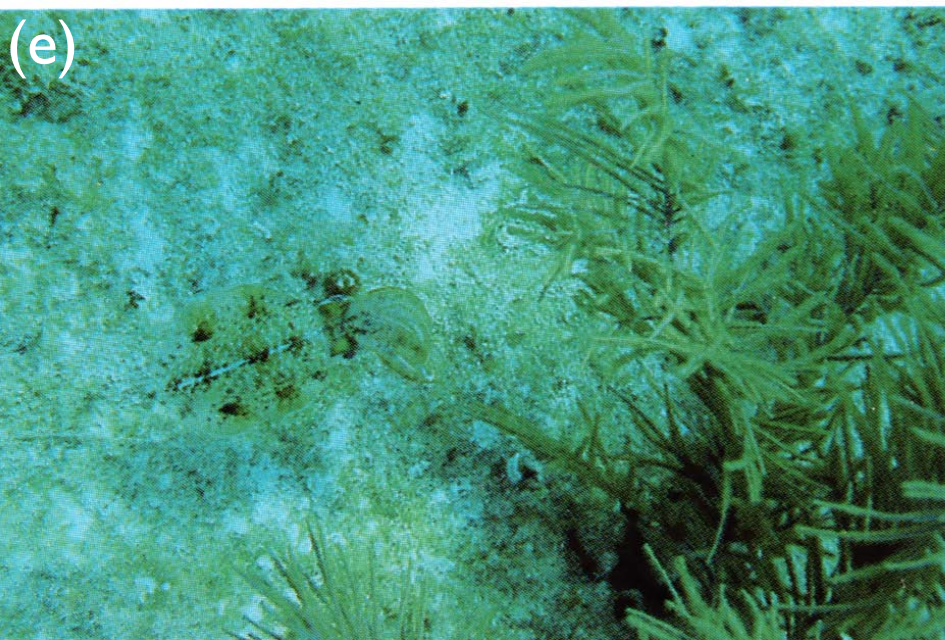


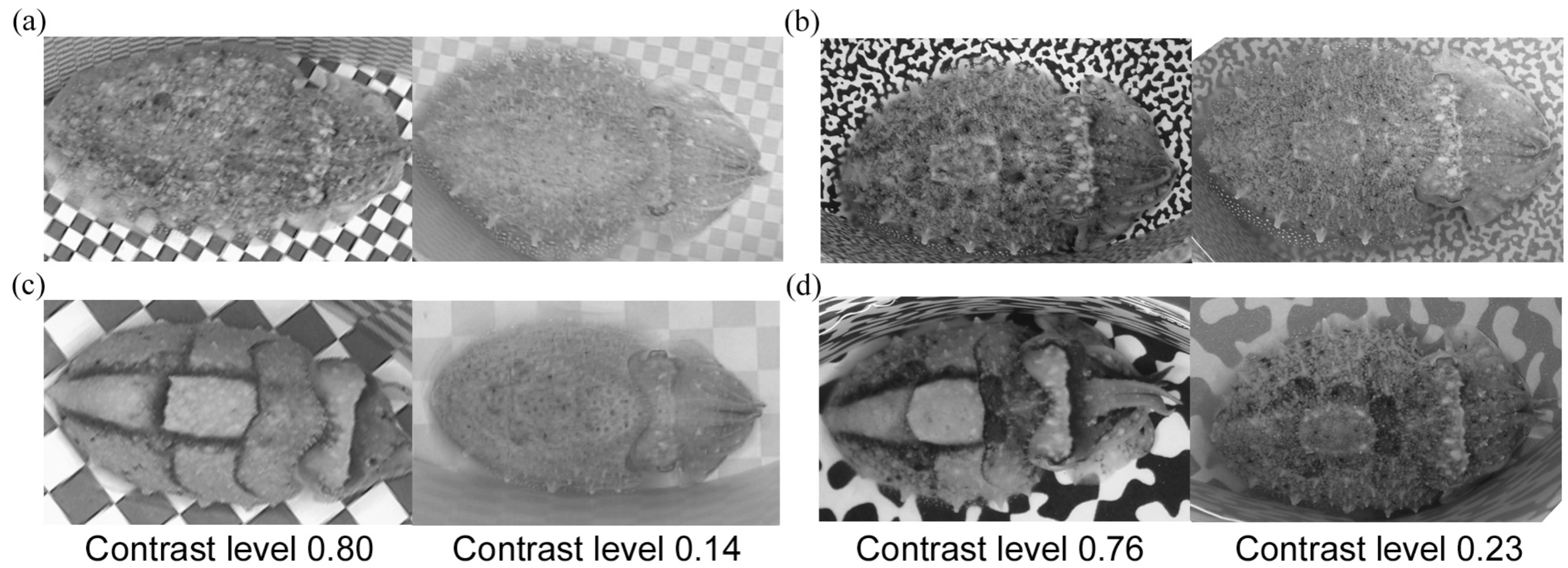
Supplementary Fig. 1



