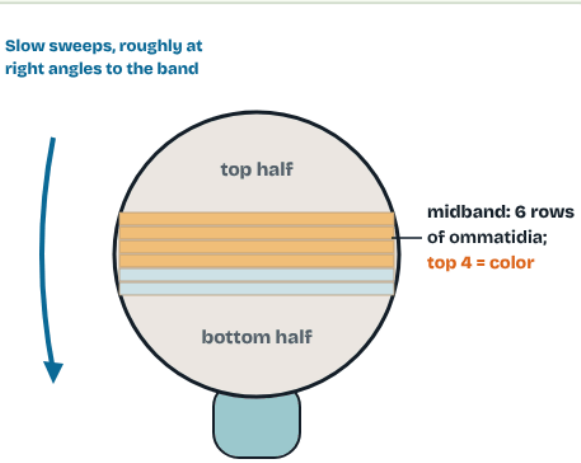
That is why

Can mantis shrimp see more colors than humans?

Twelve color receptors that each work alone let the eye recognize colors fast, but it tells close shades apart worse than we do.

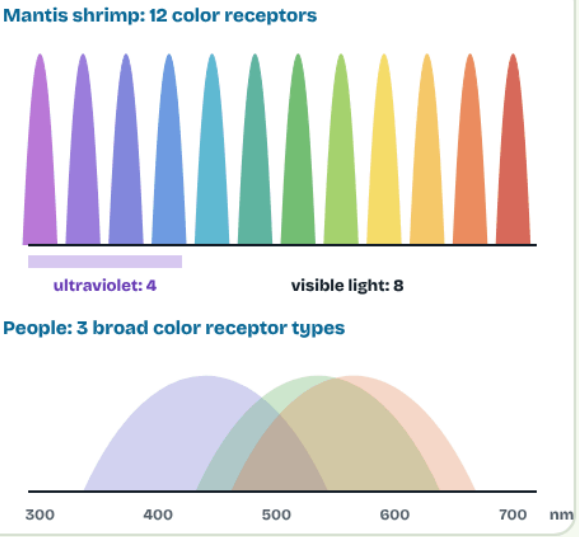
A An eye with a scanning stripe



1 Many channels

12 color receptors: 8 for visible light and 4 for ultraviolet. With extra channels for polarized light and brightness, that is 20 inputs in all. People have 3 color receptor types.

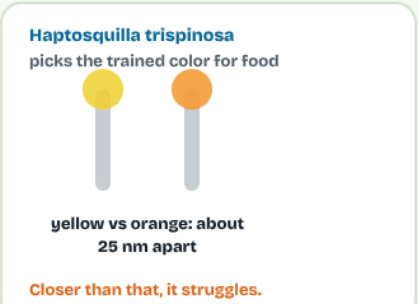
B 12 narrow bands vs 3 broad ones

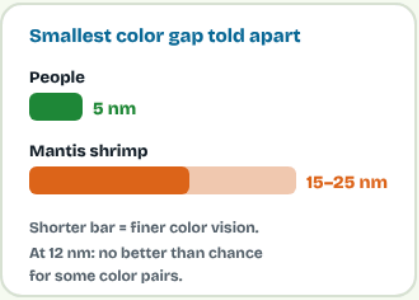


2 Compare or recognize?

People compare their 3 receptors to split close shades (color opponency). The shrimp's 12 seem to work alone: the pattern of lit bands is looked up, like a barcode. Curves above: schematic.

C The two-fiber test





Worse than people, honeybees and butterflies at close shades. Its sweeping eye works like the push-broom sensors on satellites.

A scanner, not a painter: the mantis shrimp eye reads the pattern instead of comparing the shades.

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Diagram: https://thatiswhy.com/diagrams/why-mantis-shrimp-see-colors/ · Full guide: /why-mantis-shrimp-dont-see-more-colors-than-humans/