TABLE S1. Correlation coefficients between generic diversity of different fossil groups. Statistically significant correlations ($p < 0.05$) indicated by asterisks (*) or double asterisks (**) for statisitcally significant correlations after correction for mutliple comparisons using the false discovery rate procedure of Benjamini & Hochberg (1995).

	all groups	microfossils	brachiopods	bivalves	gastropods	cephalopods	ammonites	belemnites	echinoderms	vertebrates
all groups		$r_s = 0.4$, $p = 0.26$ $\tau = 0.3$, $p = 0.24$	$r_s = 0.62$, $p = 0.06$ $\tau = 0.49$, $p = 0.06$	$r_s = 0.7$, $p = 0.02$* $\tau = 0.52$, $p = 0.04$*	$r_s = 0.26$, $p = 0.46$ $\tau = 0.16$, $p = 0.53$	$r_s = 0.83$, $p = 0.003$* $\tau = 0.66$, $p = 0.009$*	$r_s = 0.88$, $p < 0.001$** $\tau = 0.72$, $p = 0.004$*	$r_s = 0.23$, $p = 0.51$ $\tau = 0.14$, $p = 0.58$	$r_s = 0.93$, $p < 0.001$** $\tau = 0.81$, $p = 0.001$*	$r_s = 0.76$, $p = 0.01$* $\tau = 0.65$, $p = 0.01$*
microfossils			$r_s = 0.23$, $p = 0.52$ $\tau = 0.16$, $p = 0.52$	$r_s = 0.24$, $p = 0.5$ $\tau = 0.18$, $p = 0.47$	$r_s = -0.12$, $p = 0.75$ $\tau = -0.04$, $p = 0.86$	$r_s = 0.13$, $p = 0.72$ $\tau = 0.02$, $p = 0.93$	$r_s = 0.15$, $p = 0.67$ $\tau = 0.02$, $p = 0.93$	$r_s = -0.04$, $p = 0.9$ $\tau = -0.05$, $p = 0.85$	$r_s = 0.41$, $p = 0.24$ $\tau = 0.26$, $p = 0.31$	$r_s = 0.64$, $p = 0.04$* $\tau = 0.47$, $p = 0.08$
brachiopods				$r_s = 0.67$, $p = 0.03$* $\tau = 0.6$, $p = 0.02$*	$r_s = 0.45$, $p = 0.19$ $\tau = 0.36$, $p = 0.17$	$r_s = 0.79$, $p = 0.007$* $\tau = 0.69$, $p = 0.008$*	$r_s = 0.78$, $p = 0.008$* $\tau = 0.66$, $p = 0.01$*	$r_s = 0.46$, $p = 0.18$ $\tau = 0.35$, $p = 0.19$	$r_s = 0.42$, $p = 0.23$ $\tau = 0.37$, $p = 0.16$	$r_s = 0.26$, $p = 0.46$ $\tau = 0.2$, $p = 0.47$
bivalves					$r_s = 0.45$, $p = 0.19$ $\tau = 0.37$, $p = 0.15$	$r_s = 0.49$, $p = 0.15$ $\tau = 0.4$, $p = 0.12$	$r_s = 0.57$, $p = 0.09$ $\tau = 0.44$, $p = 0.09$	$r_s = -0.07$, $p = 0.85$ $\tau = -0.05$, $p = 0.85$	$r_s = 0.52$, $p = 0.11$ $\tau = 0.45$, $p = 0.08$	$r_s = 0.19$, $p = 0.6$ $\tau = 0.17$, $p = 0.54$
gastropods						$r_s = 0.22$, $p = 0.55$ $\tau = 0.12$, $p = 0.65$	$r_s = 0.24$, $p = 0.51$ $\tau = 0.14$, $p = 0.59$	$r_s = 0.14$, $p = 0.7$ $\tau = 0.1$, $p = 0.71$	$r_s = 0.27$, $p = 0.45$ $\tau = 0.21$, $p = 0.41$	$r_s = -0.22$, $p = 0.55$ $\tau = -0.25$, $p = 0.36$
cephalopods							$r_s = 0.99$, $p < 0.001$** $r_s = 0.97$, $p < 0.001$**	$r_s = 0.65$, $p = 0.04$* $\tau = 0.53$, $p = 0.04$*	$r_s = 0.70$, $p = 0.02$* $\tau = 0.52$, $p = 0.04$*	$r_s = 0.59$, $p = 0.07$ $\tau = 0.53$, $p = 0.05$*
ammonites								$r_s = 0.49$, $p = 0.07$ $\tau = 0.45$, $p = 0.08$	$r_s = 0.74$, $p = 0.01$* $\tau = 0.57$, $p = 0.03$*	$r_s = 0.60$, $p = 0.07$ $\tau = 0.55$, $p = 0.04$*
belemnites									$r_s = 0.11$, $p = 0.76$ $\tau = 0.02$, $p = 0.96$	$r_s = 0.19$, $p = 0.6$ $\tau = 0.17$, $p = 0.53$
echinoderms										$r_s = 0.78$, $p = 0.008$* $\tau = 0.66$, $p = 0.02$*

TABLE S2. Correlation coefficients between species diversity of different groups. Statistically significant correlations ($p < 0.05$) indicated by asterisks (*) or double asterisks (**) for statisitcally significant correlations after correction for mutliple comparisons using the false discovery rate procedure of Benjamini & Hochberg (1995).

