consequences for staying too long than necessary. The first disaster of the line—the ship *San Pablo* bound for Manila—was wrecked in the islands in 1568. Others were the *Nuestra Senora de la Concepcion* (1638), the *Nuestra Senora del Pilar de Zaragoza* (1690) and the *Nuestra Senora de la Concepcion (alias) Desengano* (1775). As a rule, staying longer than necessary was strictly avoided, and the ship proceeded immediately to the second stage of the voyage, keeping within the same range of latitudes and direction.

The second leg of the voyage should not have much difference with the first if undertaken within the prescribed period of sailing. Ships approaching the archipelago on the months of May to June from Acapulco would have easier time with the still mild and irregular Southwest monsoon. However, many Acapulco ships for some reasons were dispatched late arriving in the archipelago with the Southwest monsoon becoming more regular and with increasing intensity. Sailing late in 1768 from Acapulco, Pierre Pages (1768) described the transition upon reaching the Western Pacific as voyaging "under the finest weather in the most beautiful sea in the world into a rough and tempestuous weather accompanied by violent squalls."[39] Ships that were lucky enough were able to find shelter among the many islands near the *Embocadero* there to winter or wait for a favourable wind.[40] Others were driven off course to a disastrous end like the *Espiritu Santo* (1575) and the *Sto.Tomas* (1601) towards Catanduanes; the *San Nicolas de Tolentino* and *Santa Ana* (1620), the *San Ambrosio* and *San Raimundo* (1639), *San Luis Rey de Francia* (1646) and the *San Pedro* (1797) towards Cagayan. On many occasions, ships sought the nearest port in

Luzon—Lampon and Sorsogon—to unlade cargo and passengers for an overland trip to Manila.

Negotiating the entire stretch of the Embocadero was equally dangerous. Schurz commented, "Whatever misfortunes befell ships in this passage were due to late departure, or to the blunders of incompetent pilots." [41] Upon entering the San Bernardino Strait, the ships sailed on a west-southwest between Capul and Sorsogon. With the Naranjos shoal on the right and the rocks of Capul on the left, navigating this channel required extreme caution and skill. Here, many Manila-bound ships were sent to the bottom: the *Nuestra Senora de la Encarnacion* (1649 near Sorsogon), the *San Francisco Javier* (1655 in Borongan, Samar), *Sacra Famila* (1729, San Bernardino), *San Cristobal* (1735, Calantas shoal), *San Andres* (1797, Naranjos shoal) and the *San Cristobal* (1798, San Bernardino). Around Matnog, the ships turned northwest and went through Ticao veering West upon reaching the north end of the island. Passing Masbate, they then moved northwest between Mindoro and Batangas. It was here the famous galleon *San Diego* went aground in 1654, coming from Acapulco, and eventually was wrecked in Bajo Limbones (Balayan).[42] Rounding Batangas, the route turns north for the final run into Cavite.

On a fine weather with favourable wind, the final leg of the voyage took about seven to 10 days, from the San Bernardino Strait to Cavite, a distance of a hundred *leguas*.[43] The voyage from Acapulco to Manila took about from two to three months.

THE MANILA-ACAPULCO LINE DISASTER RECORD, 1565–1815[44]

Weather, geographical conditions and other objective factors play an important role in maritime accidents. Many sea accidents have been attributed to navigational hazards, topography, currents and tides in the straits, and human errors.[45] Situated in the typhoon belt, Philippine maritime transport and navigation are exposed to the hazards of typhoons and hurricanes. As an archipelago, shoals, rocks, reefs, tide rips and eddies characterised the many maritime routes and presented real dangers to navigation. Even in this modern day, Philippine maritime travel routes are described at best as unpredictable, at worst hazardous. [46] What more could have been the situation during the galleon era? During those days the seas within the archipelago were uncharted, no lighthouses, buoys and other navigational aids, no Morse code, no radio—meaning, no warnings or distress calls—once you left port you would be on your own. The long sea

voyage across the Pacific from Manila to Acapulco and back was a step into the unknown; the ocean was an alien environment where the possibility of shipwreck loomed large. But ships then were the only means for long distance transport. The history of the traffic between Manila and Acapulco involved colossal volume of merchandise amounting to millions of pesos, untold treasures and thousands of passengers over the 250 years of its existence. For this reason, shipwreck events were of particular interest to Spain, the Philippines and Mexico, as they impacted heavily on their respective economy and society, especially that of the Philippines and Mexico.

