

## Metadata for Ediacaran census counts

Retrodeformed length calculated as:

$$\text{sqrt}((\text{exp\_fact} * \cos(\text{radians}(\text{angle} - \text{raw\_orient})) * \text{raw\_length})^2 + (\sin(\text{radians}(\text{angle} - \text{raw\_orient})) * \text{raw\_length})^2)$$

Retrodeformed orientation calculated as:

$$\text{degrees}(\text{radians}(\text{angle}) - \text{atan}(((1/\text{exp\_fact}) * \tan(\text{radians}(\text{angle} - \text{raw\_orient}))))))$$

Retrodeformed width calculated as:

$$\text{sqrt}((\text{exp\_fact} * \cos(\text{radians}((\text{angle} - 90) - \text{raw\_orient})) * \text{raw\_width})^2 + (\sin(\text{radians}((\text{angle} - 90) - \text{raw\_orient})) * \text{raw\_width})^2)$$

Expansion factors and cleavage angles used for each surface:

	exp_fact	angle
BC	1.47	316
D	1.67	320
E	1.67	320
G	1.55	320
LMP	1.55	323
PC	*	*
SH	1.53	318

Two lengths and orientations are given for bent or folded fossils

Disc diameters measured parallel to cleavage direction so do not require retrodeformation

Length of unknown specimens measured parallel to cleavage (width measured perpendicular)

\*Pigeon Cove (PC) surface was counted from photographs, which were digitally retrodeformed, so only retrodeformed sizes/positions available

Shingle Head (SH) specimens do not have measured positions because of irregular surface of bedding plane