

Contents

Acknowledgements	ix
Abbreviations	x
Series Editorial	xi
Summary.....	xii
List of Figures.....	xvi
List of Tables.....	xxiii
1. Introduction.....	1
<i>Julian Whitewright</i>	
2. Vessel History: Building, Service and Loss.....	5
<i>Julian Whitewright</i>	
2.1 Background (1660–1674).....	5
2.1.1 The Thirty Ships (1674–1688)	6
2.2 The Active Service of the <i>Stirling Castle</i>	7
2.2.1 1690–1699	7
2.2.2 Rebuild and Renewal.....	8
2.2.3 1699–1703	9
2.3 The Crew of the <i>Stirling Castle</i> : March 1701 to November 1703	10
2.4 The Loss of the <i>Stirling Castle</i> : 26–28 November 1703.....	11
2.5 Conclusion.....	14
3. The Archaeological History of the <i>Stirling Castle</i>	15
<i>Julian Whitewright</i>	
3.1 Archaeological Investigation.....	15
3.1.1 Discovery and Exploration: 1979–1991	15
3.1.2 1992–2002	19
3.1.3 2003–2009	22
3.1.4 Conclusion.....	25
3.2 Ownership, Archive Access and Dissemination.....	26
3.2.1 Ownership	26
3.2.2 Archive Access	26
3.2.3 Archive Dissemination	27
3.3 The <i>Stirling Castle</i> in the Context of Maritime Archaeology in England and the UK	28
3.3.1 Methodology and Management.....	28
3.3.2 Resources, Public Access and Dissemination	29
4. Site Environment and Geophysical Survey	31
<i>Amelia Couldrey</i>	
4.1 The Natural Environment.....	31
4.1.1 Geology	31
4.1.2 Hydrodynamic Regime and Sediment Transport	32
4.1.3 Goodwin Sands Historical (pre-1990s) Evolution	36
4.2 Geophysical Survey	38
4.2.1 Singlebeam Bathymetry	38
4.2.2 Multibeam Bathymetry.....	40
4.2.3 Sidescan Sonar	43
4.2.4 Acoustic Ground Discrimination.....	46
4.2.5 Magnetometer.....	46
4.2.6 Grain Size Analysis	49
4.2.7 Sub-bottom	49

4.3 Meso- and Wreck-Scale Site Evolution	49
4.3.1 Annual Meso-Scale Site Evolution.....	49
4.3.2 Annual/Monthly Wreck-Scale Site Evolution	50
4.3.3 Maximum and Minimum Depth Locations	53
4.4 Discussion	53
5. The <i>In Situ</i> Archaeological Remains of the <i>Stirling Castle</i>.....	55
<i>Julian Whitewright</i>	
5.1 Initial Site Formation Processes.....	55
5.2 Site Development: Methodology	56
5.2.1 Observations on Overall Correlation.....	58
5.3 Site Development: 1979–2009.....	59
5.3.1 Discovery: 1979	59
5.3.2 Re-Emergence: 1998–2000	61
5.3.3 Reburial: 2002–2009	64
5.4 Discussion	65
6. <i>Stirling Castle</i>: Ship Structure and Shipbuilding.....	67
<i>Julian Whitewright</i>	
6.1 Overview	67
6.1.1 Construction Summary.....	67
6.2 Framing	69
6.2.1 Futtocks	69
6.2.2 Deck Beams.....	71
6.2.3 Stern Structure	72
6.3 Planking and Fastening	73
6.4 Rudder and Steering Mechanism	74
6.5 Discussion	75
7. Organic Material.....	77
<i>Kathryn Dagless, Angela Middleton, Gill Campbell, Polydora Baker, Simon Mays and Mariangela Vitolo</i>	
7.1 Methodology	77
7.2 Recovered Artefacts by Material	77
7.2.1 Plant Remains.....	77
7.2.2 Bamboo	78
7.2.3 Bone and Ivory	78
7.2.4 Cork.....	79
7.2.5 Fibre	79
7.2.6 Gourd and Coconut	80
7.2.7 Leather.....	80
7.2.8 Textile	86
7.2.9 Tar.....	86
7.2.10 Wood	86
7.3 Discussion	99
7.3.1 Galley Objects	99
7.3.2 Dress Accessories	100
7.3.3 Personal/Leisure Items	100
7.3.4 Tools and Equipment.....	101
7.4 Conclusion.....	101
8. Glass	103
<i>David Dungworth and Julian Whitewright</i>	
8.1 Introduction and Methodology.....	103
8.1.1 Scientific Examination and Analysis.....	103
8.2 Recovered Artefacts by Type	103
8.2.1 Bottles	103
8.2.2 Drinking Glasses	109
8.2.3 Timing Glasses	111
8.2.4 Window Glass.....	115
8.2.5 Miscellaneous.....	116