Frequency of Shipwrecks

In the 250-year history of the line there were at least 400 recorded voyages[47] between Manila and Acapulco with 59 incidents of shipwrecks along with 35 *arribadas*.[48] 13 Manila-Acapulco ships were wrecked in the first 35 years of the line constituting a high 32 percent rate of disaster. Manila galleons leaving for Acapulco carried in their hold vast amount of merchandise—technically overloaded—on which the citizens pinned their hopes. At one point it was recorded to have been laden with everything and anything of value from all the citizens' possessions as an investment that "even the wrought silver and jewels of the women had been sold in order to invest their value in stuffs."[49] Under such condition citizens of Manila grievously felt the devastating effects of these disasters whenever it occured.[50] Acapulco ships on the other hand returned with the much needed proceeds of the sale along with the annual subsidy for the colony—the *situado*—and reinforcements of soldiers, clergies and colonists. Either way, the loss of galleon impacted heavily, especially on the citizens at the western end of the line.

In the 17th century, 27 *naufragios* were recorded. This century saw a trend towards increase in ship tonnage and, subsequently, amount of cargo and number of passengers. These developments were in direct violation of the many edicts issued by the king to regulate the trade during the period.[51] Consequently, it also proportionately increased vulnerabilities to the hazards of maritime disasters. But the 17th century posted a 50 percent reduction in cases of maritime disasters. However, the increase in size and volume of the ships that plied the route for the entire period magnified the disasters in terms of increased number of lives lost and huge economic losses. While we cannot secure the complete figure from the current sources, we can cite as example, for the loss of lives the disasters involving the *San Francisco* in 1608 with 400 lives lost;[52] *San Nicolas Tolentino* in 1620, 330 died;[53]

Nuestra Senora de la Concepcion in 1638, 400 perished;[54] the *Nuestra Senora de la Encarnacion* in 1649 with 200 lives lost;[55] and the *San Jose* in 1694 with 400 deaths.[56] The social impact of these losses may have been enormous. For economic losses, the *Santo Tomas* (1601) carried in its hull 2.5 million dollars worth of cargo along with 500,000 pesos.[57] The *Santisima Trinidad* (1616) that was wrecked in Japan had 3 million dollars worth of cargo in its hold.[58] The *Nuestra Senora de la Concepcion* (1638) had reportedly 4 million dollars worth of valuables.[59] The *San Felipe*, the "largest ever made" carried in its hold *more and richer merchandise than usual* in 1691.[60] Beyond the immediate losses, there are also the intangible losses and the wider impact of these disasters especially with so much fatalities and economic sufferings. The effects of these disasters during the period were reported to have ruined the citizens of the island and brought long sufferings to many[61] reducing the island to wretchedness.[62] A governor of the island at one point claimed it has become impossible for him to discharge his duties in full given the disasters.[63]

Table 1: Frequency and percentage of maritime disasters involving Manila galleons.

Period	No. of voyages from Manila to Acapulco	No. of voyages from Acapulco to Manila	Total number of voyages	No. of sea accidents	Percentage of disasters incident
1565–1600	18	22	40	13	32.5
1601–1700	71	90	161	27	16.77
1701–1800	86	88	174	18	10.34
1801–1815	13	11	24	1	4.1
Total	**188**	**212**	**400**	**59**	**14.75**

