

## Supplementary

### 1) Printing methods

Brown replica

Standard

PLA

printing

Machine Type: FlashForge Creator Pro

Software: MeshMixer (Autodesk), Fusion 360 (Autodesk),  
FlashPrint (FlashForge).

Material: PLA mix with Wood (Creme)

Supports Overhang Thresh: 45°

Supports Pillar Size: 1.5 mm

Raft: PLA

Resolution: Standard

Layer Height: 0.18 mm

First Layer Height: 0.27

Perimeter Shells: 2

Top Solid Layer: 4

Bottom Solid Layers: 3

Fill Density: 15%

Fill Pattern: Hexagon

Combine Infill: Every 2 inner Layers

Print Speed: 60 mm s<sup>-1</sup>

Travel Speed: 60 mm s<sup>-1</sup>

Extruder Temp: 210° C

Platform: 50° C

Brown replica was reduced by a scale of 82% to fit the printer area.

The Meshmixer program was used to thicken the lower part root  
of the branches that were too thin.

Yellow, Blue and orange replicas

Standard PLA printing

Printer: AXIOM DUAL Extruder 3D Printer

Mouthpiece size: 0.35 mm

### 2) Table S1. Model code explanation.

Model structure	Model code	Surface area (mm <sup>2</sup> )	Volume (mm <sup>3</sup> )
Original structure	A1	82417	213528
Original structure from previous tests	A2	82417	213528
Scale structure 100%	AS1	82417	213528
Scale structure 150%	AS1.5	187814	710600
Scale structure 200%	AS2	333891	1684380
Tabular structure with a diameter of 19 cm	T19	97937	276432
Tabular structure with a diameter of 22 cm	T22	112765	368330
Tabular structure with a diameter of 25 cm	T25	128297	430790

3). **Table S2.** Full names of fish species observed interacting with shelters during the test.

<b>Species full name</b>	<b>Species' code</b>
<i>Acanthurus nigrofusus</i>	AN
<i>Amblyglyphidodon indicus</i>	AI
<i>Apogon cookii</i>	AC
<i>Chelodipterus quinquelineatus</i>	CQ
<i>Chlorurus gibbus</i>	CG
<i>Chromis dimidiata</i>	CD
<i>Chromis viridis</i>	CV
<i>Cirrhichthys oxycephalus</i>	CO
<i>Corythoichthys cf. schultzi</i>	CCS
<i>Corythoichthys flavofasciatus</i>	CF
<i>Dascyllus marginatus</i>	DM
<i>Ecsenius dentex</i>	ED
<i>Ecsenius frontalis</i>	EF
<i>Ecsenius gravieri</i>	EG
<i>Eviota guttata</i>	EGU
<i>Gobiodon citrinus</i>	GC
<i>Gomphosus caeruleus klunzingeri</i>	GCK
<i>Halichoeres marginatus</i>	HM
<i>Hemigymnus sexfasciatus</i>	HS
<i>Larabicus quadriliniatus</i>	LQ
<i>Neopomacentrus miryae</i>	NM
<i>Oxymonacanthus halli</i>	OH
<i>Plagiotremus townsendi</i>	PT
<i>Plectroglyphidodon lacrymatus</i>	PL
<i>Pomacentrus sulfureus</i>	PSU
<i>Pomacentrus trichourus</i>	PTR
<i>Pseudanthias squamipinnis</i>	PS
<i>Pseudocheilinus hexataenia</i>	PH
<i>Pseudochromis olivaceus</i>	PO
<i>Pseudochromis pesi</i>	PP
<i>Pseudochromis springeri</i>	PSP
<i>Salarias fasciatus</i>	SF
<i>Thalassoma rueppellii</i>	TR
<i>Zebrasoma xanthurum</i>	ZX
<i>Unknown cardinal</i>	UC
<i>Unknown moray</i>	UM
<i>Unknown sp.</i>	UNC