S5 Table

A) Linear mixed effects regression model with a random effect of rater ID and fixed effects for density, oedema, year and size (with 95% confidence interval) to determine the effect of artificial bubo characteristics on measurement accuracy

Characteristic	Regression coefficient	95% CI	p-value
Size*			
120.3mm	-5.51	-9.52 to -1.51	0.007
94.7	3.22	-1.58 to 8.03	0.189
77.8	16.1	12.0 to 20.1	<0.001
64.9	-13.2	8.45 o 18.0	<0.001
52.7	40.5	36.0 to 45.1	<0.001
Density	-1.76	-5.01 to 1.48	0.287
Year	9.44	6.53 to 12.4	<0.001
Presence of oedema	2.60	-0.95 to 6.16	0.151

*Compared to largest artificial bubo (121.6mm)

B) Number and percentage of measurements recorded within 5% intervals of the artificial bubo's true size, shown until 95% of all measurements are captured

Characteristic	5%	10%	15%	20%	25%	30%	35%	40%	45%	50%	55%	60%	65%	70%	75%	80%	85%	90%	95%	100%
Overall (N=698)	179 (26%)	307 (44%)	403 (58%)	464 (66%)	508 (73%)	550 (79%)	574 (82%)	592 (85%)	610 (87%)	627 (90%)	638 (91%)	645 (92%)	657 (94%)	664 (95%)	-	-	-	-	-	-
Hard (N=349)	87 (25%)	147 (42%)	197 (56%)	223 (64%)	244 (70%)	270 (77%)	284 (81%)	294 (84%)	309 (89%)	319 (91%)	321 (92%)	326 (93%)	331 (95%)	-	-	-	-	-	-	-
Soft (N=349)	92 (26%)	160 (46%)	206 (59%)	241 (69%)	264 (76%)	280 (80%)	290 (83%)	298 (85%)	301 (86%)	308 (88%)	317 (91%)	319 (91%)	326 (93%)	328 (94%)	336 (96%)	-	-	-	-	-
Oedema (N=213)	66 (31%)	111 (52%)	148 (69%)	166 (78%)	181 (85%)	188 (88%)	192 (90%)	193 (91%)	194 (91%)	196 (92%)	197 (92%)	200 (94%)	205 (96%)	-	-	-	-	-	-	-
No oedema (N=485)	113 (23%)	196 (40%)	255 (53%)	298 (61%)	327 (67%)	362 (75%)	382 (79%)	399 (82%)	416 (86%)	431 (89%)	441 (91%)	445 (92%)	452 (93%)	458 (94%)	466 (96%)	-	-	-	-	-
Size = 121.6 (N=108)	36 (33%)	64 (59%)	86 (80%)	91 (84%)	97 (90%)	103 (95%)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Size = 120.3 (N=160)	62 (39%)	96 (60%)	130 (81%)	141 (88%)	150 (94%)	153 (96%)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Size = 94.7 (N=88)	26 (30%)	48 (55%)	57 (65%)	73 (83%)	76 (86%)	79 (90%)	81 (92%)	82 (93%)	84 (95%)	-	-	-	-	-	-	-	-	-	-	-
Size = 77.8 (N=150)	32 (21%)	56 (37%)	78 (52%)	91 (61%)	101 (67%)	112 (75%)	114 (76%)	120 (80%)	122 (81%)	127 (85%)	130 (87%)	132 (88%)	137 (91%)	137 (91%)	140 (93%)	141 (94%)	142 (95%)	-	-	-
Size = 64.9 (N=86)	16 (19%)	33 (38%)	39 (45%)	46 (53%)	56 (65%)	69 (80%)	75 (87%)	77 (90%)	81 (94%)	82 (95%)	-	-	-	-	-	-	-	-	-	-
Size = 52.7 (N=106)	7 (7%)	10 (9%)	13 (12%)	22 (21%)	28 (26%)	34 (32%)	40 (38%)	49 (46%)	59 (56%)	67 (63%)	74 (70%)	75 (71%)	82 (77%)	87 (82%)	94 (89%)	96 (91%)	97 (92%)	100 (94%)	100 (94%)	102 (96%)

C) Mean absolute difference (mm), standard deviation (SD) and limits of agreement (LoA) between raters' first and second measurements for all artificial buboes and per characteristic

	Median percentage difference (range)	Median absolute difference, mm (range)	LoA for BA plots*	
			Lower	Upper
Overall (N = 239)	11% (0% to 129%)	11.84 (0.03 to 76.87)	-51.56	34.27
Hard (N = 121)	12% (0% to 104%)	11.84 (0.14 to 64.18)	-46.84	31.89
Soft (N = 118)	11% (0% to 129%)	12.2 (0.03 to 76.87)	-56.17	36.49
Oedema (N = 66)	12% (0% to 129%)	12.67 (0.03 to 76.87)	-54.83	31.60
No oedema (N = 173)	12% (0% to 104%)	11.46 (0.08 to 72.06)	-50.22	35.20
Size = 121.6 (N = 40)	9% (0% to 51%)	11.69 (0.17 to 53.9)	-43.27	27.71
Size = 120.3 (N = 58)	9% (0% to 69%)	11.22 (0.03 to 72.06)	-48.09	34.61
Size = 94.7 (N = 26)	10% (0% to 54%)	10.75 (0.40 to 56.58)	-50.01	34.39
Size = 77.8 (N = 51)	15% (2% to 128%)	13.24 (1.56 to 76.87)	-72.12	42.05
Size = 64.9 (N = 25)	16% (0% to 38%)	1.48 (0.08 to 26.40)	-31.28	22.77
Size = 52.7 (N = 39)	12% (0% to 104%)	10.87 (0.17 to 64.18)	-45.64	30.89

*using +ve and -ve values

D) Average n of intrarater second measurements within 5% intervals of the rater's first measurement

Characteristic and average number of measurements per rater	5%	10%	15%	20%	25%	30%	35%	40%	45%	50%	55%	60%	65%	70%	75%	80%
Overall (N=12)	3	5	7	8	9	10	10	11	11	11	11	11	11	12	-	-
Hard (N=6)	1	3	4	4	5	5	5	6	-	-	-	-	-	-	-	-
Soft (N=6)	1	3	4	4	4	5	5	5	5	5	5	5	5	6	-	-
Oedema (N=3)	1	1	2	2	2	3	-	-	-	-	-	-	-	-	-	-
No oedema (N=9)	2	4	5	6	6	7	7	8	8	8	8	8	9	-	-	-
Size = 121.6 (N=2)	1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-
Size = 120.3 (N = 3)	1	2	2	2	2	3	-	-	-	-	-	-	-	-	-	-
Size = 94.7 (N = 1)	0	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Size = 77.8 (N = 2)	0	1	1	1	2	-	-	-	-	-	-	-	-	-	-	-
Size = 64.9 (N = 1)	0	0	1	-	-	-	-	-	-	-	-	-	-	-	-	-
Size = 52.7 (N = 2)	0	1	1	1	1	1	1	2	-	-	-	-	-	-	-	-

E) Number and percentage of raters' second measurements recorded within 5% intervals of the raters' first measurement of the same artificial bubo, shown until 95% of all measurements are captured

Characteristic	5% n (%)	10% n (%)	15% n (%)	20% n (%)	25% n (%)	30% n (%)	35% n (%)	40% n (%)	45% n (%)	50% n (%)	55% n (%)	60% n (%)	65% n (%)	70% n (%)	75% n (%)	80% n (%)	85% n (%)
Overall (N=238)	56 (23%)	107 (45%)	145 (61%)	165 (69%)	174 (73%)	195 (82%)	203 (85%)	211 (88%)	219 (92%)	225 (94%)	227 (95%)	-	-	-	-	-	-
Hard (119)	33 (28%)	56 (47%)	75 (63%)	91 (76%)	94 (79%)	102 (86%)	105 (88%)	109 (92%)	113 (95%)	-	-	-	-	-	-	-	-
Soft (N=118)	29 (25%)	55 (47%)	73 (62%)	79 (67%)	84 (71%)	97 (82%)	100 (85%)	103 (87%)	104 (88%)	106 (90%)	108 (92%)	109 (92%)	109 (92%)	113 (95%)	-	-	-
Oedema (N=65)	10 (15%)	28 (43%)	44 (68%)	47 (72%)	49 (75%)	56 (86%)	58 (89%)	58 (89%)	58 (89%)	59 (91%)	61 (94%)	62 (95%)	-	-	-	-	-
No oedema (N=153)	44 (29%)	73 (48%)	92 (60%)	109 (71%)	114 (75%)	128 (84%)	132 (86%)	138 (90%)	142 (93%)	144 (94%)	147 (96%)	-	-	-	-	-	-
Size = 121.6 (N=40)	11 (28%)	22 (55%)	30 (75%)	33 (83%)	36 (90%)	37 (93%)	38 (95%)	-	-	-	-	-	-	-	-	-	-
Size = 120.3 (N=58)	15 (26%)	31 (53%)	43 (74%)	47 (81%)	48 (83%)	51 (88%)	52 (90%)	54 (93%)	56 (97%)	-	-	-	-	-	-	-	-
Size = 94.7 (N=26)	7 (27%)	13 (50%)	16 (62%)	19 (73%)	19 (73%)	23 (88%)	24 (92%)	24 (92%)	24 (92%)	24 (92%)	26 (100%)	-	-	-	-	-	-
Size = 77.8 (N=50)	8 (16%)	15 (30%)	24 (48%)	29 (58%)	31 (62%)	35 (70%)	37 (74%)	37 (74%)	38 (76%)	40 (80%)	42 (84%)	43 (86%)	43 (86%)	46 (92%)	47 (94%)	47 (94%)	48 (96%)
Size = 64.9 (N=25)	6 (24%)	9 (36%)	12 (48%)	16 (64%)	17 (68%)	22 (88%)	23 (92%)	25 (100%)	-	-	-	-	-	-	-	-	-
Size = 52.7 (N=39)	9 (23%)	17 (44%)	20 (51%)	21 (54%)	23 (59%)	27 (69%)	29 (74%)	33 (85%)	33 (85%)	34 (87%)	35 (90%)	36 (92%)	37 (95%)	-	-	-	-

F) Linear regression using a mixed effects model (with 95% confidence interval) to determine the effect of artificial bubo characteristics on the percentage difference between the raters' first and second measurements

Characteristic	Estimate	95% CI	p-value
Size	-0.0012943	-0.001412802 to -0.001175798	0.033330
Density	0.0119047	-0.05416122 to 0.07797062	0.724270
Presence of oedema	0.0493535	-0.01926767 to 0.1179747	0.159961

Size	-0.0012943	-0.001412802 to -0.001175798	0.033330
Density	0.0119047	-0.05416122 to 0.07797062	0.724270
Presence of oedema	0.0493535	-0.01926767 to 0.1179747	0.159961

G) Number and percentage of interrater measurements that were within 5% intervals of the measurements of other raters of the same artificial bubo, shown until 95% of all measurements are captured

	5% n (%)	10% n (%)	15% n (%)	20% n (%)	25% n (%)	30% n (%)	35% n (%)	40% n (%)	45% n (%)	50% n (%)	55% n (%)	60% n (%)	65% n (%)
Overall (N=34655)	6924 (20%)	13056 (38%)	18572 (54%)	22903 (66%)	26087 (75%)	28426 (82%)	30205 (87%)	31294 (90%)	32010 (92%)	32491 (94%)	32771 (95%)	-	-
Hard (N=17286)	3766 (22%)	7042 (41%)	9867 (57%)	12003 (69%)	13478 (78%)	14557 (84%)	15363 (89%)	15877 (92%)	16173 (94%)	16375 (95%)		-	-
Soft (N=17369)	3158 (18%)	6014 (35%)	8705 (50%)	10900 (63%)	12609 (73%)	13869 (80%)	14842 (85%)	15417 (89%)	15837 (91%)	16116 (93%)	16334 (94%)	16515 (95%)	-
Oedema (N=11132)	2252 (20%)	4245 (38%)	6019 (54%)	7415 (67%)	8429 (76%)	9130 (82%)	9690 (87%)	10034 (90%)	10252 (92%)	10386 (93%)	10482 (94%)	10587 (95%)	-
No oedema (N=23523)	4672 (20%)	8812 (37%)	12553 (53%)	15488 (65%)	17658 (75%)	19296 (82%)	20515 (87%)	21260 (90%)	21758 (92%)	22105 (94%)	22289 (95%)	-	-
121.6 (N=5724)	1477 (26%)	2733 (48%)	3765 (66%)	4273 (75%)	4930 (86%)	5208 (91%)	5389 (94%)	5469 (96%)	-	-	-	-	-
120.3 (N=8327)	1939 (23%)	3635 (44%)	5131 (62%)	6219 (75%)	6954 (84%)	7475 (90%)	7835 (94%)	7930 (95%)	-	-	-	-	-
94.7 (N=3912)	830 (21%)	1565 (40%)	2215 (57%)	2696 (69%)	3066 (78%)	3309 (85%)	3512 (90%)	3650 (93%)	3720 (95%)	-	-	-	-
77.8 (N=7368)	1138 (15%)	2206 (30%)	3166 (43%)	3963 (54%)	4592 (62%)	5128 (70%)	5604 (76%)	5999 (81%)	6333 (86%)	6561 (89%)	6765 (92%)	6904 (94%)	6968 (95%)
64.9 (N=3812)	700 (18%)	1360 (36%)	1952 (51%)	2498 (66%)	2935 (77%)	3230 (85%)	348 (90%)	3569 (94%)	3605 (95%)	-	-	-	-
52.7 (N=5512)	840 (15%)	1558 (28%)	2343 (43%)	3054 (55%)	3610 (65%)	4076 (74%)	4417 (80%)	4677 (85%)	4893 (89%)	5054 (92%)	5119 (93%)	5175 (94%)	5224 (95%)