8.3 Scientific Examination and Analysis.....	116
8.3.1 Methods of Analysis.....	116
8.3.2 Results	116
8.4 Discussion	122
9. Metal	125
<i>David Dungworth, Julian Whitewright and Angela Middleton</i>	
9.1 Introduction and Methodology.....	125
9.1.1 Scientific Examination and Analysis.....	125
9.2 Eating and Drinking	125
9.2.1 Plates	125
9.2.2 Bowls, Dishes, Lids and Porringers	127
9.2.3 Utensils.....	129
9.2.4 Jugs, Tankards and Drinking Vessels	130
9.2.5 Cooking Equipment.....	130
9.3 Personal Artefacts.....	133
9.3.1 Clothing and Attire	133
9.3.2 Lighting	134
9.3.3 Miscellaneous.....	135
9.4 Ship's Equipment and Fittings	139
9.4.1 Navigation and Measurement.....	139
9.4.2 Scuppers	140
9.4.3 Miscellaneous.....	140
9.4.4 Copper/Copper-Alloy Fastenings.....	142
9.4.5 Unidentified Concretions.....	142
9.5 Arms and Armament	143
9.5.1 Swords	143
9.5.2 Small Arms	144
9.5.3 Ammunition.....	145
9.5.4 Cannon	145
9.5.5 Shot.....	146
9.6 Scientific Examination and Analysis.....	146
9.6.1 Methods of Analysis.....	146
9.6.2 Results	147
9.7 Discussion	150
10. Pottery.....	153
<i>Duncan H. Brown</i>	
10.1 Introduction and Methodology.....	153
10.2 The Pottery	155
10.3 Discussion	159
11. Stone, Brick and Clay Pipes	165
<i>Julian Whitewright and Kathryn Dagless</i>	
11.1 Introduction and Methodology.....	165
11.2 Recovered Artefacts by Type	165
11.2.1 Navigational/Deck Slates	165
11.2.2 Whetstones	167
11.2.3 Bricks.....	167
11.2.4 Clay Pipes	168
12. The Stirling Castle: 1677–2009	171
<i>Julian Whitewright and Christin Heamagi</i>	
12.1 Fighting the Ship	171
12.1.1 Personal Weapons and Small Arms.....	174
12.2 Navigation.....	174
12.2.1 Navigational Practice c.1703.....	174
12.2.2 The Navigational Equipment of the <i>Stirling Castle</i>	175
12.3 Artefact Distribution.....	177

The Stirling Castle, a 70-gun Ship Lost in the Great Storm of 1703

12.4 Reflections on the Archaeology of the <i>Stirling Castle</i>	179
12.4.1 Restoration Warship or Vessel of 1699?.....	180
12.4.2 Shipwreck and Historical Archaeology of the <i>Stirling Castle</i>	181
12.5 Conclusion.....	183
References.....	187
Appendices.....	195
14.1 The Crew of the <i>Stirling Castle</i> : March 1701–November 1703	195
14.2 The <i>Stirling Castle</i> in the Ordnance Survey of c.1696	228
Index.....	231