

National Park Service
U.S. Department of the Interior

Cape Cod National Seashore



“Seashore Science”

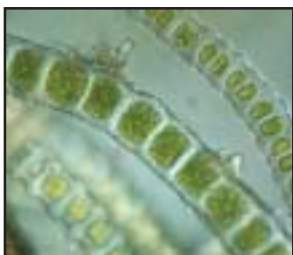
www.nps.gov/caco

ALGAL CRUSTS OF THE DUNES



Colors in the Sand

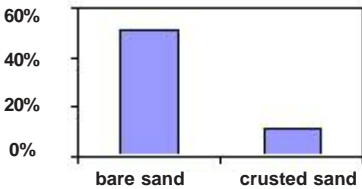
Have you ever noticed that there are places in the dunes where the sand exhibits a distinct green- gray coloration, especially after a light rain? If you touch the surface, you’ll notice that it is firm or “crusty”. What you are feeling is a living community of filamentous green algae that exists among the sand grains. The algae tolerate long periods of desiccation, surviving much of the time in a hardened, dry state and coming alive when sufficient amounts of dew or rainfall allow for bursts of productivity.



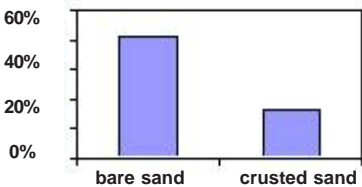
Left: a footstep reveals a crusted surface. Right: the microscopic filaments of algae that make up these crusts.

An Inconspicuous but Important Feature of the Landscape

Although barely noticeable to the eye, there is evidence to suggest that algal crusts play an important role in sand stabilization. In essence, they are like a glue that prevents the sand from being carried away by wind and rain. Furthermore, they act as a cap to reduce the loss of interstitial water by evaporation.



Percent of sand lost from petri dishes after 2 weeks exposure to ambient wind (Truro, August 2002)



Grams of water lost by evaporation from 5-cm diameter cylinders in one week (Truro, September 2002)

Physical disturbance destroys the structural integrity of algal crusts and, consequently, their soil stabilization and water retention properties. Limiting foot and vehicle traffic to established trails will greatly reduce this kind of damage.

NPS scientists are currently studying these crusts in considerable detail to better understand their influence on nutrient and water cycling and their ecological significance to higher organisms (plants and animals). In the meantime, watch your step!

text and photos:
Stephen M. Smith, Ph.D.
Plant Ecologist, National Park Service

printing of this
publication
funded by:

