



Answer Key for Lesson 4: Bolus Data Sheets

Please use the following answer key as a **guideline** for the bolus quantification activity.

Scientists use real boluses and dissecting scopes to determine the differences between items. Without this ability, answers will vary, due to limitations of photograph quality and student interpretation of specific bolus items.

Answers will be different when counting bolus images by quadrat (PRINT version) or the entire image (PROJECTION version), due to double counting of edge pieces. This key was made by counting the 4 PRINTED quadrats.

The rows labeled quadrats Top Left/Right and Bottom Left/Right are identified in the headers of the PRINT version of the bolus images.

Practicing the methods of identification, quantification, and math skills are the goals of this activity. It is not expected that student answers match this key exactly.

Enjoy the activity!

~ *Winged Ambassadors Team*

WINGED AMBASSADORS

OCEAN LITERACY THROUGH THE EYES OF ALBATROSS



Colony: Tern 2009

Species: BFAL ID 289 No. 16

	Plastic Items <small>* use different method for plastic line</small>			Prey Items		Other Items	Total
	Fragments	Foam, Rubber	Sheets	Squid Beaks	Eye Lenses	Seeds, Pumice,	Count without edges
	Count	Count	Count	Count	Count	Count	
Quadrat A (top left)	16	4	0	87 (91 with edge pieces)	0	0	107
Quadrat B (top right)	9	0	3	86	7	0	105
Quadrat C (bottom left)	10	0	0	101	1	0	112
Quadrat D (bottom right)	0	0	0	47 (53 with edge pieces)	0	0	47
Total Count	35	4	3	321	8	0	371
% of Total	9%	1%	1%	87%	2%	0%	100%

WINGED AMBASSADORS



OCEAN LITERACY THROUGH THE EYES OF ALBATROSS

Colony: Kure 2008

Species: BFAL ID 028 No. 28

	Plastic Items <small>* use different method for plastic line</small>			Prey Items		Other Items	Total
	Fragments	Foam, Rubber	Sheets	Squid Beaks	Eye Lenses	Seeds, Pumice, Other	Count without edges
	Count	Count	Count	Count	Count	Count	
Quadrat A (top left)	2	14	4	36	0	0	56
Quadrat B (top right)	6	22	17	73	0	0	118
Quadrat C (bottom left)	9	5	2	104 (106 with edge pieces)	1	0	121
Quadrat D (bottom right)	2	0	1	29 (33 with edge pieces)	0	0	32
Total Count	19	41	24	242	1	0	327
% of Total	5.8	12.6	7.3	74	0.3	0%	100%

WINGED AMBASSADORS

OCEAN LITERACY THROUGH THE EYES OF ALBATROSS



Colony: Tern 2009

Species: LAAL ID 359 No. 22

	Plastic Items <small>* use different method for plastic line</small>			Prey Items		Other Items	Total
	Fragments	Foam, Rubber	Sheets	Squid Beaks	Eye Lenses	Seeds, Pumice, Other	Count without edges
	Count	Count	Count	Count	Count	Count	
Quadrat A (top left)	9	5	3	77	0	2 unknown	96
Quadrat B (top right)	7	0	3	61	0	0	71
Quadrat C (bottom left)	6	0	3	80 (84 with edge pieces)	0	0	89
Quadrat D (bottom right)	0	0	1	29	0	0	30
Total Count Entire Bolus	22	5	10	247	0	2 unknown	286
% of Total	7.7	1.7	3.5	86.4	0	0.7	100%

WINGED AMBASSADORS



OCEAN LITERACY THROUGH THE EYES OF ALBATROSS

Colony: Kure 2008

Species: LAAL ID 536 No. 25

	Plastic Items <small>* use different method for plastic line</small>			Prey Items		Other Items	Total
	Fragments	Foam, Rubber	Sheets	Squid Beaks	Eye Lenses	Seeds, Pumice, Other	Count without edges
	Count	Count	Count	Count	Count	Count	
Quadrat A (top left)	25	15	8	43	4	0	95
Quadrat B (top right)	22	0	0	68	0	0	90
Quadrat C (bottom left)	38	0	0	81	0	0	119
Quadrat D (bottom right)	31	0	0	60	0	0	91
Total Count Entire Bolus	116	15	8	252	4	0	395
% of Total	29.4	3.8	2	63.8	1	0%	100%



Colony: Tern 2009	
Species: BFAL ID 289 No. 16	
	Plastic Line
	Area (L x W)
Quadrat Data A (top left)	0
Quadrat Data B (top right)	2.3 in x 1.5 in = 3.45 sq. in 5.8 cm x 3.8 cm = 22.04 sq. cm
Quadrat Data C (bottom left)	0
Quadrat Data D (bottom right)	3.75 in x 4.75 in = 16.48 sq. in 12.1 cm x 9.5 cm = 114.95 sq. cm
Total Area of Line	25.93 sq. in OR 136.99 sq. cm



Colony: Kure 2008	
Species: BFAL ID 028 No. 28	
	Plastic Line
	Area (L x W)
Quadrat Data A (top left)	0
Quadrat Data B (top right)	1.5 in x 1.0 in = 1.5 sq. in 3.8 cm x 2.5 cm = 9.5 sq. cm
Quadrat Data C (bottom left)	0
Quadrat Data D (bottom right)	6.25 in x 3.4 in = 21.25 sq. in 15.9 cm x 8.6 cm = 136.74 sq. cm
Total Area of Line	22.75 sq. in OR 146.24 sq. cm



Colony: Tern 2009	
Species: LAAL ID 359 No. 22	
	Plastic Line
	Area (L x W)
Quadrat Data A (top left)	0
Quadrat Data B (top right)	0
Quadrat Data C (bottom left)	2 in x 1.4 in = 2.8 sq in 5 cm x 3.5 cm = 20 sq cm
Quadrat Data D (bottom right)	3.25 in x 3.0 in = 9.75 sq. in 8.3 cm x 7.6 cm = 63.1 sq. cm
Total Area of Line	12.55 sq. in OR 83.1 sq cm



Colony: Kure 2008	
Species: LAAL ID 536 No. 25	
	Plastic Line
	Area (L x W)
Quadrat Data A (top left)	2 in x 2.4 in = 4.8 sq. in 5 cm x 6 cm = 30 sq. cm
Quadrat Data B (top right)	0
Quadrat Data C (bottom left)	0
Quadrat Data D (bottom right)	0
Total Area of Line	4.8 sq. in OR 30 sq. cm