	all groups	microfossils	brachiopods	bivalves	gastropods	cephalopods	ammonites	belemnites	echinoderms	vertebrates
all groups		$r_s = 0.42$, $p = 0.23$ $\tau = 0.33$, $p = 0.22$	$r_s = 0.71$, $p = 0.02$* $\tau = 0.57$, $p = 0.02$*	$r_s = 0.73$, $p = 0.02$* $\tau = 0.58$, $p = 0.02$*	$r_s = 0.34$, $p = 0.34$ $\tau = 0.25$, $p = 0.32$	$r_s = 0.9$, $p < 0.001$** $\tau = 0.73$, $p = 0.002$*	$r_s = 0.9$, $p < 0.001$** $\tau = 0.76$, $p = 0.002$*	$r_s = 0.02$, $p = 0.95$ $\tau = 0.16$, $p = 0.52$	$r_s = 0.88$, $p < 0.001$** $\tau = 0.75$, $p = 0.003$*	$r_s = 0.78$, $p = 0.008$* $\tau = 0.71$, $p = 0.008$*
microfossils			$r_s = 0.15$, $p = 0.69$ $\tau = 0.16$, $p = 0.53$	$r_s = 0.39$, $p = 0.27$ $\tau = 0.3$, $p = 0.24$	$r_s = 0.06$, $p = 0.87$ $\tau = 0.07$, $p = 0.77$	$r_s = 0.32$, $p = 0.37$ $\tau = 0.16$, $p = 0.6$	$r_s = 0.21$, $p = 0.57$ $\tau = 0.09$, $p = 0.72$	$r_s = -0.08$, $p = 0.83$ $\tau = -0.07$, $p = 0.78$	$r_s = 0.55$, $p = 0.1$ $\tau = 0.39$, $p = 0.13$	$r_s = 0.68$, $p = 0.03$* $\tau = 0.49$, $p = 0.07$
brachiopods				$r_s = 0.71$, $p = 0.02$* $\tau = 0.6$, $p = 0.02$*	$r_s = 0.67$, $p = 0.03$* $\tau = 0.53$, $p = 0.04$*	$r_s = 0.72$, $p = 0.02$* $\tau = 0.57$, $p = 0.02$*	$r_s = 0.7$, $p = 0.02$* $\tau = 0.6$, $p = 0.02$*	$r_s = 0.54$, $p = 0.11$ $\tau = 0.45$, $p = 0.08$	$r_s = 0.44$, $p = 0.2$ $\tau = 0.4$, $p = 0.12$	$r_s = 0.3$, $p = 0.41$ $\tau = 0.22$, $p = 0.41$
bivalves					$r_s = 0.41$, $p = 0.24$ $\tau = 0.31$, $p = 0.23$	$r_s = 0.54$, $p = 0.11$ $\tau = 0.35$, $p = 0.17$	$r_s = 0.54$, $p = 0.1$ $\tau = 0.38$, $p = 0.14$	$r_s = 0.07$, $p = 0.84$ $\tau = 0.07$, $p = 0.78$	$r_s = 0.66$, $p = 0.04$* $\tau = 0.55$, $p = 0.03$*	$r_s = 0.33$, $p = 0.35$ $\tau = 0.29$, $p = 0.3$
gastropods						$r_s = 0.27$, $p = 0.44$ $\tau = 0.16$, $p = 0.53$	$r_s = 0.26$, $p = 0.47$ $\tau = 0.18$, $p = 0.47$	$r_s = 0.77$, $p = 0.009$* $\tau = 0.55$, $p = 0.03$*	$r_s = 0.29$, $p = 0.42$ $\tau = 0.26$, $p = 0.32$	$r_s = -0.13$, $p = 0.73$ $\tau = -0.14$, $p = 0.61$
cephalopods							$r_s = 0.98$, $p = < 0.001$** $\tau = 0.94$, $p = < 0.001$**	$r_s = 0.22$, $p = 0.54$ $\tau = 0.26$, $p = 0.32$	$r_s = 0.67$, $p = 0.03$* $\tau = 0.52$, $p = 0.04$*	$r_s = 0.75$, $p = 0.01$* $\tau = 0.65$, $p = 0.01$*
ammonites								$r_s = 0.19$, $p = 0.6$ $\tau = 0.19$, $p = 0.46$	$r_s = 0.69$, $p = 0.03$* $\tau = 0.55$, $p = 0.03$*	$r_s = 0.69$, $p = 0.03$* $\tau = 0.61$, $p = 0.02$*
belemnites									$r_s = -0.13$, $p = 0.71$ $\tau = -0.07$, $p = 0.78$	$r_s = -0.26$, $p = 0.47$ $\tau = -0.14$, $p = 0.61$
echinoderms										$r_s = 0.72$, $p = 0.02$* $\tau = 0.58$, $p = 0.03$*

TABLE S3. Correlation coefficients between sampling proxies. Statistically significant correlations ($p < 0.05$) indicated by asterisks (*) or double asterisks (**) for statisitcally significant correlations after correction for mutliple comparisons using the false discovery rate procedure of Benjamini & Hochberg (1995).

