

Texel, August 2022



Research on red knots

In 1998 the shorebird group of the Royal Netherlands Institute for Sea Research (Royal NIOZ) launched a color ring program on red knots *Calidris canutus islandica* and *C. c. canutus*. Since the late eighties the species has been studied by our research group which is based on the island of Texel in the Dutch Wadden Sea. As of August 2022, 10.600 red knots have been captured and provided with color-rings in the Dutch Wadden Sea, 4.040 birds at the Banc d'Arguin (Mauritania) and 75 at the Bijachos Archipelago (Guinea-Bissau) in West Africa, 160 in the Wadden Sea of Schleswig-Holstein (Germany), 1.010 along the Atlantic coast of France. The aim for the coming years is to color-ring approximately 500 red knots annually in the Netherlands and 200 annually in Mauritania.

The color ring combination consist of four color-rings and a flag (a ring with a kind of streamer). There are two color-rings on each lower leg (the tarsus) with the flag in one of eight possible positions (Figure 1). The flag colors that have been used since 1998 are shown in Figure 2 and are (in chronological order): Yellow (Y), Red (R), Green (G), Lime (L) and black (N) and from 2017 onwards we've started to use Yellow (Y) flags again. Each bird also carries a metal ring, this is not part of the color combination. In most cases the metal ring is on the upper leg (tibia), the flag can also be on the tibia, but never a color-ring!

Since 2017, yellow flags are used in combination with four color rings. The colors used are black (shorthand N in accordance with international agreements for color ringing), Red (R), Yellow (Y), Green (G) and Pale blue (P). To give an example: a red knot with a green over a yellow color-ring on the left leg, a yellow flag on the right upper leg and two pale blue rings on the lower leg is quoted as Y2GYPP. First, the color and position of the flag is noted and then the color-rings from top to bottom, first for the left leg (of the bird) and then for the right leg.

In the early years of the study color-rings were made of a plastic named Darvic. However, this material is no longer in production, so we are currently using a different material that has the properties of Plexiglas. These rings do not have eternal life and are often shorter than the maximum life of a red knot. This means there are incomplete combinations existing as a result of ring loss and some rings may be strongly faded as a result of ultraviolet light. We would also like to receive observations of birds with incomplete color-ring combinations, so we can get an idea of the amount of ring loss.

Observations of red knots can be sent to shorebirds@nioz.nl describing the color ring combination, the observation date and location. Additional data which we would like to receive are: the type of terrain, the flock size and if possible, the ring density (the number of color-ringed individuals and the total number of observed birds) and the plumage (summer or winter plumage; if possible expressed as a percentage).

Best regards and thank you for your observations on behalf of the NIOZ shorebirds team.

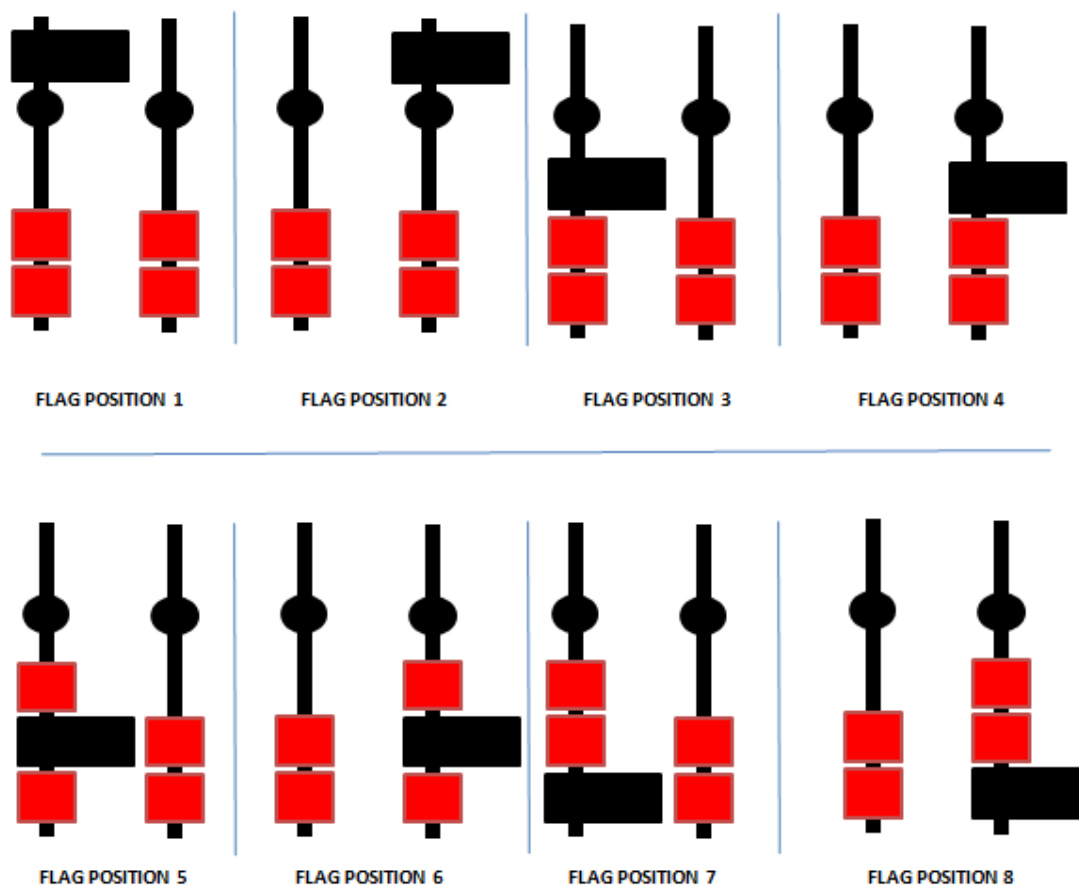


Figure 1 Possible flag positions when looking at the bird from behind (i.e. left side is the birds left leg, right side is the birds right leg).




Yellow flag	Red flag	Green flag	Lime flag	Black flag (N)	Yellow Flag
					
 <u>Y</u> ellow	 <u>Y</u> ellow	 <u>Y</u> ellow	 <u>Y</u> ellow	 <u>Y</u> ellow	 <u>Y</u> ellow
 <u>W</u> hite	 <u>W</u> hite	 <u>W</u> hite	 <u>L</u> ime	 <u>N</u> (black)	 <u>N</u> (black)
 <u>R</u> ed	 <u>R</u> ed	 <u>R</u> ed	 <u>R</u> ed	 <u>R</u> ed	 <u>R</u> ed
 <u>B</u> lue	 <u>B</u> lue	 <u>G</u> reen	 <u>G</u> reen	 <u>G</u> reen	 <u>G</u> reen
				 <u>P</u> ale blue	 <u>P</u> ale blue

Figure 2 The used color-rings for every flag color, currently we are using yellow flags.