TUIM06MV
Van Dover Cruise Report

Jason Lowering 140, Lau Basin, Kilo Moana. Collected 1 mussel pot (of 1 available) from small patch of mussels at x = 6959, y = 10651, z = 2621 m. Sample was not good – 7 mussels total. Deployed Marker A at the mussel sampling site.

Jason Lowering 141, Lau Basin, Kilo Moana. Returned to Marker A and attempted 4 mussel pots. The drawstring snapped on 2 of the mussel pots. The first of these, Pot 4, yielded 14 *Bathymodiolus brevior* and 1 possible *B. elongatus* and was treated as if it was a good sample, i.e., we washed and sieved the sample. The site was difficult to work; neither of the other two pot attempts were successful. *Branchipolynoe* sp. inside the mussels were scarce – only one was recovered.

Jason Lowering 142, Lau Basin, Tow Cam. Collected 4 successful pots (max = 27 mussels in one pot); no *B. elongatus* evident. These mussel pot samples all came from a single small sulfide chimney near Mkr 12 of the Tivey leg. We placed another Marker A at this site x = 6528, y = 5380, z = 2714 m. On first approach, the mussel bed was covered with shrimp and galatheids, but these moved away as we worked. There was also a chiridotid nearby, and bythograeid crabs. Mussels rarely contained commensal polynoids. Temperature in the mussel bed was 6.8. NB, the drawstring on Pot 4 was frayed; we used a dremel tool to smooth the rough edge of the drawstring guide.

Jason Lowering 143, Lau Basin, Tu'i Malila. Collected 2 'snail' pots plus attempted 2 pots. Pot 4 was best with 19 *Alviniconcha* and 6 *Ifremeria*. Pot 3: 4 *Alviniconcha*, 1 *Ifremeria*, 2 *Bathymodiolus*, plus a sulfide spire with attached barnacles. Pot 1: 1 myxine fish. Pot 2: 1 *Ifremeria*. Washings from pots 1 and 2 combined. Gill and mantle tissue from each snail (both species) dried for stable isotope analysis. Strings on pots 1 and 2 broke; polished guide to prevent chaffing on two pots; attempted to remove burs on pots for next dive. Polynoid slurp: dissected 4 live animals for reproductive anatomy (TEM and LM) plus preserved in formalin ~20 individuals. Possibly 2 polynoid species (1 and 2) in this collection.

Jason Lowering 144, Lau Basin, Tu'i Malila. Collected 2 mussel pots plus one large scoop of mussels in Biobox 4 (65 mussels). Pot 1 was good [63 mussels, numerous Eosipho (to RCV)], pot 2 marginal (11 mussels + 6 large *Ifremeriai*). Pots 1 and 2 were taken from different areas at the Mkr 22 site. Bio Box 4 came from the Mkr 27 site, just north. (Snail samples from Jason 143 were from the southern smoker complexes). Many commensal polychaetes. This differs from mussels of Tow Cam and Kilo Moana sites, where commensals were rare. Commensals were largest in these mussels, compared to mussels from previous day's dive, and were all female except 2-3 males.

Jason Lowering 145, Lau Basin, Hine Hina. No mussel samples. Mussel pots used to collect sediment. Xpndr wire coils on rebound so as to be useless. The northern site includes old, oxidized sulfides, but seems to have a more seep-like character now to its fauna, including possibly a different species of mussel with low relief, radiating ribs. Collected *Branchipolynoe* from the mussels (n.b., likely not *Bathymodiolus brevior*) and dissected gonads and other reproductive organs for ultrastructural studies.

Jason Lowering 146, Lau Basin, Hine Hina South. No mussel samples. Collected *Provanna segonzaci* from sulfur rock for isotopes, repro bio (LM, TEM). Fixed gills, digestive gland, male and female gonads in glut; also prepared 3 formalin-fixed vials of ~20 snails each for LM by breaking open tips of shell; 60 Provanna dried in shells for isotopes; remainder of snails preserved in formalin (10%); sulfur crystals air dried.

Jason Lowerings 147, 148, Fiji Basin, Mussel Valley. Could not locate vent site, even after confirming presence of site with CTD casts.

