Table A1. Energy budget parameter estimates for snail hosts deviating from the original *Schistosome* Individual-Based Dynamic Energy Budget (SIDEB) model based on repeated feeding and starvation experiments on algae resources (1,2).

Parameter	Description	Estimate[1,2,3]	Units
Host parameters			
K	Proportional allocation to soma	0.91	—
M	Mass:volume relationship	$5.2 \cdot 10^{-3}$	$mg\ C\ mm^{-3}$
E_M	Maximum host reserve biomass relative to structural biomass	1.40	$mg\ C$
L_M	Maximum physical host length	53.61	mm
i_M	Surface area-specific maximum host ingestion rate	$3.04 \cdot 10^{-2}$	$mg\ C\ d^{-1}\ mm^{-2}$
F_h	Host (Type-II) foraging half saturation constant	0.0005	$mg\ C\ L^{-1}$
Y_{EF}	Yield of reserve on resources	0.3273	—
Y_{VE}	Yield of structure on reserve	0.2606	—
μ_D	Maintenance rate for maturity	0.1326	—
D_R	Host maturity threshold for reproduction	0.6167	$mg\ C$
ε_H	Carbon content of host offspring	0.015	$mg\ C$
Parasite parameters			
α	Parasite manipulation of host allocation rule	2.2002	$mg\ C^{-1}$
i_{PM}	Parasite maximum mass-specific ingestion rate	0.5830	$mg\ C\ d^{-1}$
Y_{PE}	Yield of parasite biomass on reserve	0.9368	—
Y_{RP}	Yield of parasite offspring biomass on assimilate	0.0526	—
e_h	Parasite ingestion half saturation constant	$2.20 \cdot 10^{-2}$	—
m_P	Mass-specific maintenance rate for parasites	0.3107	d^{-1}
p_h	Parasite allocation half-saturation constant	0.1277	—
ε_P	Carbon content of parasite offspring	$4 \cdot 10^{-5}$	$mg\ C$

Damage, hazard, survival, and repair parameters

k_R	Damage repair rate constant	$3.14 \cdot 10^{-2}$	d^{-1}
δ_0	Damage density threshold	$9.12 \cdot 10^{-2}$	—
h_δ	Hazard coefficient of damage	$2.06 \cdot 10^{-3}$	d^{-1}
h_b	Background hazard rate	$4.0 \cdot 10^{-4}$	d^{-1}
Θ	Intensity of parasite-induced damage	79.3058	—
m_R	Scaled energy expenditure rate for damage repair	$1.0 \cdot 10^{-5}$	d^{-1}

Transmission model

ε	Snail-miracidia contact rate	20.0	$L\ d^{-1}$
σ	Miracidial infection probability given contact	0.50	—
M_{in}	Miracidial input rate	10	$L^{-1}\ d^{-1}$
m_M	Mortality rate of miracidia	1	d^{-1}

Environmental/Resource parameters

ENV	Volume of environment	500	L
r	Algal maximum growth rate	varied	d^{-1}
K	Algal carrying capacity	5	$mg\ C\ L^{-1}$
det	Detritus subsidy rate	Varied	$mg\ C\ L^{-1}\ d^{-1}$
M_Z	Mortality rate of cercariae	1	d^{-1}

1. All DEB parameter estimates rounded to five significant figures.
2. Transmission model parameters rounded from estimates in Civitello and Rohr (2014).
3. Environmental/resource parameters chosen to reflect a $1m^2 \cdot 0.5$ m deep volume of habitat, realistic quantities of algal growth or detrital input, and rates of parasite mortality.

References

1. Civitello DJ, Fatima H, Johnson LR, Nisbet RM, Rohr JR. Bioenergetic theory predicts infection dynamics of human schistosomes in intermediate host snails across ecological gradients. Ecology Letters. 2018.
2. Civitello DJ, Baker LH, Maduraiveeran S, Hartman RB. Resource fluctuations inhibit the reproduction and virulence of the human parasite Schistosoma mansoni in its snail intermediate host. :In review.