

The Deep-Sea Tortugas Shipwreck, Florida (1622): the Ceramic Tablewares

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The excavation of the 400m-deep Tortugas shipwreck in the Straits of Florida, USA, resulted in the recovery 2,031 rims, handles, bases and sherds from 21 principal types of tablewares. The collection is dominated by 1,477 tin-glazed sherds representing eight individual types almost completely produced in Seville, followed by 336 lead-glazed wares and 218 unglazed coarseware sherds.

This report quantifies the assemblage and presents a site-specific typology and catalogue of the diagnostic wares. The historical context of the Tortugas wreck's tablewares within Seville's pottery industry is summarized, recognizing and characterizing the importance of the Triana district on the west bank of the Guadalquivir River.

Compared to English, Dutch and other European shipwrecks of the 16th and 17th centuries, home-produced ceramics dominate the assemblage from the Tortugas ship, which is identified as the 117-ton Spanish-operated *Buen Jesús y Nuestra Señora del Rosario*. This trend is embedded within the economic monopoly that Seville and the Casa de Contratación exerted over the Americas trade. The Tortugas collection is compared to ceramics associated with Iberian and other European shipwrecks to assess whether this cultural convention was normal or atypical.

The assemblage is extremely similar to the *Atocha's* ceramic record despite the fact that this ship from the same 1622 Tierra Firme fleet was far larger and of superior status to the *Buen Jesús*. The Tortugas ceramic tablewares are a revealing index of unchanged cultural tastes and continued production within Seville's pottery industry despite the contraction of the Spanish economy at the end of the country's Golden Age.

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1. Introduction: Site Distribution, Typology & Quantification¹

Between June 1990 and October 1991, Seahawk Deep Ocean Technology of Tampa, Florida, excavated the wreck of a small merchant vessel that sank at a depth of 400m, 20km south of the Dry Tortugas Islands in the Straits of Florida. The Tortugas shipwreck is interpreted as the Portuguese-built and Spanish-operated 117-ton *Buen Jesús y Nuestra Señora del Rosario* from the 1622 Tierra Firme fleet, which was returning to Seville when it succumbed to a hurricane on 5 September (Kingsley, 2013; Stemm *et al.*, 2013a; 2013b).

The entire ceramic assemblage visible on the site's surface and buried within the uppermost 30cm-deep stratum was recovered (Figs. 1-2, 19-36). Alongside 86 intact olive jars, 123 individual rims and 1,344 olive jar sherds (209 *botijas* total), the collection contains 2,309 tableware and cooking vessel rims, bases, handles and sherds (RBHS), including Afro-Caribbean colonoware (Gerth and Kingsley, 2014). This report focuses on the tin-glazed, lead-glazed and coarse tablewares.

The Tortugas shipwreck lies at a depth of 394.5-406.4m on a northwest to southeast orientation, the keel line extending along a 150° axis. The visible structural

remains and ballast mound are 19.2m long and 15.6m wide. The tableware debris field extended across a total area of 26.4m northwest/southeast and 14.1m east/west.

Only 22.6% of the tablewares overlay the ballast mound (Fig. 2). 83% were concentrated in the northern half of the site corresponding to the stern, where the galley structure would have been located. Of these the majority (64.1%) were recorded in the northwest quadrant of the site. A further 18.9% of tablewares were located in the northeast quadrant, 13.2% in the southwest quadrant and just 3.8% to the southeast.

The dominant depositional pattern within the north-west quadrant, combined with the fact that 77.3% of all tablewares lay west of the keel line, reflects two site-formation trends. Firstly, these data complement the broader artifact distribution pattern, which suggested that the *navio* settled to starboard, causing the ship's cargo and domestic assemblage to spill westward most extensively as the hull deteriorated (Stemm *et al.*, 2013a: 38). Secondly, the dense concentration of tin-glazed wares to the northwest may be interpreted as having derived from stowage in the adjacent stern galley structure. The exception may be some unglazed coarsewares and lead-glazed products, examples of which were only found to the south of the site, where Type 19A, Type 19B and Type 20 were identified in close proximity. This may point to a second stowage pattern.



Fig. 1. Selection of tablewares from the Tortugas shipwreck, Straits of Florida.

The distribution of tin-glazed products displayed little discernable patterns of type distribution. For instance, Type 1 Seville Blue on Blue products were most tightly clustered in a 8.6m east/west and 2.8m north/south strip extending from north of the wreck in the northwest quadrant across the northern ballast mound and into the north-east zone. Type 2 Seville Blue on White plates and Type 3 Plain White Morisco plates and bowls predominated to the northwest. Type 5A Seville Polychrome small jugs were located adjacent to anchor A3 in the northeast quadrant and at the extreme south of the southwest area (8.4m away from the ballast mound's southern edge), covering a total area of 22.7m north/south, but just 2.5m east/west.

