

= Brazilian monitor Pará =

The Brazilian monitor Pará was the lead ship of the Pará class river monitors built for the Brazilian Navy during the Paraguayan War in the late 1860s . Pará participated in the Passagem de Humaitá in February 1868 and provided fire support for the army for the rest of the war . The ship was assigned to the Mato Grosso Flotilla after the war . Pará was disarmed and discarded in 1884 .

= = Design and description = =

The Pará class monitors were designed to meet the need of the Brazilian Navy for small , shallow draft armored ships capable of withstanding heavy fire . The monitor configuration was chosen as a turreted design did not have the same problems engaging enemy ships and fortifications as did the casemate ironclads already in Brazilian service . The oblong gun turret sat on a circular platform that had a central pivot . It was rotated by four men via a system of gears ; 25 minutes were required for a full 360 ° rotation . A bronze ram was fitted to these ships as well . The hull was sheathed with Muntz metal to reduce biofouling .

The ships measured 39 meters (127 ft 11 in) long overall , with a beam of 8 meters (28 ft 0 in) . They had a draft between of 1 to 1.5 meters (4 ft 11 in to 5 ft 1 in) and displaced 500 metric tons (490 long tons) . With only 0.3 meters (1 ft 0 in) of freeboard they had to be towed between Rio de Janeiro and their area of operations . Their crew numbered 43 officers and men .

= = = Propulsion = = =

The Pará class ships had two direct acting steam engines , each driving a single 3 meter (4 ft 3 in) propeller . Their engines were powered by two tubular boilers at a working pressure of 59 psi (407 kPa ; 4 kgf / cm²) . The engines produced a total of 180 indicated horsepower (130 kW) which gave the monitors a maximum speed of 8 knots (15 km / h ; 9 mph) in calm waters . The ships carried enough coal for one day 's steaming .

= = = Armament = = =

Pará carried a single 70 pounder Whitworth rifled muzzle loader (RML) in her gun turret . The 70 pounder gun had a maximum elevation of 15 ° . It had a maximum range of 5,540 meters (6,060 yd) . The 70 pounder gun weighed 8,582 pounds (3,892 kg) and fired a 5.5 inch (140 mm) shell that weighed 81 pounds (36 kg) . Most unusually the gun 's Brazilian designed iron carriage was designed to pivot vertically at the muzzle ; this was done to minimize the size of the gunport through which splinters and shells could enter .

= = = Armor = = =

The hull of the Pará class ships was made from three layers of wood that alternated in orientation . It was 457 millimeters (18 inches) thick and was capped with a 102 millimeter (4 in) layer of peroba hardwood . The ships had a complete wrought iron waterline belt , 0.91 meters (3 feet) high . It had a maximum thickness of 102 millimeters amidships , decreasing to 76 millimeters (3 in) and 51 millimeters (2 in) at the ship 's ends . The curved deck was armored with 12 millimeters (0.5 in) of wrought iron .

The gun turret was shaped like a rectangle with rounded corners . It was built much like the hull , but the front of the turret was protected by 152 millimeters (6 in) of armor , the sides by 102 millimeters and the rear by 76 millimeters . Its roof and the exposed portions of the platform it rested upon were protected by 12 millimeters of armor . The armored pilothouse was positioned ahead of the turret .

= = Service = =

Pará was laid down at the Arsenal de Marinha da Côrte in Rio de Janeiro on 8 December 1866 , during the Paraguayan War , which saw Argentina and Brazil allied against Paraguay . She was launched on 21 May 1867 and commissioned on 15 June 1867 . She was towed to the Río de la Plata on 20 June 1867 and steamed up the Paraná River , although her passage further north was barred by the Paraguayan fortifications at Humaitá . On 19 February 1868 six Brazilian ironclads , including Pará , sailed past Humaitá at night . Pará and her two sister ships , Alagoas and Rio Grande , were lashed to the larger ironclads in case any engines were disabled by the Paraguayan guns . Barroso led with Rio Grande , followed by Bahia with Alagoas and Tamandaré with Pará . The monitor had to be beached after passing the fortress to prevent her from sinking . Pará was repaired by 27 February when she joined a squadron dispatched to capture the town of Laureles . On 15 October she bombarded Angostura Fort in company with Brasil , Silvado , Rio Grande and her sister Ceará . On 17 May 1869 she joined a blockading squadron on the Jejuy and Araguaya Rivers . After the war Pará was assigned to the newly formed Mato Grosso Flotilla . She was disarmed and discarded on 10 December 1884 at Ladário .