

= Effects of Hurricane Mitch in Honduras =

The effects of Hurricane Mitch in Honduras included the worst flooding in Honduras in the 20th century . Hurricane Mitch , the strongest storm of the 1998 Atlantic hurricane season , formed on October 22 , and after becoming a Category 5 hurricane , it weakened and struck Honduras on October 29 . While near peak intensity , Mitch struck the offshore Guanaja island , where it nearly destroyed the mangrove forest . On the mainland , the hurricane dropped torrential rainfall , and many gauges were washed away in mountainous areas where unofficial rainfall totals were as high as 1900 mm (75 in) . The highest official total was 928 mm (36 @. @ 5 in) at Choluteca in southern Honduras , which was more than half of the annual precipitation average there . The rains caused widespread flooding and landslides , although impact from winds was not as severe .

The President of Honduras estimated that Mitch set back 50 years of economic development . The storm wrecked about 35 @, @ 000 houses and damaged another 50 @, @ 000 , leaving up to 1 @. @ 5 million people homeless , or about 20 % of the country 's population . Mitch directly caused \$ 2 @. @ 005 billion in damage , with an additional \$ 1 @. @ 8 billion in indirect costs . Most of the damage was ruined crops , and cash crop exports were cut by 9 @. @ 4 % in 1999 , largely due to the storm . Over 70 % of the transportation infrastructure was damaged , mostly damaged highways and bridges . Widespread areas experienced power outages , and about 70 % of the country lost water after the storm . In the capital , Tegucigalpa , a large landslide affected three neighborhoods and formed a temporary dam . Floods in the city damaged buildings that were over 350 years old . Throughout the country , there were at least 7 @, @ 000 fatalities , some reported in each department .

Following the storm , officials in Honduras requested international assistance , which totaled \$ 2 @. @ 8 billion over a several year period . Despite this , the gross domestic product began decreasing at the end of 1998 , and contracted by 1 @. @ 9 % in 1999 . Officials enacted a widespread curfew following the storm , and for 15 days temporarily restricted constitutional rights to maintain order . There were outbreaks in various diseases , and many residents faced food and water shortages . Due to the heavy damage , the name Mitch was retired from the Atlantic hurricane naming list .

= = Preparations and background = =

Hurricane Mitch formed on October 22 in the southwestern Caribbean Sea , and it eventually intensified into a Category 5 on the Saffir @-@ Simpson Hurricane Scale by October 26 . By that time , the hurricane was just north of the coast of Honduras , and was expected by the National Hurricane Center (NHC) and various tropical cyclone forecast models to turn to the north . When the track was more westward than expected , the NHC recommended early on October 26 for a hurricane warning to be issued for the northeastern Honduran coast , although difficulties in communications prevented their immediate implementation . Within a few hours , a hurricane warning was in place between Limón to the Honduras and Nicaragua border , including the offshore Swan Island . When Mitch still failed to turn to the north , the government of Honduras issued a hurricane warning for the remainder of their coastline . The hurricane weakened while turning to the south , and made landfall in Honduras 134 km (83 mi) east of La Ceiba , with estimated winds of 130 km / h (80 mph) . Mitch continued to weaken while moving slowly westward across the country .

On October 26 , the Honduran Permanent Contingency Commission coordinated with neighboring countries regarding the storm . Officials initially issued a state of emergency for the offshore islands and five coastal departments , which was later extended to the rest of the country . The government increased emergency spending and created a National Emergency Commission . Officials advised residents to evacuate in flood @-@ prone areas , although many people stayed for fear of being looted . Some left to stay with relatives during the hurricane . Prisoners in Tegucigalpa Central Penitentiary were evacuated to the national stadium .

Before the storm struck , Honduras was facing decreased food supplies due to ongoing El Niño

conditions . The economy had been growing at a rate similar to the previous year until Mitch struck , and was largely dependent on exports . About 73 % of the population was living in poverty when the storm struck . Hurricane Mitch set back the economies of various countries in the region , including Honduras , Nicaragua , Guatemala , and El Salvador , after they had improved throughout the 1990s .