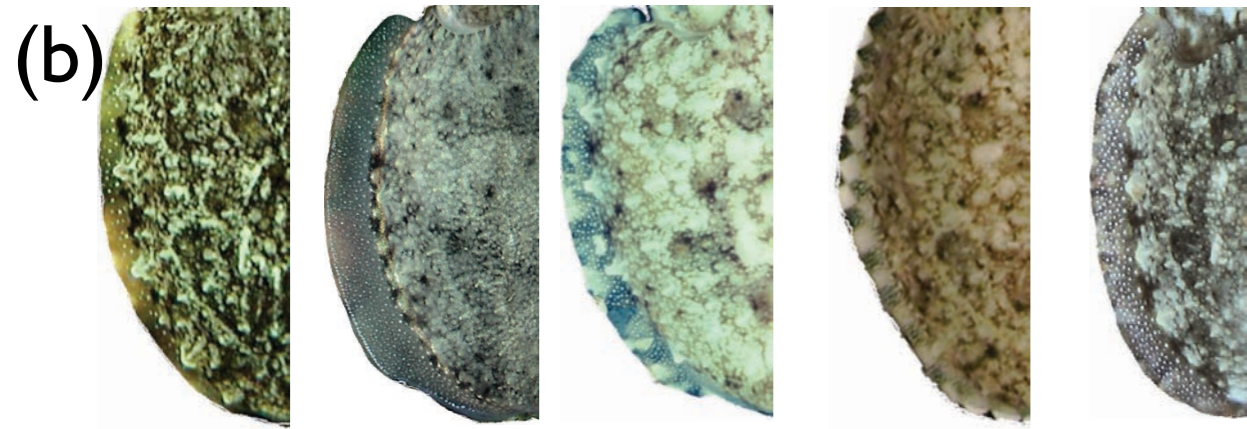
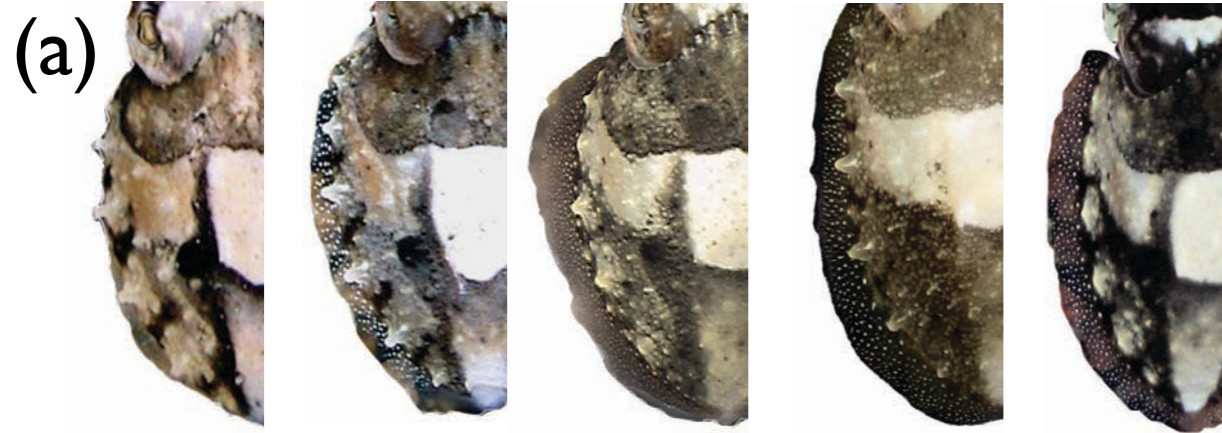
Supplementary Fig. 2



