ELECTRONIC APPENDIX

This is the Electronic Appendix to the article

Migrating locusts can detect polarized reflections to avoid flying over the sea

by

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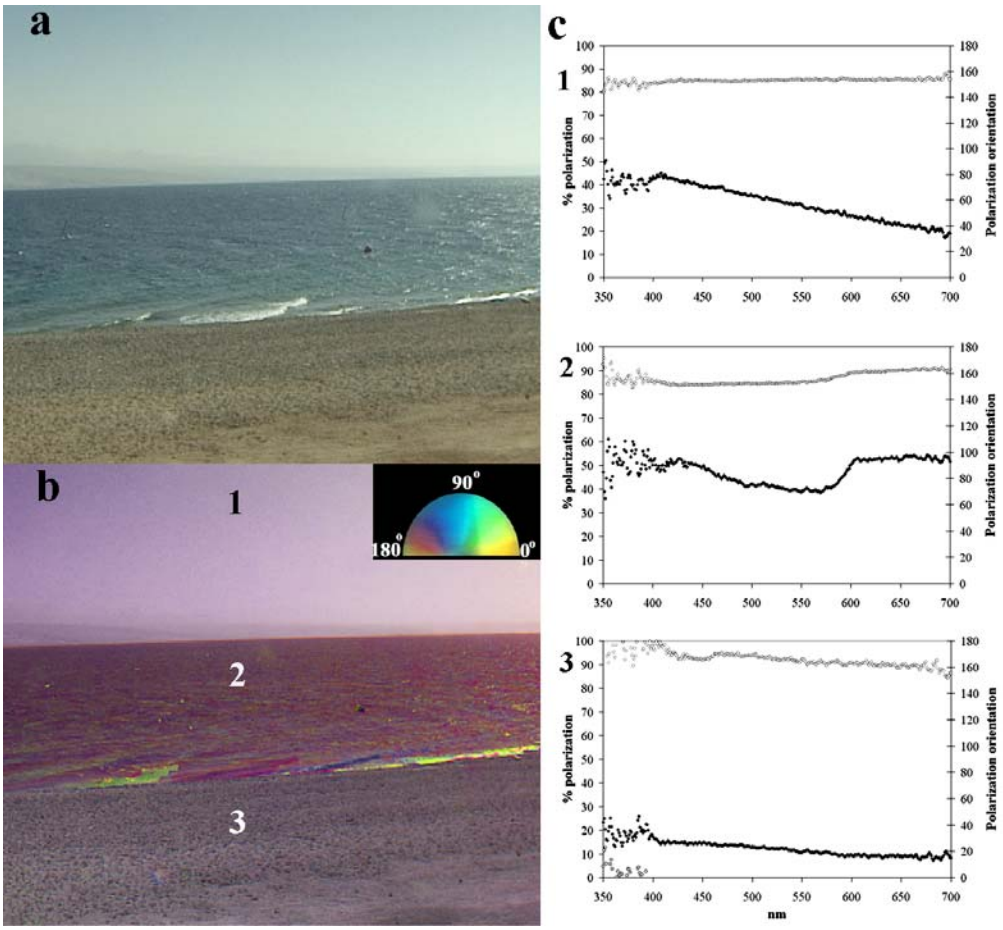
Supplemental information

1) Light reflection of seawater measured at 11:30 AM with a wind coming from the North- East (left side of the images) . a) A color image of the Gulf of Aqaba. b) A false color polarization image of the same scene taken with an imaging polarimeter (Wolff & Andreow 1995; Shashar *et al*. 2004) where polarization orientation is coded into hue (insert), % polarization is coded into color saturation, and intensity remains unaffected (Wolff & Andreow 1995). c) Polarization orientation (o- gray) and % polarization (♦-black) across the 350-700 nm range at representative areas in the sky (1), water (2) and the beach (3), measured with a spectral polarimeter (Shashar *et al.* 2004).

Wolff, L.B. & Andreou, A.G. 1995 Polarization camera sensors. *Image and Vision Computing* **13**, 497-510.


a
b
1
2
3
90°
180°
0°
c
1
2
3
% polarization
Polarization orientation
nm

2) Setup for flight over black surfaces experiment.

a) A schematic drawing of the setup. b) An image of a tethered locust during an experiment, flying towards the left surface.

Animals were tested in the following setup (a): Two 1.2 x 0.8 m squares of flat black material were placed on the ground with an exposed gap between them. The test materials were made of a linearly polarized light reflecting plastic and of felt that reflected much less polarized light. A fan generated a light wind along the central gap, towards the sun, symmetrical on both sides of the gap. Animals were tethered to a pre set bar positioned 50 cm with a small hock above the center of the gap, and were manually released directly underneath it by dropping the holding hand; such they were 5-7 cm above the ground at release. A digital video camera, placed at the height of the holding bar recorded the animals' flight direction (b). The image presented is a single frame out of a recorded experiment.