The significance of the Tortugas shipwreck tableware assemblage lies in its derivation from a single coherent cultural deposit, compared to the *Atocha*, whose important collection is the selective remains from a heavily scattered ship (Mathewson, 1986: 114; Marken, 1994). The Tortugas ship was operating at the opposite end of the commercial spectrum to the great treasure ships the *Atocha* (550 tons), *Margarita* (630 tons) and *Rosario* (600 tons) within the same 1622 Tierra Firme fleet (Barnette, 2003: 142, 144). At 117-tons the *Buen Jesús* represented the smallest class of vessel permitted for trans-Atlantic *flota* trade with the Americas, which for an ocean-going *navío* was reduced under the *Ordenanzas para la fábrica de navíos de guerra y mercantes* from 148 tons in 1613 to 80¾ tons in 1618 (Haring, 1918: 273; Mendoza, 2008: 174, 179, tables 6, 11).

The date of the ship's sinking in 1622 coincided with

a decline in the economic fortunes of Spain, whose tight control of its colonial dominions was fragmenting. The Tortugas wreck represents a significant archaeological thin-slice of daily life at sea at the end of the Golden Age of Spain and provides a rare intact insight into a world in political and economic transition.

The study of everyday Spanish ceramics is complicated by falling between two problematic methodological pillars. Firstly, most studies in the Americas and Caribbean have focused on earlier centuries, correlating with the peak era of colonial expansion, because 16th-century deposits dominate the terrestrial and maritime archaeological record. A thematic concentration on earlier subject matter preceding 1600 also predominates in Europe (cf. Gerrard *et al.*, 1995; Vera Reina and Torres, 2005; 2009), largely because the post-medieval world has tended to be neglected within Spain in favor of classical antiquity.

Secondly, within Spain the literature might be expected to provide a plethora of comparative primary data, but until recently interest has traditionally focused on exotic or high-end wares of museum quality to the detriment of excavated finds or studies into lesser status ceramics. Alongside a gradually increasing number of 16th- to 18th-century shipwrecks of Iberian origin, the Tortugas assemblage starts to fill this archaeological void for the maritime archaeological record.

The Tortugas collection's 2,309 tableware and cooking vessel rims, bases, handles and sherds (RBHS) derive from 23 ceramic classes. The 278 Afro-Caribbean colonoware

Pottery Class	No. Sherds	Weight (Kg)	Percent Total Sherds	Percent Total Weight
Olive Jars	1,553 *	> 476.80	40.2%	92.3%
Tin-glazed Wares (Types 1-8)	1,477	14.47	38.2%	2.8%
Colonoware (Types 9-10)	278	16.68	7.2%	3.2%
Unglazed Coarsewares (Types 11-19A)	218	4.26	5.6%	0.8%
Lead-glazed Wares (Types 19B-22)	336	4.16	8.7%	0.8%
Total	3,862	516.37	100%	100%

• The olive jar assemblage quantified here is based on the site's total 86 intact jars, 123 rims & 1,344 sherds. A sample of 54 intact/near-intact olive jars, 90 rims & 100 body sherds are preserved in the Odyssey collection. Only the latter are available to provide weights.

Table 1. Quantification by sherd count and weight of combined olive jars, tablewares and cooking wares from the Tortugas shipwreck.

Tortugas Type	Tableware Class	No. Sherds	Weight (Kg)	Percent Total Sherds	Percent Total Weight
Type 1	Seville Blue on Blue	938	4.61	46.2%	21.0%
Type 2	Seville Blue on White	285	1.04	14.0%	4.8%
Type 3	Plain White Morisco Ware	16	3.76	0.8%	17.1%
Type 4	Seville White	102	0.66	5.0%	3.1%
Type 5	Seville Polychrome	49	0.69	2.4%	3.1%
Types 6-8	Linear/Decorated/Mottled Blue Morisco Ware	87	3.17	4.3%	14.4%
Types 11-19A	Unglazed Coarsewares	218	4.26	10.7%	19.4%
Types 19B-22	Lead-Glazed Wares	336	3.76	16.6%	17.1%
Total		2,031	21.95	100%	100%

Table 2. Quantification by sherd count and weight of tablewares from the Tortugas shipwreck.

cooking vessel sherds account for 7.2% of the shipwreck's total combined pottery (Table 1). These products are excluded from the present study because as kitchenwares used for cooking they are functionally dissimilar to tablewares. The colonowares are discussed separately elsewhere (Gerth and Kingsley, 2014).