Despite the increase in the number of voyages, the decreasing trend in the incidence of maritime disasters continues for the next century. One factor could be the significant changes in ship design. European ship design beginning in the late 17th century have become increasingly frigate-like and more seaworthy than the original designs of galleons, which were too high and top heavy and not well adapted to weather a *baguio* or typhoon.[64] However, this trend did come very slowly to be effected in Manila-Acapulco trade ships due to Manila's isolation from Europe and the premium placed on durability and cargo volume.[65] Not until 1750s did the Manila trade ships begin to exhibit these changes in design and construction.[66] The coming of Governor Jose Francisco Obando in 1750

made great improvements in the Manila-Acapulco ships; he even founded a school for navigation.[67] A French visitor in the island at the time declared that it made navigation of Manila-Acapulco ships *on the same footing as that of Europe*.[68] The period saw one of the important Spanish legacies in the ships' construction design[69] and navigation which tend to mitigate shipwreck incidents. Another reason could be the regularity of the dispatch of ships from either origin according to the prescribed period—February to March (latest would be early April) from Acapulco and June to July from Manila,[70] as noted from the dates of dispatches and arrivals from Manila to Acapulco and vice-versa during the period.[71] However, despite the continuing significant decline of maritime disaster occurrences in the 18th century, the immediate effects of the loss of lives and economic losses arising out of these accidents remained catastrophic for the colony during the period.[72]

Out of the total number of voyages, 306 were successful, but not necessarily without incidents,[73] making up a 76.5 percent success rate against almost nine percent of *arribadas* and an average of almost 15 percent rate of disaster. What is significant in the figure is the substantial decline of disaster incidents in between centuries as it progresses.

The number and percentage of maritime disasters by passage revealed higher percentage of sea accidents in the Manila to Acapulco passage reflecting the hard fact that it was the more difficult, long and dangerous of the two passages (Table 2). The general decreasing percentage of incident of disasters does not necessarily lessen its tremendous negative impact on the society. Incidence of disasters taken in the context of immediate, short-term time scale, and in consecutive fashion which happens periodically, the effects are catastrophic.

Table 2: Frequency and percentage of maritime disasters by route.

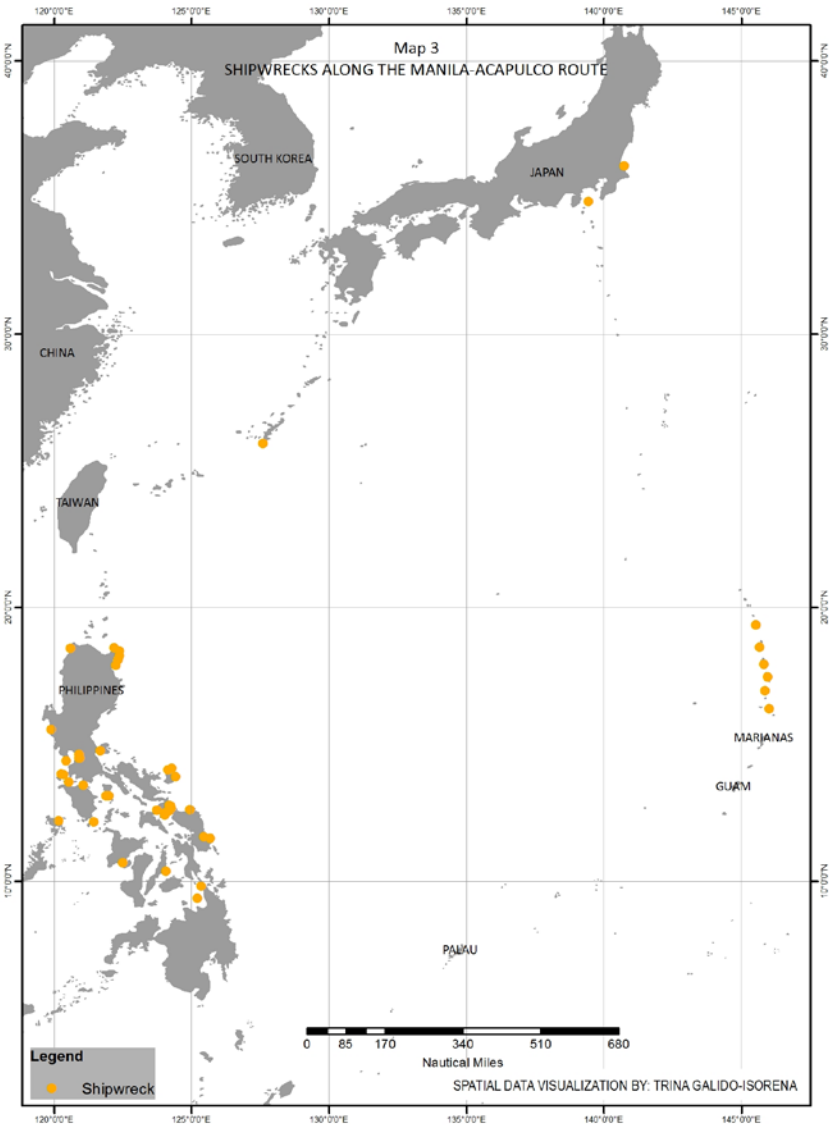
Period	Manila to Acapulco	No. of ships involved in disaster	Percentage of disaster (Manila-Acapulco)	Acapulco to Manila	No. of ships involved in disaster	Percentage of disaster (Acapulco-Manila)
1565–1600	18	10	55.55	22	3	13.63
1601–1700	71	13	18.3	90	14	14.4
1701–1800	87	11	12.64	88	7	7.95

