A yarn defect classifying device for a yarn winding machine includes a yarn defect detecting device (5) adapted to detect a yarn defect, a removal determination section (53N, 53S, 53L) adapted to calculate a removal determination value for a set length of the yarn (Y) in accordance with a detected thickness of the yarn defect detected by the yarn defect detecting device (5), and to determine removal of the yarn defect when the removal determination value exceeds a prescribed value, and a calculating section (54N, 54S, 54L) adapted to calculate a display thickness and a display length of the yarn defect in accordance with the detected thickness and a detected length of the yarn defect.