Supplementary Fig. 3



Supplementary Fig. 4



Supplementary Fig. 5



Fig. 1. Background matching in octopus (*a,b*), cuttlefish (*c,d*) and squid (*a*) *Octopus vulgaris* in mottle coloration showing general background matching to brown/yellow algae instead of sand, possibly as a better match; Little Cayman Island, BWI at 4 three-dimensional m. (*b*) *Octopus burryi* sitting on calcareous algae as it sways in the current at 13 m at Saba Island, BWI. (*c,d*) The giant Australian cuttlefish, *Sepia apama*, amidst differently textured algae in S. Australia at 3m; note the arm postures in (*d*) that enhance camouflage and perhaps have a disruptive effect. (*e*) The Caribbean reef squid, *Sepioteuthis sepioidea*, showing mottle against a background of sand/algae and next to a soft coral in Little Cayman Island, BWI at 5m depth (*f*) Same squid species hovering next to a soft coral with arms splayed to produce background matching. All images by R. Hanlon.

Fig. 2. Disruptive body patterns in squids. (*a*) *Loligo pealeii* in the laboratory showing bold transverse mantle bars to disrupt its longitudinal body shape (insert shows a side view). (*b*) Two small *L. pealeii* on the bottom sitting amidst rocks as a predatory bluefish swims overhead without detecting the camouflaged squids in a laboratory tank. (*c*) The Caribbean reef squid, *Sepioteuthis sepioidea*, hovering motionless in a disruptive pattern amidst soft corals at Little Cayman Island, BWI. (*d*) *S. sepioidea* hovering motionless in upward pointing posture with a disruptive pattern on its ventral surfaces amidst a soft coral at Dry Tortugas, Florida. All images by R. Hanlon.

Fig. 3. Background contrast affects camouflage pattern type in cuttlefish, *Sepia officinalis*. (*a,b*) Mottle is shown on small-scale background of high contrast, but when contrast is reduced the body pattern changes to uniform (or uniformly stippled) on the same scale background (*c,d*) Disruptive patterns change to mottle in the same manner as in (*a,b*) Images by various coauthors.

Fig 4. Examples of patterning component diversity in the common European cuttlefish, *Sepia officinalis*. (*a*) Disruptive patterns. (*b*) Mottle patterns. Examples drawn from hundreds of examples. Note that any individual cuttlefish can show all of these patterns and their varieties. Images by various coauthors.

Fig 5. Background matching or disruptive coloration? (*a*) A large adult of the giant Australian cuttlefish, *Sepia apama*, showing disruptive body components such as the white transverse mantle bar, with a good deal of mottle coloration in many body parts. (*b*) Same species sitting on a rock with a more pronounced disruptive effect but also with mottle intermixed. Both images ca. 3-5m depth (*c*) The European cuttlefish, *Sepia officinalis*, with weak disruptive patterns intermixed with weak mottle as it sits on a small rock substrate mixed with seagrass near Izmir, Turkey at 2m depth. (*d*) Same species sitting out in the open on the sand showing weak disruptive pattern: this image could be interpreted as a form of background matching call 'deceptive resemblance' to the distant rocks and algae. All images by R. Hanlon.