Of the 2,031 RBHS from 21 types of tableware represented on the Tortugas shipwreck (Tables 1-2), 1,477 are tin-glazed wares (Figs. 48-106, 121), 218 unglazed coarsewares (Figs. 107-114, 121) and 336 lead-glazed wares (Figs. 115-120). The latter two categories contain mixed forms with only the three examples of Type 22 small jugs repetitively represented.

Quantitative statistics derived from sherd weight are problematic and not used for the study of the Tortugas collection. The best preserved Type 1A Seville Blue on Blue plates, which are three-quarters intact, weigh 294 grams maximum (TOR-90-00085-CS; Fig. 54), compared to a complete Type 3B Plain White Morisco plate that is 624 grams (TOR-90-00039-CS; Fig. 83). A three-quarters completed Type 3B tin-glazed plate weighs 413 grams

(TOR-90-00028-CS; Fig. 85). Each of the two Plain White Morisco Type 3D bowls weigh up to 283 grams (TOR-90-00021-CS; Fig. 88), compared to up to 256 grams for each of the wreck's three Type 5A Seville Polychrome small jugs (TOR-90-00032-CS; Fig. 93).

The same bias exists for quantification derived from total RBHS counts, which will not accurately reflect relative volumes utilized on the Tortugas ship because of wide differences in vessel sizes, wall thicknesses and fragmentation rates. For instance, the relatively thin-walled Seville Blue on Blue wares (Type 1: 823 body sherds; Figs. 37, 48-69) and Seville Blue on White plates (Type 2: 255 body sherds; Figs. 38, 74-79) have fragmented into extensive sherd scatters, while the Plain White Morisco plates and bowls (Type 3; Figs. 80-89) proved comparatively robust within the marine archaeological record: only two body sherds were recovered. Amongst the lead-glazed wares, Type 19B jars have similarly fragmented into 320 sherds (Figs. 42, 115-116), whereas no sherds from the small and compact Types 21-22 lead-glazed jugs were identified (Tables 5-6, Figs. 118-120).