	thickness	2D outcrop area	3D outcrop area	2D estimated volume	3D estimated volume	2D exposure area	3D exposure area	publications	publications with sampling	authors	car parks within 1km	pubs within 1km
thickness		$r_s = 0.76, p = 0.02$* $\tau = 0.6, p = 0.02$*	$r_s = 0.7, p = 0.03$* $\tau = 0.56, p = 0.03$*	$r_s = 0.66, p = 0.04$* $\tau = 0.51, p = 0.05$*	$r_s = 0.66, p = 0.04$* $\tau = 0.51, p = 0.05$*	$r_s = 0.43, p = 0.22$ $\tau = 0.29, p = 0.29$	$r_s = 0.49, p = 0.15$ $\tau = 0.38, p = 0.16$	$r_s = 0.19, p = 0.61$ $\tau = 0.11, p = 0.73$	$r_s = 0.41, p = 0.24$ $\tau = 0.27, p = 0.28$	$r_s = 0.02, p = 0.95$ $\tau = 0, p = 1$	$r_s = 0.65, p = 0.04$* $\tau = 0.52, p = 0.04$*	$r_s = 0.59, p = 0.07$ $\tau = 0.41, p = 0.1$
2D outcrop area				$r_s = 0.96, p \ll 0.001$** $\tau = 0.91, p < 0.001$**		$r_s = 0.3, p = 0.41$ $\tau = 0.16, p = 0.6$		$r_s = -0.01, p = 1$ $\tau = -0.02\ p = 1$	$r_s = 0.18, p = 0.61$ $\tau = 0.13, p = 0.59$	$r_s = -0.22, p = 0.54$ $\tau = -0.19\ p = 0.46$	$r_s = 0.45, p = 0.2$ $\tau = 0.34\ p = 0.18$	$r_s = 0.19, p = 0.6$ $\tau = 0.12\ p = 0.64$
3D outcrop area					$r_s = 0.95, p \ll 0.001$** $\tau = 0.87, p < 0.001$**		$r_s = 0.26, p = 0.47$ $\tau = 0.11, p = 0.73$	$r_s = -0.04, p = 0.92$ $\tau = -0.07, p = 0.86$	$r_s = 0.13, p = 0.71$ $\tau = 0.09, p = 0.72$	$r_s = -0.26, p = 0.47$ $\tau = -0.24, p = 0.36$	$r_s = 0.37, p = 0.3$ $\tau = 0.3\ p = 0.24$	$r_s = 0.11, p = 0.77$ $\tau = 0.07\ p = 0.78$
2D estimated volume						$r_s = 0.33, p = 0.35$ $\tau = 0.16, p = 0.6$		$r_s = 0.09, p = 0.81$ $\tau = 0.07, p = 0.86$	$r_s = 0.27, p = 0.46$ $\tau = 0.22, p = 0.37$	$r_s = -0.12, p = 0.75$ $\tau = -0.09, p = 0.71$	$r_s = 0.45, p = 0.2$ $\tau = 0.34, p = 0.18$	$r_s = 0.17, p = 0.64$ $\tau = 0.12, p = 0.64$
3D estimated volume							$r_s = 0.31, p = 0.39$ $\tau = 0.16, p = 0.6$	$r_s = 0.09, p = 0.81$ $\tau = 0.07, p = 0.86$	$r_s = 0.27, p = 0.46$ $\tau = 0.22, p = 0.37$	$r_s = -0.12, p = 0.75$ $\tau = -0.09, p = 0.71$	$r_s = 0.45, p = 0.2$ $\tau = 0.34, p = 0.18$	$r_s = 0.17, p = 0.64$ $\tau = 0.12, p = 0.64$
2D exposure area								$r_s = 0.81, p = 0.008$* $\tau = 0.64, p = 0.009$*	$r_s = 0.85, p = 0.002$* $\tau = 0.67, p = 0.007$*	$r_s = 0.59, p = 0.07$ $\tau = 0.52, p = 0.04$*	$r_s = 0.77, p = 0.009$* $\tau = 0.57, p = 0.02$*	$r_s = 0.66, p = 0.04$* $\tau = 0.5, p = 0.05$*
3D exposure area								$r_s = 0.73, p = 0.02$* $\tau = 0.56, p = 0.03$*	$r_s = 0.77, p = 0.009$* $\tau = 0.58, p = 0.02$*	$r_s = 0.53, p = 0.11$ $\tau = 0.42, p = 0.1$	$r_s = 0.81, p = 0.005$* $\tau = 0.66, p = 0.009$*	$r_s = 0.71, p = 0.02$* $\tau = 0.55, p = 0.03$*
publications									$r_s = 0.95, p < 0.001$** $\tau = 0.85, p < 0.001$**	$r_s = 0.89, p < 0.001$** $\tau = 0.8, p = 0.002$*	$r_s = 0.66, p = 0.04$* $\tau = 0.48, p = 0.06$	$r_s = 0.75, p = 0.01$* $\tau = 0.64, p = 0.01$*
publications with sampling										$r_s = 0.82, p = 0.004$* $\tau = 0.74, p = 0.004$*	$r_s = 0.77, p = 0.009$* $\tau = 0.6, p = 0.02$*	$r_s = 0.79, p = 0.006$* $\tau = 0.68, p = 0.009$*
authors											$r_s = 0.56, p = 0.1$ $\tau = 0.31, p = 0.23$	$r_s = 0.67, p = 0.03$* $\tau = 0.53, p = 0.05$*
car parks within 1km												$r_s = 0.88, p < 0.001$** $\tau = 0.73, p = 0.005$*

TABLE S4. Correlation coefficients between generic diversity and sampling proxies. Statistically significant correlations ($p < 0.05$) indicated by asterisks (*) or double asterisks (**) for statisitcally significant correlations after correction for mutliple comparisons using the false discovery rate procedure of Benjamini & Hochberg (1995).

