

# TONGUE IN PEEP: NEW PERSPECTIVES FOR SHOREBIRD ECOLOGY

Peter G. Beninger , and Robert W. Elner

## Study Description

Our understanding of shorebird ecology has been transformed by the discovery of shorebird feeding on epibenthic microbial mats generated on intertidal mudflats. Counterintuitively, such feeding constitutes a *downward* trophic shift at critical migratory stopovers, immediately prior to arrival and breeding at the nesting sites. All species which engage in this type of feeding possess tongues equipped with spines, used to pick up the biofilm. These observations have opened several avenues of research, from the specific trophic and physiological contribution of mudflat microbial mats to the role of shorebirds as sentinels of critical mudflat habitat status.

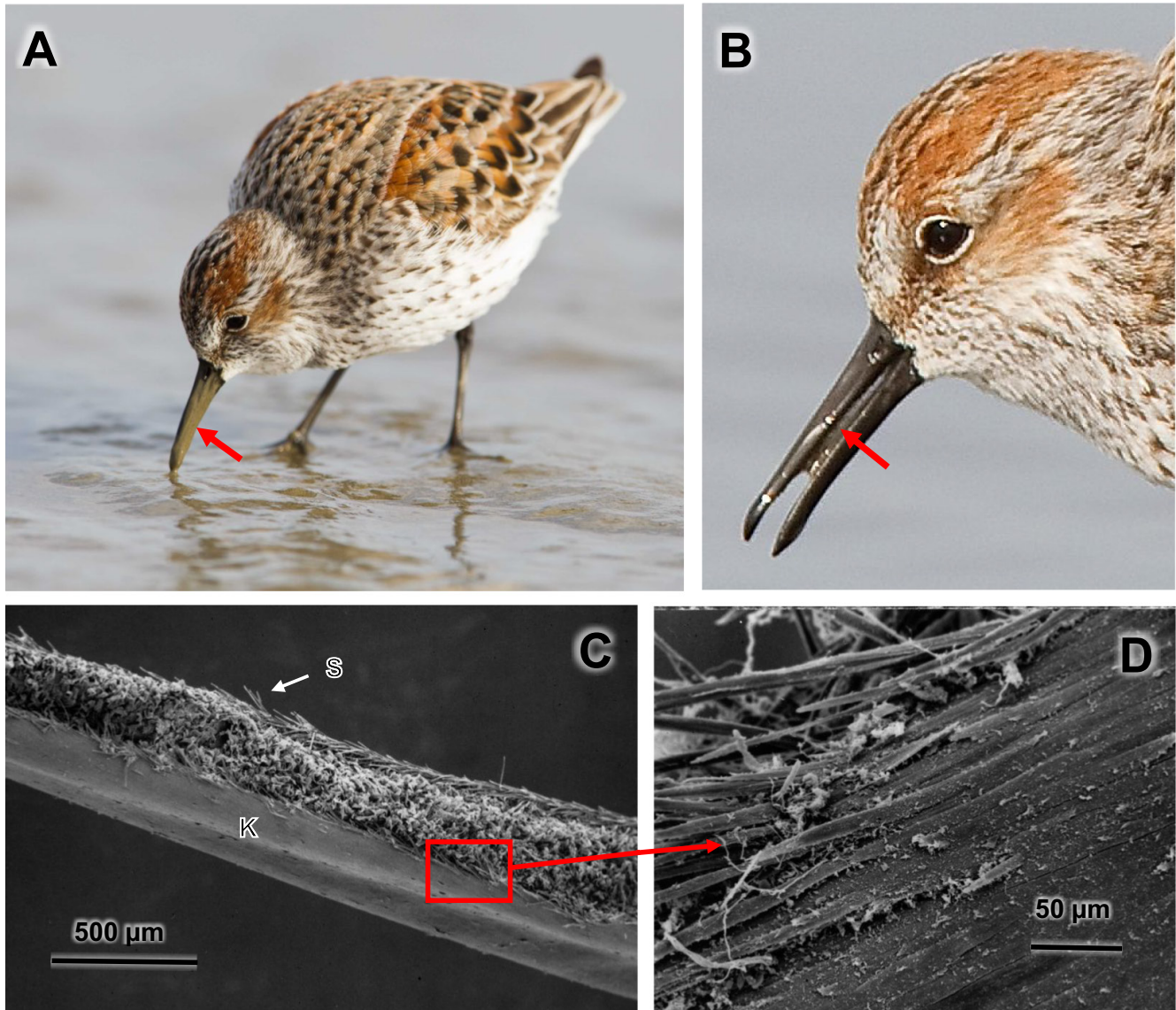


Photo 1. (A, B) Western sandpiper, *Calidris mauri*, feeding at its penultimate migratory stopover on Roberts Bank, British Columbia, Canada. Note mudflat microbial mat adhering to the bill and in position for ingestion (arrows). (C) The numerous tongue spines (S) are used to gather the superficial biofilm; the spines arise from the keratinous ventral tongue surface (K). (D) Detail of boxed area in (C) showing the origin of the tongue spines. Photo credits: A, B, Jason Puddifoot; C, D, Peter Beninger.

These photographs illustrate the article “On the tip of the tongue: natural history observations that transformed shorebird ecology” by Peter G. Beninger and Robert W. Elner published in *Ecosphere*. <https://doi.org/10.1002/ecs2.3133>