(*continued on next page*)

Table 2: (*continued*)

Period	Manila to Acapulco	No. of ships involved in disaster	Percentage of disaster (Manila-Acapulco)	Acapulco to Manila	No. of ships involved in disaster	Percentage of disaster (Acapulco-Manila)
1801–1815	13	1	7.69	11	0	0
Total	**189**	**35**	**18.51**	**212**	**24**	**11.32**

Geographic Distribution of Shipwrecks



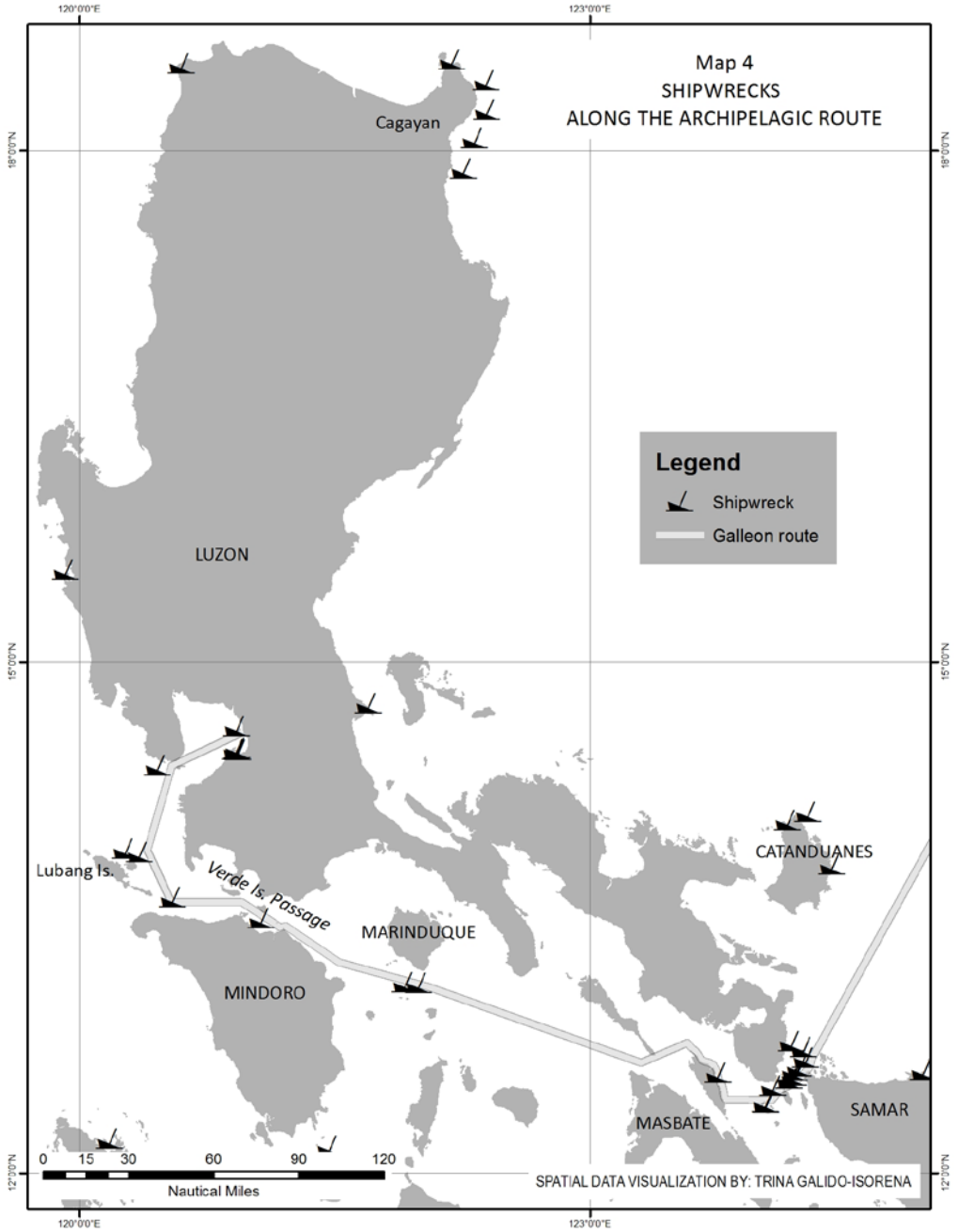
Map 3: Shipwrecks along the Manila-Acapulco route.