	all groups	microfossils	brachiopods	bivalves	gastropods	cephalopods	ammonites	belemnites	echinoderms	vertebrates
average thickness	$r_s = 0.25$, $p = 0.49$	$r_s = 0.37$, $p = 0.3$	$r_s = -0.12$, $p = 0.75$	$r_s = 0.26$, $p = 0.48$	$r_s = 0.25$, $p = 0.49$	$r_s = 0.04$, $p = 0.91$	$r_s = 0.09$, $p = 0.82$	$r_s = -0.14$, $p = 0.7$	$r_s = 0.21$, $p = 0.56$	$r_s = 0.36$, $p = 0.31$
	$\tau = 0.16$, $p = 0.6$	$\tau = 0.25$, $p = 0.32$	$\tau = -0.07$, $p = 0.78$	$\tau = 0.25$, $p = 0.32$	$\tau = 0.22$, $p = 0.37$	$\tau = 0.07$, $p = 0.79$	$\tau = 0.09$, $p = 0.72$	$\tau = -0.09$, $p = 0.71$	$\tau = 0.12$, $p = 0.65$	$\tau = 0.27$, $p = 0.31$
2D outcrop area	$r_s = -0.02$, $p = 0.97$	$r_s = 0.22$, $p = 0.54$	$r_s = -0.24$, $p = 0.5$	$r_s = 0.14$, $p = 0.7$	$r_s = -0.05$, $p = 0.89$	$r_s = -0.24$, $p = 0.5$	$r_s = -0.17$, $p = 0.64$	$r_s = -0.16$, $p = 0.66$	$r_s = -0.08$, $p = 0.83$	$r_s = 0.03$, $p = 0.94$
	$\tau = 0.02$, $p = 1$	$\tau = 0.16$, $p = 0.53$	$\tau = -0.16$, $p = 0.52$	$\tau = 0.16$, $p = 0.53$	$\tau = 0.02$, $p = 0.93$	$\tau = -0.16$, $p = 0.53$	$\tau = -0.09$, $p = 0.72$	$\tau = -0.09$, $p = 0.71$	$\tau = -0.02$, $p = 0.93$	$\tau = 0$, $p = 1$
3D outcrop area	$r_s = -0.03$, $p = 0.95$	$r_s = 0.12$, $p = 0.74$	$r_s = -0.2$, $p = 0.57$	$r_s = 0.15$, $p = 0.67$	$r_s = 0.02$, $p = 0.95$	$r_s = -0.21$, $p = 0.57$	$r_s = -0.13$, $p = 0.71$	$r_s = -0.07$, $p = 0.85$	$r_s = -0.12$, $p = 0.75$	$r_s = -0.05$, $p = 0.9$
	$\tau = -0.02$, $p = 1$	$\tau = 0.11$, $p = 0.65$	$\tau = -0.12$, $p = 0.65$	$\tau = 0.2$, $p = 0.42$	$\tau = 0.07$, $p = 0.79$	$\tau = -0.11$, $p = 0.65$	$\tau = -0.04$, $p = 0.86$	$\tau = -0.05$, $p = 0.85$	$\tau = -0.07$, $p = 0.78$	$\tau = -0.05$, $p = 0.84$
2D estimated volume	$r_s = 0.04$, $p = 0.92$	$r_s = 0.3$, $p = 0.39$	$r_s = -0.13$, $p = 0.72$	$r_s = 0.2$, $p = 0.59$	$r_s = 0.07$, $p = 0.85$	$r_s = -0.21$, $p = 0.55$	$r_s = -0.14$, $p = 0.7$	$r_s = -0.15$, $p = 0.68$	$r_s = -0.04$, $p = 0.89$	$r_s = 0.09$, $p = 0.81$
	$\tau = 0.11$, $p = 0.73$	$\tau = 0.25$, $p = 0.32$	$\tau = -0.07$, $p = 0.78$	$\tau = 0.25$, $p = 0.32$	$\tau = 0.11$, $p = 0.65$	$\tau = -0.16$, $p = 0.53$	$\tau = -0.09$, $p = 0.72$	$\tau = -0.09$, $p = 0.71$	$\tau = 0.02$, $p = 0.93$	$\tau = 0.05$, $p = 0.84$
