

Length–weight relationship for sandfish, *Holothuria scabra*

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Lengths and weights were measured for sandfish (*Holothuria scabra*) at the Research Institute for Aquaculture no 3, Nha Trang, Vietnam. The sandfish were taken from five separate groups and ranged size from 1.16 g (2.7 cm) to 574 g (24 cm). In total, 133 animals were measured.

After being removed from the water, the sandfish were left to dry in the shade for a period that depended broadly on the group size (see Table 1). The sandfish were weighed, generally to three significant figures, with a digital balance, then gently straightened and their lengths measured to 1 mm with a ruler. Linear and log plots, trendlines and equations were determined using MS Excel software.

It is hoped that these data will be useful in helping bridge the gap between reports that discuss sand-

fish in terms of length, and those using mainly weight measurements. Both length and weight measurements, of course, are highly variable for sea cucumbers.

Individuals can stretch or contract and can vary in the amount of substrate and water held inside their bodies. It is not obvious which parameter changes less for a particular individual over a short period of time, and, therefore, which measurement gives the most accurate average size. It would, however, be fairly easy to follow changes in a group of individuals over a few days, measuring both length and weight at fixed or random intervals.

It should be noted that the relationship is a power curve; weight = constant × lengthⁿ (where n = 2.8). Therefore, in calculus notation, dw/w = n dl/l. In

Table 1: Details of sandfish groups used for measurements

Group	Origin	no.	Taken from	Range (cm)	Range (g)	Drying time (min)
1	hatchery	15	pond 24 hours in bare tank	12.1–21.3	145–400	5
2	hatchery	20	nursery tank on sand	2.0–7.9	1.16–10.93	0.5
3	wild	34	pens (>1 year) 20 hours in bare tank	14.5–26.0	157–574	10-20
4	hatchery	8	nursery tank on sand	5.6–8.8	17.4–46.2	3
5	hatchery	32	pond 5 hours in bare tank	10.5–21.0	101–379	5

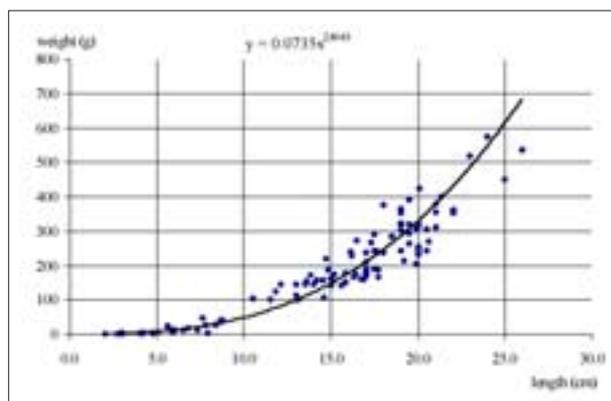


Figure 1. Length (cm) against weight (g)

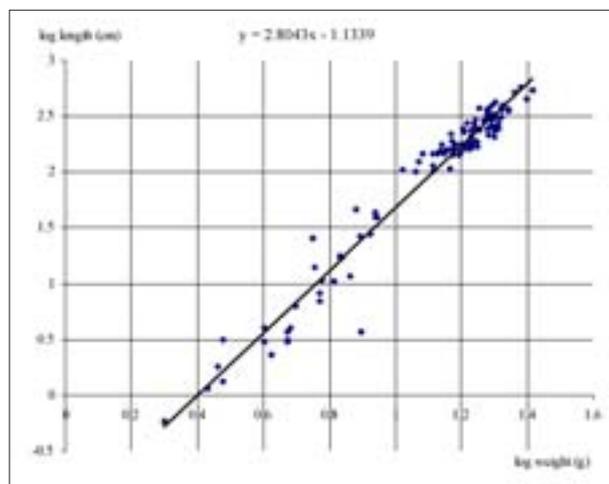


Figure 2. Log length (cm) against log weight (g)

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other words, any percentage error in determining length will lead to a percentage error in estimating weight that is almost three times as high. Additionally (except when working underwater), weight measurements are generally quicker, less subjective and more accurately made than lengths, as long as suitable balances are available.

Holothuria scabra from Southeast Asia appears generally to be smaller than the same species from the South Pacific. One can speculate whether this is due

to current heavy fishing, many generations of fishing having exerted a selective pressure for quick maturation and breeding at a small size, or some more fundamental difference. It would also be interesting to know whether sandfish from other areas, and those recently collected from the wild, fit into the same length–weight relation.