= = Meteorological effects = =

Due to weak steering currents , Hurricane Mitch moved slowly for about a week , both offshore and while moving through Honduras . Rainbands drew moisture from the Pacific Ocean and the Caribbean Sea , producing high amounts of rainfall of over 300 mm (12 in) per day , beginning on October 26 . In some areas , high mountain peaks contributed to high precipitation totals , and the highest amounts occurred in southern Honduras . The highest official total was 928 mm (36 @. @ 5 in) at Choluteca , which represented more than half of the annual precipitation average ; at the same location , 466 @. @ 7 mm (18 @. @ 37 in) fell in a 24 @- @ hour period on October 31 , which was more than double the previous record set in 1985 . At Universidad Nacional Autónoma de Honduras in the capital Tegucigalpa , rainfall totaled 294 mm (11 @. @ 58 in) . The total of 120 @. @ 4 mm (4 @. @ 74 in) on October 30 broke the record set in 1966 for the wettest day . At La Ceiba near where the storm made landfall , Mitch produced 874 mm (34 @. @ 4 in) of rainfall , which is 30 % of its annual rainfall ; of the total , 284 @. @ 1 mm (11 @. @ 19 in) fell on October 27 , which was the third highest amount there on record . There were unofficial rainfall totals in Central America as high as 1900 mm (75 in) ; rain gauges in mountainous areas were washed away .

The high rainfall caused many rivers in the country to overflow " to an unprecedented extent this century " , as described by the United Nations . The flooding caused the Choluteca River to change its course , forming an avulsion . Widespread flooding near the northern coast left behind about 1 m (3 @. @ 3 ft) of sediment , which ruined forests and shrimp ponds . Flooding also affected the Pacific coast along the Gulf of Fonseca , leaving behind debris and sediment . In the country 's interior , particularly the southern portion , the high rainfall caused hundreds of landslides , many of them shallow and about 95 % in the form of debris flow . However , two earthflows caused significant damage near Tegucigalpa .

In mainland Honduras , the winds were not as damaging as the rainfall , although offshore islands sustained heavy damage due to high winds . Offshore northern Honduras , it was estimated that Mitch produced waves as high as 13 m (44 ft) .

= = Impact = =

Overall , Hurricane Mitch caused an estimated \$ 3 @. @ 8 billion in damage , of which \$ 2 @. @ 005 billion was from direct damages and the remainder from indirect costs . The overall impact represented about 70 % of Honduras 's annual gross domestic product (GDP) .

= = = Offshore = = =

On October 27 , the Fantome , a schooner , last reported its location to the south of Guanaja , while trying to escape the brunt of the storm . The United States Coast Guard searched until November 4 , when they observed the debris from the ship . All 31 people on board were presumed killed .

On the offshore Guanaja island , waters rose about 2 m (6 @. @ 6 ft) during the storm . The combination of storm surge and high winds severely damaged offshore islands . High waves eroded northern coastlines and damaged lagoons . Most of the Bay Islands had damage to their water facilities . Two days of winds exceeding 200 km / h (120 mph) destroyed nearly all of the plants and trees on Guanaja , uprooting or knocking down almost the entire mangrove forest . Most mangrove trees were an average of 11 @. @ 2 m (37 ft) in height before they fell . Those remaining standing were damaged internally and unable to regrow . All trees lost their leaves on the island , and 70 % of conifer trees were knocked down . Montane trees likewise experienced severe damage , although

they made a recovery within a year . However , no mangrove trees had regrown there by three years after the storm struck , indicating the level of destruction . Tree damage also occurred on nearby Roatán island , although to a much lesser degree , and occurring on the eastern end . Winds there were generally less than 185 km / h (115 mph) , and the tree damage was more random .

= = = Mainland = = =

Hurricane Mitch wrought significant damage to Honduras , affecting nearly the entire population and causing damage in all 18 departments . High winds near the coast knocked down trees , particularly in mountainous areas . The United Nations Economic Commission for Latin America and the Caribbean estimated that Mitch caused the worst floods of the 20th century in the country . Severe flooding occurred in the northern region , which washed away more than 25 entire villages . In San Pedro Sula in northwestern Honduras , flooding covered several neighborhoods and the international airport . Near the coast , high waves destroyed hotels and houses while swollen rivers flooded nearby areas . Damage was heaviest in Colón and Atlántida departments . In the latter department , the Cangrejal River left heavy damage along its path after it flooded . In Choluteca and Valle departments in the southern portion of the country , river flooding swept away houses and affected neighborhoods .