3D estimated volume	$r_s = 0.04$, $p = 0.92$	$r_s = 0.3$, $p = 0.39$	$r_s = -0.13$, $p = 0.72$	$r_s = 0.2$, $p = 0.59$	$r_s = 0.07$, $p = 0.85$	$r_s = -0.21$, $p = 0.55$	$r_s = -0.14$, $p = 0.7$	$r_s = -0.15$, $p = 0.68$	$r_s = -0.04$, $p = 0.89$	$r_s = 0.09$, $p = 0.81$
	$\tau = 0.11$, $p = 0.73$	$\tau = 0.25$, $p = 0.32$	$\tau = -0.07$, $p = 0.78$	$\tau = 0.25$, $p = 0.32$	$\tau = 0.11$, $p = 0.65$	$\tau = -0.16$, $p = 0.53$	$\tau = -0.09$, $p = 0.72$	$\tau = -0.09$, $p = 0.71$	$\tau = 0.02$, $p = 0.93$	$\tau = 0.05$, $p = 0.84$
2D exposure area	$r_s = 0.72$, $p = 0.02$*	$r_s = 0.76$, $p = 0.01$*	$r_s = 0.38$, $p = 0.28$	$r_s = 0.57$, $p = 0.09$	$r_s = 0.03$, $p = 0.93$	$r_s = 0.51$, $p = 0.13$	$r_s = 0.58$, $p = 0.08$	$r_s = 0.26$, $p = 0.47$	$r_s = 0.62$, $p = 0.06$	$r_s = 0.67$, $p = 0.03$*
	$\tau = 0.51$, $p = 0.05$*	$\tau = 0.57$, $p = 0.02$*	$\tau = 0.12$, $p = 0.65$	$\tau = 0.34$, $p = 0.18$	$\tau = 0.02$, $p = 0.93$	$\tau = 0.25$, $p = 0.32$	$\tau = 0.31$, $p = 0.21$	$\tau = 0.24$, $p = 0.36$	$\tau = 0.44$, $p = 0.08$	$\tau = 0.54$, $p = 0.04$*
3D exposure area	$r_s = 0.61$, $p = 0.07$	$r_s = 0.79$, $p = 0.006$*	$r_s = 0.27$, $p = 0.45$	$r_s = 0.44$, $p = 0.2$	$r_s = -0.16$, $p = 0.65$	$r_s = 0.43$, $p = 0.21$	$r_s = 0.49$, $p = 0.15$	$r_s = 0.26$, $p = 0.47$	$r_s = 0.51$, $p = 0.13$	$r_s = 0.67$, $p = 0.03$*
	$\tau = 0.42$, $p = 0.11$	$\tau = 0.57$, $p = 0.02$*	$\tau = 0.07$, $p = 0.78$	$\tau = 0.25$, $p = 0.32$	$\tau = -0.06$, $p = 0.79$	$\tau = 0.25$, $p = 0.32$	$\tau = 0.31$, $p = 0.21$	$\tau = 0.24$, $p = 0.36$	$\tau = 0.35$, $p = 0.17$	$\tau = 0.54$, $p = 0.04$*
publications	$r_s = 0.92$, $p < 0.001$**	$r_s = 0.61$, $p = 0.06$	$r_s = 0.53$, $p = 0.12$	$r_s = 0.52$, $p = 0.12$	$r_s = 0.09$, $p = 0.81$	$r_s = 0.73$, $p = 0.02$*	$r_s = 0.77$, $p = 0.009$*	$r_s = 0.23$, $p = 0.53$	$r_s = 0.84$, $p = 0.002$**	$r_s = 0.89$, $p < 0.001$**
	$\tau = 0.78$, $p < 0.001$**	$\tau = 0.43$, $p = 0.09$	$\tau = 0.35$, $p = 0.17$	$\tau = 0.34$, $p = 0.18$	$\tau = -0.02$, $p = 0.93$	$\tau = 0.52$, $p = 0.04$*	$\tau = 0.58$, $p = 0.02$*	$\tau = 0.14$, $p = 0.58$	$\tau = 0.67$, $p = 0.008$*	$\tau = 0.82$, $p = 0.002$**
publications with sampling	$r_s = 0.92$, $p < 0.001$**	$r_s = 0.69$, $p = 0.03$*	$r_s = 0.52$, $p = 0.13$	$r_s = 0.61$, $p = 0.06$	$r_s = 0.13$, $p = 0.72$	$r_s = 0.68$ $p = 0.03$*	$r_s = 0.73$ $p = 0.02$*	$r_s = 0.16$, $p = 0.66$	$r_s = 0.86$ $p = 0.001$**	$r_s = 0.86$ $p = 0.001$**