From the 59 incidents of maritime disasters, 41 of these occurred within the Philippine archipelagic waters, 12 outside and six incidents happened in an unknown location, or were reported as lost and never heard from again. 50 percent out of the total number of ships involved in sea accidents for the Manila-Acapulco passage occurred within the Philippine archipelagic water while Acapulco-Manila passage registered a high 84.61 percent rate of accidents' suggesting ships coming from Acapulco have more difficulty negotiating the archipelagic waters. Many of these Manila-bound ships however were dispatched late from Acapulco thus arriving in the archipelago when the southwest monsoon was providing strong contrary wind along low clouds, squalls and storms, making it more difficult to approach and navigate the *Embocadero*. Manila-bound ships that suffered misfortune outside the archipelago all occurred in the Ladrones or Marianas, and none was lost to unknown location (see Table 3).

Table 3: General site of disasters.

Passage	No. of ships involved in disasters	Site of disasters		
		Within the archipelago	Outside	Unknown
Manila to Acapulco	33	19	8	6
Acapulco to Manila	26	22	4	0
Total	**59**	**41**	**12**	**6**

Along the route within the archipelago (Map 4), the San Bernardino Strait or the *Embocadero*, where the greatest dangers lie, claimed the most number of ships followed by Cagayan coasts which offered no protection from the monsoons[74] and the port of Cavite where berthing and launching of ships were always considered dangerous. Samar at the mouth of the Embocadero, and the rocky shores of Catanduanes were sites of three disasters each. Lubang Island, Limbones (Batangas), Verde Island, Marinduque and Lampon (Binangonan) each were sites of two incidents of disasters. The rest of the route was associated with a lost galleon "in almost every step in the way out of the strait"[75] making the entire route a veritable shipwreck alley.



Map 4: Shipwrecks along the archipelagic route.

What is interesting in the geographic distribution of wrecks is the Cagayan coast, while far-off from the established route, claimed a significant number of accidents. This coast along with Catanduanes were frequently mistaken by incoming ships from Acapulco for the Cape of Espiritu Santo leading to the Embocadero. Late ships from Acapulco arriving with the southeast monsoon that brought low clouds, fog and violent squalls and storms suffered difficulty in making sightings in the approach to the archipelago. The strong contrary wind blowing from west-

southwest normally compel ships to seek port northward to Luzon. Poor visibility, strong contrary winds, and the unfamiliarity with the seas around can make even the most experienced pilot commit mistakes along this route without the aids of modern technology. Ships bound for Acapulco caught by typhoon outside of the Embocadero were also driven to these coasts seemed for no other purpose but to get wrecked.

