

Sexing of Purple Sandpipers *Calidris maritima* according to CHD1-genes: how well does bill length predict the sex?

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Generally waders show little, if any, sexual dimorphism according to plumage. However, on average females are bigger than males. This is true for the Purple Sandpipers *Calidris maritima* where bill length has served as a good discriminant factor for sex determination. According to morphometrics it is believed that few populations of Purple Sandpipers can be found in Iceland during non-breeding seasons. One of these populations are “long-billed” birds that winter in NW-Europe and seem to use Iceland as a stopover site on the way to breeding areas that are thought to be in Canada. If the cut point of bimodal curve (consisting of bill length frequencies) is used as a discriminant point for the sex (at 32,15 mm), a bias towards males becomes evident. The reason for this bias is not known.

Here we:

- 1) check the reliability of sexing Purple Sandpipers from bill length measurements
- 2) look for possible systematic errors in sexing Purple Sandpipers from the bill length

In May 2003 and 2005 more than 330 Purple Sandpipers were caught alive at Reykjanes Peninsula. According to measurements majority of the birds were “long-billed” wintering birds from Europe. 65% of the birds were males according to bill length. DNA was extracted from feather shafts of 65 birds most having bill length between 31-33 mm. To sex the birds parts of the CHD1 genes found on the Z and W chromosomes were amplified with PCR method. The CHD1W fragment is ca. 450 bp whereas the CHD1Z fragment is ca. 650 bp. As females are ZW and males ZZ sex can be determined by electrophoresis of the DNA fragments.

According to a discriminant function analyses it was possible to sex around 94% of the birds according to the bill length. 96% of females and 92% of males were assigned correctly. Thus, bill length seem to be an accurate sexing method for Purple Sandpipers and a slight systematic error according to bill length measurements does not explain the dramatic sex bias found in the population.