	$\tau = 0.85$, $p < 0.001$**	$\tau = 0.46$, $p = 0.07$	$\tau = 0.33$, $p = 0.2$	$\tau = 0.48$, $p = 0.06$	$\tau = 0.02$, $p = 0.93$	$\tau = 0.51$, $p = 0.05$*	$\tau = 0.57$, $p = 0.02$*	$\tau = 0.07$, $p = 0.78$	$\tau = 0.75$, $p = 0.003$**	$\tau = 0.77$, $p = 0.004$**
authors	$r_s = 0.82$, $p = 0.004$**	$r_s = 0.47$, $p = 0.17$	$r_s = 0.32$, $p = 0.37$	$r_s = 0.25$, $p = 0.48$	$r_s = 0.07$, $p = 0.86$	$r_s = 0.64$, $p = 0.04$*	$r_s = 0.66$, $p = 0.04$*	$r_s = 0.24$, $p = 0.51$	$r_s = 0.85$, $p = 0.002$**	$r_s = 0.88$, $p < 0.001$**
	$\tau = 0.66$, $p = 0.01$*	$\tau = 0.31$, $p = 0.23$	$\tau = 0.2$, $p = 0.46$	$\tau = 0.22$, $p = 0.41$	$\tau = 0$, $p = 1$	$\tau = 0.41$, $p = 0.1$	$\tau = 0.43$, $p = 0.09$	$\tau = 0.15$, $p = 0.57$	$\tau = 0.72$, $p = 0.007$*	$\tau = 0.84$, $p = 0.003$**
car parks 1km	$r_s = 0.54$, $p = 0.11$	$r_s = 0.82$, $p = 0.004$**	$r_s = 0.1$, $p = 0.79$	$r_s = 0.15$, $p = 0.67$	$r_s = -0.2$, $p = 0.57$	$r_s = 0.34$, $p = 0.34$	$r_s = 0.36$, $p = 0.30$	$r_s = 0.17$, $p = 0.64$	$r_s = 0.57$, $p = 0.08$	$r_s = 0.8$, $p = 0.005$**
	$\tau = 0.48$, $p = 0.06$	$\tau = 0.63$, $p = 0.01$*	$\tau = 0.07$, $p = 0.78$	$\tau = 0.07$, $p = 0.79$	$\tau = -0.16$, $p = 0.52$	$\tau = 0.35$, $p = 0.17$	$\tau = 0.41$, $p = 0.1$	$\tau = 0.12$, $p = 0.64$	$\tau = 0.4$, $p = 0.12$	$\tau = 0.64$, $p = 0.02$*
pubs 1km	$r_s = 0.66$, $p = 0.04$*	$r_s = 0.64$, $p = 0.05$*	$r_s = 0.24$, $p = 0.51$	$r_s = 0.17$, $p = 0.65$	$r_s = -0.39$, $p = 0.26$	$r_s = 0.57$, $p = 0.09$	$r_s = 0.57$, $p = 0.08$	$r_s = 0.22$, $p = 0.54$	$r_s = 0.66$, $p = 0.04$*	$r_s = 0.92$, $p < 0.001$**
	$\tau = 0.55$, $p = 0.03$*	$\tau = 0.44$, $p = 0.09$	$\tau = 0.18$, $p = 0.51$	$\tau = 0.15$, $p = 0.58$	$\tau = -0.37$, $p = 0.16$	$\tau = 0.56$, $p = 0.03$*	$\tau = 0.56$, $p = 0.03$*	$\tau = 0.23$, $p = 0.39$	$\tau = 0.52$, $p = 0.05$*	$\tau = 0.88$, $p = 0.002$**

TABLE S5. Correlation coefficients between species diversity and sampling proxies. Statistically significant correlations ($p < 0.05$) indicated by asterisks (*) or double asterisks (**) for statisitcally significant correlations after correction for mutliple comparisons using the false discovery rate procedure of Benjamini & Hochberg (1995).