Causes

The causes for maritime disasters can be very difficult to ascertain and are somewhat tricky. This could be due to the fact that maritime disasters are rather in between natural and man-made,[76] that causes of these disasters can be both natural and man-made at the same time. Causes normally cited in the reports are the occurrence of severe weather condition (typhoon, storms, fog, contrary wind, etc.) and the marine hazards (a shoal, rocks, sandbars, tide rips and eddies, etc.). In view of the fact that human element is the basic and by far the most frequent reason that leads towards marine accidents ranging from 75–90 percent,[77] there was also a significant recognition of human faults behind the disasters involving Manila galleons. These human faults consists of pilot's error,[78] faulty ship construction and design,[79] ill-maintained/fitted ships and overloading by the *patron-de-ribera* (shore-master),[80] deliberate delay in the dispatch of ships and appointment to office of incompetent ships' officers and crew by the Governor.[81] There was one incident reported fire as the cause of disaster.[82] A close reading of the accounts however reveals the occurrence of not one but several causes in any one case of galleon shipwrecks.

Table 4: Sites of disasters within Philippine archipelagic waters.

Route	Manila to Acapulco	Acapulco to Manila	Total
Cavite	4	0	4
Mariveles	0	1	1
Lubang Island	2	0	2
Limbones	0	1	1
Mindoro/Panagatan Cay	0	2	2
Verde Island	2	0	2
Marinduque	1	1	2
Ticao	1	0	1

(*continue on next page*)

Table 4: (*continued*)

Route	Manila to Acapulco	Acapulco to Manila	Total
Capul	1	0	1
Calantas	0	1	1
Naranjos	0	1	1
Sorsogon	0	1	1
San Bernardni/Embocader	4	2	6
Samar	0	3	3
Catanduanes	1	2	3
Lampom/East Coast	1	1	2
Cagayan/Northern Coast	0	4	4
Busuanga, Calamian Grp	0	1	1
Bajo de Masinloc	0	1	1
Arevalo, Panay	1	0	1
Abula, N. Mindanao	1	0	1
Total	**19**	**22**	**41**

Many, if not all, cases involved the occurrence of inclement weather, specifically typhoon, and could obscure the presence of other hazards such as health and nautical hazards and human factors and thus led us to believe it was cause of the disasters.[83] A close reading of the sources would reveal typhoon occurrences made the presence of marine hazards more dangerous, challenging both the seaworthiness of the vessel and the competence of the ships' officers and crew, resulting to multiple causes if it resulted an accident. Colonial punishments for galleon officers and crew involved in sea accidents were harsh. Governor Fajardo condemned the commander of the disaster stricken ship *San Marco* in 1618 "to be beheaded and his head exposed to public view and to the loss of one-half of his property."[84] The wreck of the galleon *San Francisco Javier* in 1655 resulted to the imposition of 20 years prison term to the commander, eight to the *piloto mayor* and two to the co-pilot, even though the latter died from the disaster; and, to the captain 10 years of service in Terrenate and a payment of a fine of 11,000 pesos.[85] Six officers of the galleon *Santo Cristo de Burgos* which was wrecked in Ticao in 1726 were imprisoned and the entire family fortune confiscated.[86] Government high officials were not spared. In 1638 Governor Corcuera were found to "have the habit of shipping unregistered cargo in the galleons constituting of gifts and bribes he received."[87] In order to conceal the illegal cargo and ensure its safety, Corcuera appointed his

nephew as commander of the ship *Nuestra Senora de la Concepcion*, who was only 24 years of age and had no experience in commanding a galleon.[88] Overloading and disagreements of ships' officer led to the grounding incident in the Marianas. The Governor was prosecuted for the offense.[89] The survivors of the galleon *Nuestra Senora de la Vida* that crashed onto the reef of Verde Island blamed the chief pilot and hanged him upon the coast.[90] The seemingly unforgiving punishments by authorities and the people for those responsible in sea accidents underscores the heavy role humans play in the occurrence of maritime disasters. The harsh punishments were also conceived to prevent and mitigate such disaster occurrences along with the series of king's decrees for safe navigation.

Table 5: List of Manila galleons involved in disaster and their reported causes.

