

**Q. Is there a difference in FISH diversity between REEF 1 & REEF 2 ?**

Method: Data was collected using BRUV (baited remote underwater video). Analysis: Footage was paused every 5 seconds to I.D and count. Averages were calculated (excluding zero counts) and recorded as 'n'.

**SAMPLE 1: Reef 1: Structurally complex coral reef**

IDENTIFY		COUNT	Simpson	Shannon-Wiener ("ln" is the Inverse button on calculator)		
Name	n	n(n -1)	n/N	ln(n/N)	(n/N) ln(n/N)	
1	<i>Cromileptes altivelis</i> (Barramundi cod)	2	2	0.08695652174	-2.442347035	-0.212378003
2	<i>Epinephelus tukula</i> (Potato cod)	1	0	0.04347826087	-3.135494216	-0.136325835
3	<i>Lutjanus sebae</i> (Red Emperor)	1	0	0.04347826087	-3.135494216	-0.136325835
4	<i>Synodus dermatogenys</i> (Two-spot Lizardfish)	4	12	0.17391304348	-1.749199855	-0.304208670
5	<i>Forcipiger flavissimus</i> (Long-nosed Butterflyfish)	4	12	0.17391304348	-1.749199855	-0.304208670
6	<i>Pomacanthus imperator</i> (Emperor Angelfish)	2	2	0.08695652174	-2.442347035	-0.212378003
7	<i>Abudefduf sexfasciatus</i> (Scissortail Sergeant)	4	12	0.17391304348	-1.749199855	-0.304208670
8	<i>Labrichthys unilineatus</i> (Cleanerfish)	3	6	0.13043478261	-2.036881927	-0.265680251
9	<i>Chlorurus frontalis</i> (Reefcrest Parrotfish)	2	2	0.08695652174	-2.442347035	-0.212378003
<b>Total</b>		<b>N</b> 23	$\Sigma n(n-1)$ 48			$-\Sigma (n/N) \ln(n/N)$ 2.088

**SAMPLE 2: Reef 2: Flattened, algae-dominated reef**

IDENTIFY		COUNT	Simpson	Shannon-Wiener		
Name	n	n(n -1)	n/N	ln(n/N)	(n/N) ln(n/N)	
1	<i>Scorpaenodes varipinnis</i> (Ornate Scorpionfish)	2	2	0.07142857143	-2.63905733	-0.188504095
2	<i>Hemiramphus far</i> (Barred Garfish)	25	600	0.89285714286	-0.11332868	-0.10118632
3	<i>Synodus dermatogenys</i> (Two-spot Lizardfish)	1	0	0.03571428571	-3.33220451	-0.119007304
<b>Total</b>		<b>N</b> 28	$\Sigma n(n-1)$ 602			$-\Sigma (n/N) \ln(n/N)$ 0.409

Diversity Indices	Species Richness	Simpsons Diversity (SDI)	Shannon-Weiner (H)	Sorrensen (CC)	Jaccard (T)
Sample 1	9	$1-[48/(23^2)]$ 0.905	2.088	$2C / (S1+S2)$ C=1 S1=9 S2=3 $2(1) / (9+3)$	$a / (a+b+c)$ a=1 b=8 c=2 $1 / (1+8+2)$
Sample 2	3	$1-[602/(28^2)]$ 0.2037	0.409	0.1666'	0.09091

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