	all groups	microfossils	brachiopods	bivalves	gastropods	cephalopods	ammonites	belemnites	echinoderms	vertebrates
average thickness	$r_s = 0.2, p = 0.58$	$r_s = 0.35, p = 0.33$	$r_s = -0.15, p = 0.67$	$r_s = 0.3, p = 0.4$	$r_s = -0.41, p = 0.23$	$r_s = 0.22, p = 0.54$	$r_s = 0.19, p = 0.59$	$r_s = -0.35, p = 0.32$	$r_s = 0.23, p = 0.53$	$r_s = 0.36, p = 0.31$
	$\tau = 0.11, p = 0.73$	$\tau = 0.24, p = 0.38$	$\tau = -0.11, p = 0.65$	$\tau = 0.26, p = 0.32$	$\tau = -0.34, p = 0.18$	$\tau = 0.2, p = 0.48$	$\tau = 0.13, p = 0.59$	$\tau = -0.26, p = 0.32$	$\tau = 0.16, p = 0.53$	$\tau = 0.27, p = 0.31$
2D outcrop area	$r_s = -0.05, p = 0.89$	$r_s = 0.26, p = 0.47$	$r_s = -0.27, p = 0.44$	$r_s = 0.12, p = 0.73$	$r_s = -0.06, p = 0.87$	$r_s = -0.05, p = 0.89$	$r_s = -0.12, p = 0.75$	$r_s = -0.04, p = 0.91$	$r_s = -0.01, p = 0.97$	$r_s = 0.03, p = 0.94$
	$\tau = -0.02, p = 1$	$\tau = 0.2, p = 0.48$	$\tau = -0.16, p = 0.53$	$\tau = 0.16, p = 0.52$	$\tau = -0.02, p = 0.93$	$\tau = -0.02, p = 1$	$\tau = -0.09, p = 0.72$	$\tau = -0.02, p = 0.93$	$\tau = 0.02, p = 0.93$	$\tau = 0, p = 1$
3D outcrop area	$r_s = -0.06, p = 0.86$	$r_s = 0.16, p = 0.66$	$r_s = -0.24, p = 0.5$	$r_s = 0.11, p = 0.76$	$r_s = 0.01, p = 0.97$	$r_s = -0.04, p = 0.92$	$r_s = -0.09, p = 0.8$	$r_s = 0.06, p = 0.88$	$r_s = -0.05, p = 0.89$	$r_s = -0.05, p = 0.9$
	$\tau = -0.07, p = 0.86$	$\tau = 0.16, p = 0.6$	$\tau = -0.11, p = 0.65$	$\tau = 0.12, p = 0.65$	$\tau = 0.02, p = 0.93$	$\tau = 0.02, p = 1$	$\tau = -0.04, p = 0.86$	$\tau = 0.02, p = 0.93$	$\tau = -0.02, p = 0.93$	$\tau = -0.05, p = 0.84$
2D estimated volume	$r_s = 0.02, p = 0.97$	$r_s = 0.35, p = 0.33$	$r_s = -0.14, p = 0.69$	$r_s = 0.18, p = 0.61$	$r_s = 0.07, p = 0.85$	$r_s = -0.01, p = 1$	$r_s = -0.09, p = 0.8$	$r_s = 0.07, p = 0.8$	$r_s = 0.02, p = 0.96$	$r_s = 0.08, p = 0.81$
	$\tau = 0.07, p = 0.86$	$\tau = 0.29, p = 0.29$	$\tau = -0.07, p = 0.79$	$\tau = 0.26, p = 0.32$	$\tau = 0.07, p = 0.79$	$\tau = -0.02, p = 1$	$\tau = -0.09, p = 0.72$	$\tau = 0.07, p = 0.78$	$\tau = 0.07, p = 0.79$	$\tau = 0.05, p = 0.84$
3D estimated volume	$r_s = 0.02, p = 0.97$	$r_s = 0.35, p = 0.33$	$r_s = -0.14, p = 0.69$	$r_s = 0.18, p = 0.61$	$r_s = 0.07, p = 0.85$	$r_s = -0.01, p = 1$	$r_s = -0.09, p = 0.8$	$r_s = 0.07, p = 0.8$	$r_s = 0.02, p = 0.96$	$r_s = 0.08, p = 0.81$
	$\tau = 0.07, p = 0.86$	$\tau = 0.29, p = 0.29$	$\tau = -0.07, p = 0.79$	$\tau = 0.26, p = 0.32$	$\tau = 0.07, p = 0.79$	$\tau = -0.02, p = 1$	$\tau = -0.09, p = 0.72$	$\tau = 0.07, p = 0.78$	$\tau = 0.07, p = 0.79$	$\tau = 0.05, p = 0.84$
2D exposure area	$r_s = 0.67, p = 0.04$*	$r_s = 0.75, p = 0.02$*	$r_s = 0.31, p = 0.37$	$r_s = 0.65, p = 0.04$*	$r_s = 0.11, p = 0.76$	$r_s = 0.62, p = 0.06$	$r_s = 0.58, p = 0.08$	$r_s = -0.02, p = 0.95$	$r_s = 0.68, p = 0.03$*	$r_s = 0.67, p = 0.03$*
	$\tau = 0.47, p = 0.07$	$\tau = 0.51, p = 0.05$*	$\tau = 0.07, p = 0.79$	$\tau = 0.44, p = 0.08$	$r_s = 0.02, p = 0.93$	$r_s = 0.38, p = 0.16$	$r_s = 0.31, p = 0.21$	$r_s = -0.02, p = 0.93$	$r_s = 0.48, p = 0.06$	$r_s = 0.54, p = 0.04$*