Name of ship	Year	Wreck dite	Reported causes of accident
San Pablo	1568	Ladrones	Typhoon and grounding
Espiritu Santo	1575	Catanduanes	Typhoon, pilot's error and grounding
Santiago	1576	Lost/unknown	Unknown
San Felipe	1576	Lost/unknown	Unknown
San Juanillo	1578	San Bernardino	Unknown
San Juan	1586	Lost/unknown	Unknown
Santa Ana	1587	Burned	Intentional burning
Two Manila galleons	1589	Cavite	Storm, overloading, design and construction defects
Almiranta	1590	Marinduque	Storm, grounding
San Agustin	1595	Coast of California	Storm
San Felipe	1596	Japan (Hondo Bay)	Typhoon, grounding
A galleon from Cebu	1597	Lost/unknown	Unknown
San Geronimo	1601	Catanduanes	Typhoon, pilot's error, grounding
Santa Margarita	1601	Marianas	Typhoon, grounding
Santo Tomas	1601	Catanduanes	Typhoon, pilot's error, grounding
San Antonio de Padua	1603	Lost/unknown	Overloading, ill-fitted/maintained (sailed with rotting hull)
Jesus Maria	1606	Lost/unknown	Technical defects, pilot's error
Santiago	1608	Capul	Unknown
San Francisco	1609	Japan Coast	Typhoon, technical defects, poorly equipped, grounding

(*continue on next page*)

Table 5: (*continued*)

Name of ship	Year	Wreck dite	Reported causes of accident
Santisima Trinidad	1616	Japan (Cape Satano)	Typhoon, grounding
San Marcos[*]	1617	Arevalo, Panay	Storm, ship under no command, badly anchored
Six large galleons[*]	1617	Marinduque	Storm, poor command
San Nicolas de Tolentino	1620	Borongan, Samar	Late-despatch, strong contrary wind (vendavalas), grounding
Santa Ana	1620	Borongan, Samar	Late-despatch, strong contrary wind (vendavalas), grounding
Nsra Sra de la Vida	1620	Isla Verde	Under poor command, late-despatch, treacherous currents and waves, grounding, pilot's error
Santa Maria de Magdalena	1631	Cavite	Poor construction and design (technical defects), overloading
Nsra Sra de la Concepcion	1638	Marianas	Typhoon, grounding, overloading, under incompetent commander, disagreements between and among crews and officers
San Ambrosio	1639	Cagayan Coast	Late-despatch, storm, commander's error (badly sheltered anchorage)
San Raimundo	1639	Cagayan Coast	Late-despatch, storm, commander's error (badly sheltered anchorage)
San Luis Rey de Francia	1646	Cagayan Coast	Late-despatch, strong contrary wind, storm, grounding
Buen Jesus	1648	Lampon	Dutch threat, grounding, intentional burning
Nsra Sra de la Encarnacion	1649	Sorsogon	Late-despatch, strong contrary wind, grounding
San Diego	1654	Bajo de Limbones	Storm, grounding
Nra Sra del Rosario	1654	Bajo de Masinloc	Typhoon, grounding
San Francisco Javier	1655	Borongan, Samar	Storm, commander's error in judgment, pilot's error, grounding
Rosario	1690	Marianas	Commander's error in judgment, storm

(*continue on next page*)

Table 5: (*continued*)

Name of ship	Year	Wreck dite	Reported causes of accident
San Felipe	1690	Lubang Is.	Overloading, storm, grounding, pilot's error
Santo Cristo de Burgos	1693	Marianas	Fire
San Jose	1694	Lubang Is.	Overloading, hurricane, grounding, pilot's error, "divine punishment"
San Francisco Javier	1705	Lost/unknown	Unknown
Santo Cristo de Burgos	1726	San Jacinto, Ticao	Storm, commander and pilot's error, grounding
Nsra Sra de los Dolores	1729	Abula, N. Mindanao	Commander and pilot's error, storm
Sacra Familia	1729	San Bernardino	Pilot's error, grounding
Santa Maria Magdalena	1734	Cavite	Overloading, technical defects
A Patache	1735	Calamian reefs	Pilot's error, grounding
San Cristobal	1735	Calantas Shoal	Dutch threat, pilot's error, grounding
La Sacra Familia	1739	Mindoro	Pilot's error, grounding, storm
Nsra Sra de la Guia	1740	San Bernardino Str.	Unknown
Nsra Sra del Pilar de Zaragoza	1750	San Bernardino Str.	Ill-fitted/maintained, commander and pilot's error, grounding
The Capitana	1756	San Bernardino Str.	Unknown
Nsra Sra de la Concepcion (alias) Desengaño	1775	Marianas	Unknown
San Pedro	1782	Cagayan Coast	Storm, commander and pilot's error
Nsra Sra de la Santisima Trinidad	1795	Marianas	Overloading, storm, grounding
San Andres	1797	Naranjo Shoal	Pilot's error, grounding
Santa Maria	1797	Cape Bojeador	Storm, grounding