An estimated 70 ? 80 % of transportation network was destroyed , including most bridges and secondary roads , amounting to \$ 236 million in damage . In mountainous areas , floods carrying debris damaged roads and bridges . A total of 9 @, @ 198 m (30 @, @ 177 ft) of bridges were damaged or destroyed , and an additional 2 @, @ 045 m (6 @, @ 709 ft) of approach roads were likewise damaged . Several vehicles were washed away due to the floods . In contrast to roads , there was little railway damage . There was minor impact to the nation 's airports , limited to some damage to air traffic equipment . Seaports also sustained minor damage , although many lost electronic equipment . Hurricane Mitch left widespread power outages after damaging more than 385 km (239 mi) of power lines and several power plants . About 11 % of Honduras 's telephone lines were damaged during the storm . Landslides and flooding contaminated aqueducts in several cities , including 1 @, @ 600 systems in rural areas . Many cities sustained damage to their water network , and about 70 % of Honduras lost access to fresh water after the storm , although many rural areas had already been experiencing water shortages . The combined damage to transportation , communication , utilities , including power and water , was estimated at \$ 665 million . Communications were disrupted after power outages , and there were also fuel and water shortages . Flooding damaged or destroyed industrial areas of Honduras , which affected exports and domestic products . Six maquiladora factories were damaged in the northern portion of the country , and one was destroyed in La Ceiba . Many businesses shut down , leaving many people unemployed who already lost their homes . Mitch also destroyed 123 health facilities nationwide and wrecked 4 @, @ 835 classrooms , or 23 % , of the classrooms . As a result , most classes that would have gone until November 30 were ended about a month early , allowing teachers to assist in helping others .

High water levels along the Choluteca River affected the capital , Tegucigalpa , reaching levels 10 m (33 ft) above their banks . Mitch largely destroyed the center of the city , including many residential buildings along river banks . The floods damaged about one @-@ third of buildings , including some more than 350 years old . The storm destroyed the primary water mains in Tegucigalpa and neighboring Comayagüela , and 23 km (14 mi) of water piping had to be repaired . In central Tegucigalpa , there was a large earthflow along Cerro El Berrinche mountain that weighed 6 @, @ 000 @, @ 000 m³ (210 @, @ 000 @, @ 000 cu ft) . This landslide , the largest generated by Mitch in the country , destroyed the Colonia Soto section and damaged portions of two other neighborhoods . It carried debris , trees , and rocks , forming a temporary dam along the Choluteca River laden with sewage . Because the landslide was slow @-@ moving , officials were able to evacuate before the river was stopped due to the temporary dam . Another smaller landslide destroyed several houses in the Colonia El Reparto section of the capital , although it was also slow @-@ moving , and the residents were able to evacuate . Other landslides destroyed over 20 houses

along the rivers in the city due to erosion along river banks .

Across Honduras , agriculture sustained serious damage , with initial estimates of 70 % of crops destroyed . Flooding affected about 29 % of the country 's arable land , much of covered for an extended period of time . This washed away large areas of topsoil , which would take a long period of time to recover . About 85 % of the banana crop was lost , along with the loss of 60 % of melons , 60 % of sugar cane , and 58 % of corn . About one @-@ third of the corn crop had already been harvested . About 50 @,@ 000 bovine were killed , as were 60 % of the fowl population . Crop and agricultural damage totaled about \$ 1 billion , which would take the country years to recover . Poor road conditions following the storm prevented crops from being dried , which caused further damage .

Honduras 's Social Fund for Housing estimated that 35 @,@ 000 houses nationwide were destroyed with another 50 @,@ 000 damaged , many of which were poorly built or in flood @-@ prone areas . This left up to 1 @.@ 5 million people homeless ? about 20 % of the total population ? and was the highest number of victims from any natural disaster in Honduras 's history . Over 30 % of the populations of Choluteca , Colón , and Cortés departments were left homeless . Housing costs were estimated at \$ 344 million , including \$ 221 million in housing damage ; the rest included the costs for shelters , removal of debris , and loss of rent .

= = = Deaths and injuries = = =

Overall , Hurricane Mitch killed about 7 @,@ 000 people in Honduras , with 11 @,@ 000 missing in the months after the storm . There were 8 @,@ 000 people listed as missing about ten days after Mitch struck , although problems with record @-@ keeping made it difficult to determine the exact total . Choluteca Department in the southern portion of the country had the most deaths , with 1 @,@ 200 fatalities . Francisco Morazán Department , which includes Tegucigalpa , had about 1 @,@ 000 deaths , and Yoro Department had 911 fatalities . There were deaths in every department , however . Many of the dead were buried in mass graves or were cremated . The storm injured 12 @,@ 272 people nationwide , mostly in Choluteca and Cortés departments .

