

MIGRATION UNDER GLOBAL CHANGE

Mitigating threats to help birds adapt

Shorebirds experience threats throughout their migratory journeys. Their Arctic breeding grounds are changing. **As the Arctic spring warms, shorebirds need to travel faster to arrive in the Arctic in time to make use of the best breeding conditions.** While shorebirds adjust to this change, stopover sites where they prepare for migration are under pressure from human development, with less food and space available to help them on their journey. To cope with these multiple challenges, shorebirds need well-connected networks of stopover sites where they can find food and rest, in order to adjust their migrations to a changing climate.

Migratory shorebirds

The Arctic is home to more than half of the world's shorebird species (CAFF, 2010). These birds criss-cross the globe and return to the Arctic every spring lay eggs, raise the next generation and make use of the bountiful Arctic spring. Here, godwits are used as a representative of this larger species group, which also includes Dunlin, Phalaropes, Knots, Sandpipers, and Curlews, many of which are experiencing dramatic population declines (CAFF, 2021).

HUDSONIAN GODWIT – AMERICAS FLYWAY

Hudsonian godwits winter at the extreme southern tip of Chile and breed in sub-Arctic Canada and Alaska. **Individuals that winter in disturbed stopover sites in Chile find less food, which has repercussions for their entire migratory journey; they have a lower chance of surviving spring migration, and are less likely to raise chicks successfully.** (Swift et al. 2020)



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Chile

AMERICAS FLYWAY

BAR-TAILED GODWIT – AFRICAN EURASIAN FLYWAY

In recent decades, bar-tailed godwits in the African Eurasian Flyway have been arriving earlier on their breeding grounds in Arctic Russia, where they can breed in the best conditions for chicks survival and growth. As a result, these birds are shortening the time they spend at their main stopover site in the Wadden Sea. **This may be a risky strategy. In years when lugworms—the main prey item of these birds—are less abundant, not all birds survive the northward journey from the Wadden Sea to the Arctic.** (Rakhimberdiev et al. 2018)



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Wadden Sea

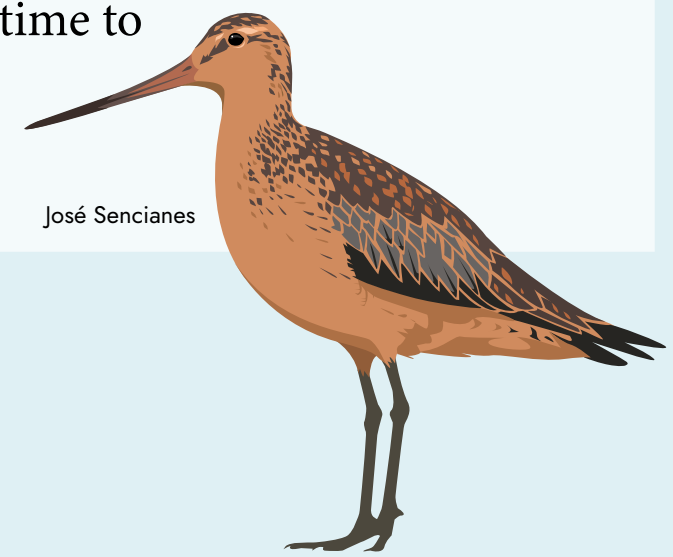
AFRICAN EURASIAN FLYWAY



Arctic Russia

BAR-TAILED GODWIT – EAST ASIAN AUSTRALASIAN FLYWAY

Bar-tailed godwits in the East Asian-Australasian Flyway have recently started leaving their wintering sites in New Zealand earlier, but they are not arriving earlier on their Alaskan breeding grounds. **Instead birds are staying longer on their Yellow Sea stop over sites, where finding food has become more difficult.** It is not clear whether earlier departure from New Zealand is a response to earlier springs in Alaska or just a strategy to ensure they have more time to find food, feed, and rest in the Yellow Sea. (Concklin et al. 2021)



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Yellow Sea

EAST ASIAN AUSTRALASIAN FLYWAY

New Zealand

- SITES WHERE BIRDS ARE ADJUSTING THEIR MIGRATION
- SITES OF IMPORTANCE FOR SPECIES
- FLYWAYS

CAFF 2010, Arctic Biodiversity Trends 2010 – Selected indicators of change
 CAFF 2021, State of the Arctic Terrestrial Biodiversity Report
 Concklin et al. 2021, <https://doi.org/10.1038/s41467-021-25022-7>
 Rakhimberdiev et al. 2018, <https://doi.org/10.1038/s41467-018-06673-5>
 Swift et al. 2020, <https://doi.org/10.1111/1365-2656.13246>