(*continue on next page*)

Table 5: (*continued*)

Name of ship	Year	Wreck dite	Reported causes of accident
San Cristobal	1798	San Bernardino Str.	Unknown
Esperanza	1806	Mindoro	Pilot's error, storm

**Wrecked not working the line*

CONCLUSION

For the more than 20,000 nautical miles round-trip distance between Manila and Acapulco, almost 90 percent of the sea accidents occurred in the western end of the line—in the Philippines, Japan and the Marianas. One incident of disaster was reported for the northern coast of California, as for the rest nothing was heard from them. While the number of shipwrecks account for almost 15 percent out of the total number of voyages spread out in 250 years may seem negligible, the immediate social impact of the loss of human lives and economic sufferings arising from these accidents were catastrophic, not discounting the long-term intangibles.

Out of the 90 percent western Pacific disasters, 70 percent of these occurrences were within the Philippine coasts and archipelagic waters. The natural path of the Manila-Acapulco galleons within the Philippine archipelagic waters took on routes with shifting tides and treacherous currents, causing the galleons to heave about in the winding channel where shoals and rocks and low-lying islands menaced. Safety was made more difficult and hazardous with the monsoons and the typhoons. Therefore, besides the monsoons and unpredictable typhoons, sailing the Manila-Embocadero leg of the voyage and vice-versa is like going through a gauntlet. The most dangerous part of the archipelagic route claimed the most number of sea accidents—the *Embocadero*, for both the outgoing and incoming galleons. The difficult passages along the archipelagic waters were underscored by the fact that the entire stretch of this route was dotted by lost galleons. Out in the Pacific, the Acapulco-bound ships passes through the concentration area of typhoon in the Western Pacific with a very short window for safe passage. All incidents of disasters in the area involved the sudden breakout of storm or typhoon with many of the ships running late of schedule, overloaded and with leaking hulls.

The idea that natural occurrences (i.e., typhoons, storms, etc.) and marine features (shoals, reefs, etc.) only become hazards to navigation when it developed into a threat to people, goods and environment,[91] significantly places more responsibility and role to humans in maritime disaster events.

A substantial number of accounts have squarely put the blame on people in authority for the misfortunes suffered by Manila galleons imposing commensurate punishments which to some were ruthless. The harsh punishments inflicted on galleon commanders, pilots, boatswains and other officers and crew, including government officials found responsible in sea accidents was an unambiguous recognition, even then, of the larger role of human hands in the occurrence of maritime disasters.

Without the benefits of modern-day weather forecasting, navigational aids and global maritime laws and safety standards, the monsoons and typhoons along with marine hazards and a substantial amount of human error made a catastrophic mix for the Manila galleons. Notwithstanding, the steady decline of disaster incidents involving Manila galleons as time progresses is a good indication that steps were undertaken in the context of mitigation and risk reduction, which I think is also worth looking into to fully comprehend these patterns and gain important lessons from the Manila galleon disasters.

Considering the weather, topography and causes, shipwreck events involving Manila galleons were limited to foundering and grounding. Besides the single report of fire, other modern-day causes of maritime disasters, such as impact collision, loss of containment and error in manoeuvre were absent. Foundering incidences were due to severe weather condition while grounding appears to have multiple causes. Human errors factored much in grounding incidence (i.e., pilot's error, incompetence, ignorance of the seas around) with higher occurrence probability under inclement weather condition.

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NOTES

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