3D exposure area	$r_s = 0.56, p = 0.1$	$r_s = 0.75, p = 0.02$*	$r_s = 0.2, p = 0.59$	$r_s = 0.54, p = 0.11$	$r_s = -0.07, p = 0.83$	$r_s = 0.56, p = 0.1$	$r_s = 0.51, p = 0.13$	$r_s = -0.12, p = 0.75$	$r_s = 0.56, p = 0.09$	$r_s = 0.67, p = 0.03$*
	$\tau = 0.38, p = 0.16$	$\tau = 0.51, p = 0.05$*	$\tau = -0.02, p = 0.93$	$\tau = 0.35, p = 0.17$	$\tau = -0.07, p = 0.79$	$\tau = 0.38, p = 0.16$	$\tau = 0.31, p = 0.21$	$\tau = -0.11, p = 0.65$	$\tau = 0.39, p = 0.13$	$\tau = 0.54, p = 0.04$*
publications	$r_s = 0.93, p < 0.001$**	$r_s = 0.65, p = 0.05$*	$r_s = 0.55, p = 0.1$	$r_s = 0.62, p = 0.06$	$r_s = 0.23, p = 0.53$	$r_s = 0.83, p = 0.006$*	$r_s = 0.78, p = 0.007$*	$r_s = -0.06, p = 0.87$	$r_s = 0.84, p = 0.003$**	$r_s = 0.89, p < 0.001$**
	$\tau = 0.82, p < 0.001$**	$\tau = 0.51, p = 0.05$*	$\tau = 0.39, p = 0.13$	$\tau = 0.44, p = 0.08$	$\tau = 0.11, p = 0.65$	$\tau = 0.64, p = 0.009$*	$\tau = 0.58, p = 0.02$*	$\tau = 0.07, p = 0.78$	$\tau = 0.66, p = 0.009$*	$\tau = 0.82, p = 0.002$**
publications with sampling	$r_s = 0.91, p < 0.001$**	$r_s = 0.72, p = 0.02$*	$r_s = 0.53, p = 0.12$	$r_s = 0.7, p = 0.02$*	$r_s = 0.2, p = 0.58$	$r_s = 0.8, p = 0.005$*	$r_s = 0.75, p = 0.01$*	$r_s = -0.06, p = 0.87$	$r_s = 0.87, p = 0.001$**	$r_s = 0.88, p = 0.001$**
	$\tau = 0.81, p = 0.001$**	$\tau = 0.54, p = 0.03$*	$\tau = 0.37, p = 0.15$	$\tau = 0.59, p = 0.02$*	$\tau = 0.07, p = 0.79$	$\tau = 0.63, p = 0.01$*	$\tau = 0.57, p = 0.02$*	$\tau = 0.04, p = 0.85$	$\tau = 0.74, p = 0.004$**	$\tau = 0.77, p = 0.004$**
authors	$r_s = 0.82, p = 0.004$**	$r_s = 0.51, p = 0.14$	$r_s = 0.37, p = 0.29$	$r_s = 0.34, p = 0.34$	$r_s = 0.06, p = 0.86$	$r_s = 0.72, p = 0.02$*	$r_s = 0.71, p = 0.02$*	$r_s = -0.15, p = 0.67$	$r_s = 0.79, p = 0.007$*	$r_s = 0.9, p < 0.001$**
	$\tau = 0.66, p = 0.01$*	$\tau = 0.33, p = 0.2$	$\tau = 0.24, p = 0.36$	$\tau = 0.32, p = 0.23$	$\tau = 0, p = 1$	$\tau = 0.52, p = 0.04$*	$\tau = 0.48, p = 0.07$	$\tau = -0.05, p = 0.85$	$\tau = 0.63, p = 0.02$*	$\tau = 0.84, p = 0.003$**
car parks 1km	$r_s = 0.51, p = 0.14$	$r_s = 0.85, p = 0.002$**	$r_s = 0.05, p = 0.89$	$r_s = 0.29, p = 0.42$	$r_s = -0.15, p = 0.68$	$r_s = 0.53, p = 0.11$	$r_s = 0.45, p = 0.2$	$r_s = -0.16, p = 0.66$	$r_s = 0.59, p = 0.08$	$r_s = 0.8, p = 0.005$**
	$\tau = 0.43, p = 0.09$	$\tau = 0.7, p = 0.005$*	$\tau = 0.02, p = 0.93$	$\tau = 0.17, p = 0.52$	$\tau = -0.12, p = 0.65$	$\tau = 0.48, p = 0.06$	$\tau = 0.41, p = 0.1$	$\tau = -0.12, p = 0.65$	$\tau = 0.44, p = 0.08$	$\tau = 0.64, p = 0.02$*
pubs 1km	$r_s = 0.67, p = 0.03$*	$r_s = 0.65, p = 0.04$*	$r_s = 0.23, p = 0.52$	$r_s = 0.32, p = 0.37$	$r_s = -0.25, p = 0.48$	$r_s = 0.73, p = 0.02$*	$r_s = 0.67, p = 0.03$*	$r_s = -0.28, p = 0.44$	$r_s = 0.61, p = 0.06$	$r_s = 0.92, p < 0.001$**
	$\tau = 0.6, p = 0.02$*	$\tau = 0.45, p = 0.08$	$\tau = 0.17, p = 0.51$	$\tau = 0.25, p = 0.35$	$\tau = -0.22, p = 0.4$	$\tau = 0.64, p = 0.01$*	$\tau = 0.63, p = 0.02$*	$\tau = -0.18, p = 0.51$	$\tau = 0.46, p = 0.08$	$\tau = 0.87, p = 0.002$**