Jason Lowering 149, Fiji Basin, S of White Lady. Mussel Pot #2 collected from an area of what appears to be very low flow. Mussels were generally scarce; where they existed in this local region, they seemed to be in the crack of a fissure and unreachable by pots. The exception was this one sample, which returned with 26 mussels plus a number of Ifremeria. A great sample. The sample included a rock with a large

terebellids worm in a tube, which we gave to Greg Rouse; a new species, he thinks. We also had one mussel with a nautiliniellid. Mussels were pretty uniformly infested with large female Branchipolynoe and scarce males. In helping dissect mussels for the Vrijenhoek lab, there were specimens where it was possible to tease out 10 or more juvenile polynoids from the gill filaments.

Jason Lowering 150, Fiji Basin, Mussel Hill (?). Collected 4 pots along a line of mussels in a fairly extensive mussel-snail bed (15-20 m max dimension). First pot was on outer edge, then worked into the bed. Last pot was a mix of *Ifremeria* and *Bathymodiolus*. Only 3 of the pots had fair to excellent recovery.

Jason Lowering 151, Fiji Basin, Mussel Hill. Attempted 4 pots, but only 3 worked and 1 of those 3 was problematic. We are still plagued by breaking strings. Continuing to find "brown-spot" disease. Preserved material in formalin for further study.

Jason Lowering 152, Fiji Basin, Mussel Hill. Collected 4 pots and processed mussels with attention to disease. Pot #4 came from the same small area of the bed where the disease was noted on JL 151. The other 3 pots all contained mussels affected by the disease. There appears to be a progression from brown spots to a black stage. Material from healthy, brown spot, and black mussels was preserved in formalin, EtOH and glutaraldehyde. All shells reserved and the health status of each mussel sampled was recorded.

Summary

										Volume					Number of Mussels				
	Site	Date	Time	Event #	X	Y	Z	Lat	Lon	P1	P2	P3	P4	Biobox	P1	P2	P3	P4	Biobox
Jason 140	Kilo Moana	17-May	20:00 to 20:03	412	6959	10651	2622	20 3.22S	176 8.005W		1.2					7			
Jason 141	Kilo Moana	18-May	21:00 to 21:30	1573	6951	10653	2622	20 3.22 S	176 8.005W				2.0					15	
Jason 142	Tow Cam	19-May	20:23 to 21:21	2904	6528	6525.79	5381.07	20 19.08	176 8.24W	2.4	2.2	2.2	2.6		27	17	17	17	
Jason 143	Tu'i Malila	20-May	03:20 to 03:30	4934	1476.28	2825.54	1867.52	21 59.46	176 34.14W	Snails Only									
				5954	1480.41	2821.66	1871.36	21 59.47	176 34.13W										
Jason 144	Tu'i Malila	21-May	22:37	5615	1581	3180	1895	21 59.28	176 34.07W	3.3					63				
			3:23	6256	1596	3174	1895	21 59.28	176 34.07W		1.9					11			
Jason 144	Tu'i Malila	21-May	4:32	6420	1602.98	3203.19	1900	21 59.26	176 34.06W					8.4					65
TOTALs Lau Basin										5.7	5.0	2.0	5.0	8.4	30	35	17	32	65
														26.1					179
FIJI BASIN:														TOTAL					TOTAL
Jason 149	S of White Lady	28-May	6:23:46		1572	2790	1991	16 59.48 S	173 54.88 E		1.9			1.9		26			26.0
Jason 150	Mussel Hill	29-May	23:50 to 00:23	12300	1598	2861	1990	16 59.44 S	173 54.90 E	3.7	2.0	1.2	0.1	7.0	28	21	12	1	62.0
Jason 151	Mussel Hill	30-May	20:28 to 21:02	12865	1605	2848	1989	16 59.45 S	173 54.90 E	2.6				2.6	20				20.0
				12775	1605	2861		16 59.44 S	173 54.90 E			2.6		2.6			21		21.0
				12834	1609	2856		16 59.45 S	173 54.90 E				2.4	2.4				20	20.0
Jason 152	Mussel Hill	31-May	20:33 to 21:20	14032	1604	2864	1989	same	same	2.6				2.6	16				16.0
			includes some T-meas	14090	1604	2861					1.0			1.0		18			18.0
			Alviniconcha: 44.6	14104	1606	2862						2.3		2.3			6		6.0
			Ifremeria: 24.2	14122	1609	2868							2.3	2.3				17	17.0
			Mussels: 7.7																
											TOTAL VOLUME			24.7		TOTAL NUMBER			206