= = Aftermath = =

Then @-@ president Carlos Roberto Flores estimated that Mitch reversed 50 years of progress in the country . Officials estimated it would take at least 15 years to rebuild completely . The national gross domestic product (GDP) only grew at a rate of 3 % due to the storm , compared with 5 @.@ 1 % in 1997 , due to damaged infrastructure and lingering effects . In 1999 , the economy of Honduras contracted by 1 @.@ 9 % , largely due to the storm . The Honduran government increased spending by 24 @.@ 7 % , . much of it emergency funds to restore communications and provide relief , which caused economic deficits . This caused inflation to increase from 13 @.@ 6 % to 15 @.@ 7 % . The Honduran government adjusted its economic plan , including privatization of various federal entities . For two years , the government temporarily halted taxes to businesses affected by the hurricane .

In the storm 's immediate aftermath , officials enacted a widespread curfew after reports of looting and vandalism . The government temporarily restricted constitutional rights for 15 days . Officials urged residents to restrict water and fuel use , and alcohol sales were halted . The widespread flooding and the crippled infrastructure forced officials to rely on a limited number of helicopters to operate search and rescue missions and deliver supplies . A helicopter carrying four people , including Tegucigalpa mayor and potential presidential candidate César Castellanos , crashed on November 1 while touring flood damage , killing everyone aboard . In some areas , residents did not receive assistance until November 12 , more than two weeks after Mitch 's landfall . About 285 @,@ 000 people remained in 1 @,@ 375 shelters , many of them schools , by three weeks after the hurricane struck . Some sports stadiums and churches were also used as makeshift shelters . Overcrowding at shelters caused various diseases .

Due to the hurricane and the widespread destruction , the hurricane caused outbreaks of malaria ,

dengue , cholera , and various fever and respiratory illnesses . Ongoing flooding caused an outbreak of Leptospirosis , notably in Cortés Department . There were widespread food and water shortages , leaving villagers near @-@ starvation . Damaged crops also prevented the export of cash crops , and exports decreased by 9 @.@ 4 % in 1999 . Many of the people left homeless also became unemployed , and there were reductions in exports and economic growth . Officials set up shelters that housed 285 @,@ 000 people for about a month . In Tegucigalpa , where the Choluteca River was dammed by a landslide , a temporary lagoon filled with sewage persisted for about two months , until a crew from the United States Army Corps of Engineers and United States Geological Survey dug a channel to drain the water .

Even before the storm struck , the government of Honduras issued an appeal for international assistance . In the immediate aftermath , the United States provided \$ 875 @,@ 000 in aid . A portion went to purchasing and delivering food , while the majority utilized airplanes to participate in rescue missions and deliver supplies , such as plastic sheets and water . The United States ultimately gave \$ 15 million in aid to Honduras through various United Nations organizations . Mexico donated food , medicine , and clothing , and Cuba sent a team of doctors and mobile hospitals . Uruguay donated a pump for the city of Choluteca to restore water there . Several European Countries sent aid to Honduras , in addition to donations from the European Union . France sent medical equipment , and the government of Japan provided a field hospital that helped 300 patients per day in the center of Tegucigalpa . Following the storm , the United Nations Development Programme sent a team to Honduras and El Salvador to determine the needs of the population . The Honduran government requested the team to assess the socio @-@ economic impact of the storm . The World Food Programme provided \$ 17 million worth of food to the country . The Pan American Health Organization focused on restoring water systems by providing latrines , while UNICEF sent large water tanks .

The Inter @-@ American Development Bank approved \$ 197 @.@ 4 million in loans in 1998 , most of which due to Hurricane Mitch . The loans were to assist in rebuilding damaged infrastructure , including for water systems , transportation , and houses . Various countries provided nearly \$ 2 @.@ 8 billion to the country in aid , which limited the annual debt following the hurricane 's damage . The foreign aid due to the storm largely ended by 2003 .

Overall cost for reconstruction was estimated at \$ 2 @.@ 5 billion , which was estimated to take four years . The cost for repairing the damaged houses was estimated at \$ 484 @.@ 8 million . Following the storm , workers made emergency repairs to the destroyed bridges and roads . The cost for rebuilding roads was higher than their damage cost due to planning for future flooding . Within a month , there were repairs to the power grid to a level of 550 MW , or 91 @.@ 7 % of what it was before Mitch struck . Water companies restored water to 60 % of Tegucigalpa within a month of the storm striking .

The Honduras delegation to the World Meteorological Organization requested the name " Mitch " be retired , following the hurricane . The 25 member committee voted in support to replace the name with " Matthew " , which was first used in 2004 .