

= Brazilian monitor Ceará =

The Brazilian monitor Ceará was the fifth ship of the Pará class river monitors built for the Brazilian Navy during the Paraguayan War in the late 1860s . Ceará arrived in Paraguay in mid 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 . Ceará was scrapped in 1884 .

= = Design and description = =

The Pará class monitors were designed to meet the need of the Brazilian Navy for small , shallow draft armoured 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 central battery 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 8.54 meters ( 28 ft 0 in ) . They had a draft between of 1.51 to 1.54 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 1.3 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 / cm<sup>2</sup> ) . The engines produced a total of 180 indicated horsepower ( 130 kW ) which gave the monitors a maximum speed of 8 knots ( 15 km / h ; 9.2 mph ) in calm waters . The ships carried enough coal for one day 's steaming .

= = = Armament = = =

Ceará had a single 120 pounder Whitworth rifled muzzle loader ( RML ) in her gun turret . The gun had a maximum range of about 5,540 meters ( 6,060 yd ) . The 7 inch ( 178 mm ) shell of the 120 pounder gun weighed 151 pounds ( 68 kg ) while the gun itself weighed 16,660 pounds ( 7,556 kg ) . Most unusually the guns ' 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 in ) 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 ( 3.0 ft ) high . It had a maximum thickness of 102 millimetres amidships , decreasing to 76 millimeters ( 3 in ) and 51 millimeters ( 2 in ) at the ship 's ends . The curved deck was armored with 12.7 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 millimetres and the rear by 76 millimetres . Its roof and the exposed portions of the platform it rested upon were protected by 12.7 millimetres of armor . The armored pilothouse was positioned ahead of the turret .

= = Service = =

Ceará 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 22 March 1868 and commissioned the following month . The monitor arrived in Paraguay in May 1868 . On 31 August she bombarded enemy positions on the Tebicuary River to provide cover for advancing troops . The ship destroyed Paraguayan defenses on the Manduvirá River on 18 April 1869 . Ceará , together with her sister ships Piauí and Santa Catharina , broke through the Paraguayan defenses at Guaraio on 29 April and drove off the defenders . After the war she was assigned to the Mato Grosso Flotilla and was scrapped in 1884 .