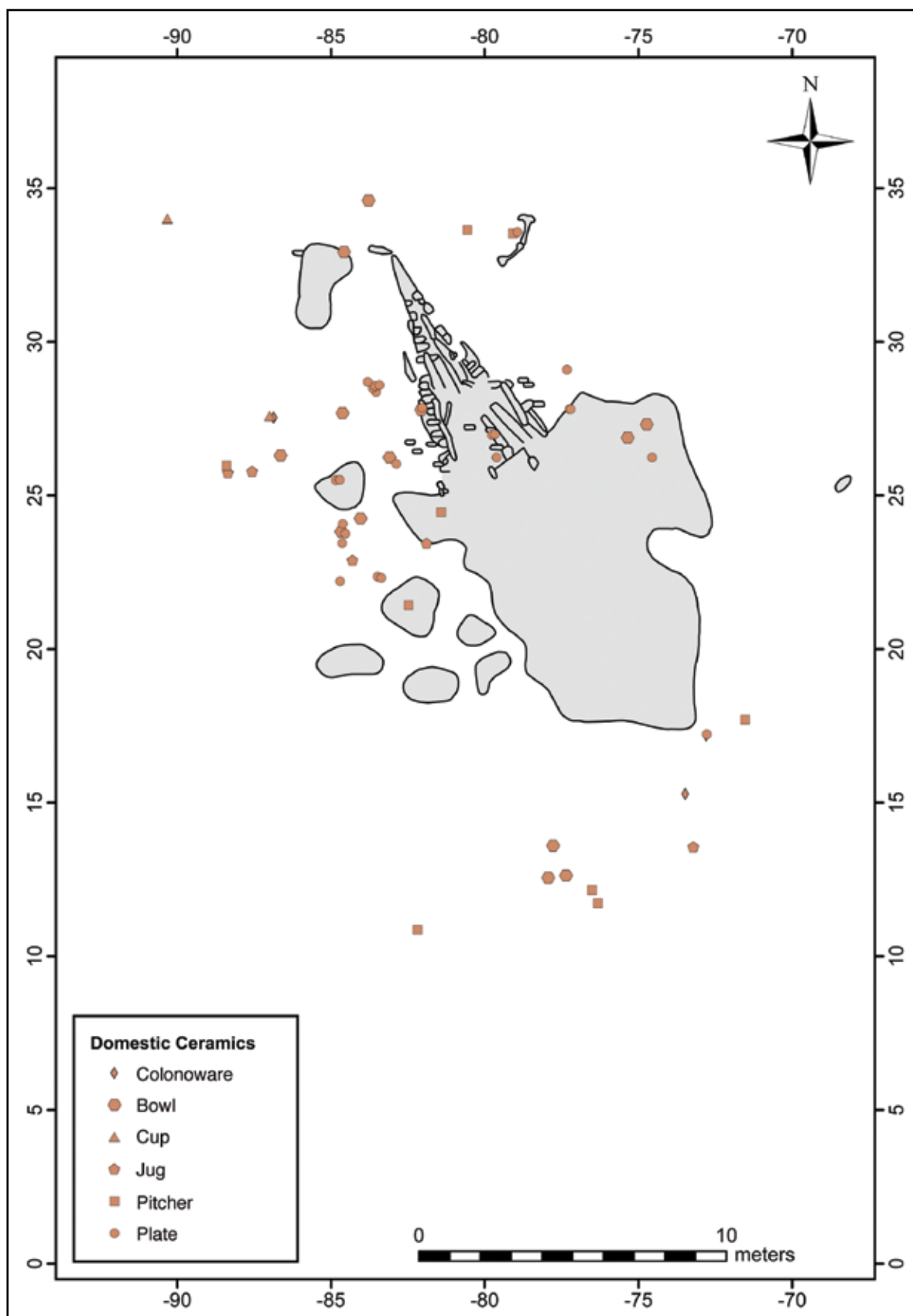


Fig. 2. Distribution map of tablewares recovered from the Tortugas shipwreck.

Tortugas Type	English Terminology	American Terminology	Spanish Terminology
Type 1 (Seville Ware)	Seville Blue on Blue	Ichucknee Blue on Blue	Sevilla Azul Sobre Azul
Type 2 (Seville Ware)	Seville Blue on White	Talavera-Style Blue on White; Ichucknee Blue on White	Sevilla Azul Sobre Blanco
Type 3 (Morisco Ware)	Plain White Morisco	Columbia Plain	Blanca Lisa
Type 4 (Seville Ware)	Seville White	Sevilla White	Sevilla Blanca
Type 5 (Seville Ware)	Seville Polychrome	Andalusia Polychrome	Sevilla Polícroma (Estilo Talavera)
Type 6 (Morisco Ware)	Linear Blue Morisco	Yayal Blue on White	Azul Lineal
Type 7 (Morisco Ware)	Decorated Blue Morisco	Santo Domingo Blue on White	Azul Figurativa
Type 8 (Morisco Ware)	Mottled Blue Morisco	Santa Elena Mottled Blue on White	Azul Moteada

Table 3. Types of tin-glazed wares on the Tortugas wreck with comparative English, American and Spanish terminology (after Gutiérrez, 2000: 44).

The small and compact size of Seville Polychrome jugs means that they too are less susceptible to fragmentation, but even where they have broken they created far fewer sherds per vessel (42 body sherds) than the larger containers (Figs. 40, 93-96). Comparing vessel types' total rims, bases, handles and sherd counts like for like would thus create a set of inaccurate quantitative pseudo-statistics.

In the absence of optimum data based on total rim and base circumference percentages, which would facilitate the reconstruction of EVE counts (Estimated Vessel-Equivalents) (cf. Orton and Hughes, 2013: 210), a more reliable form of quantifying the Tortugas tableware assemblage is by omitting body sherds from the sample and solely counting rims, bases and handles, an option which yields a total sample size of 219 RBH in which tin-glazed wares dominate at 81.3%. This filtering method results in the following statistics for the combined tableware assemblage (Figs. 11-12):

- Seville Blue on Blue (Type 1): 47.5%
- Seville Blue on White (Type 2): 13.7%
- Plain White Morisco (Type 3): 6.4%
- Seville White (Type 4): 5.9%
- Seville Polychrome (Type 5): 2.3%
- Linear Blue Morisco (Type 6): 1.8%
- Decorated Blue Morisco (Type 7): 1.8%
- Mottled Blue Morisco (Type 8): 1.8%
- Unglazed Coarsewares (Type 11-19A): 11.4%
- Lead-glazed Wares (Type 19B-22): 7.3%

A residual methodological weakness of this approach is that thicker-walled wares remain under-represented in favor of thin-walled vessels, as can be perceived in the presence of 104 Seville Blue on Blue RB, but just 13 Plain White

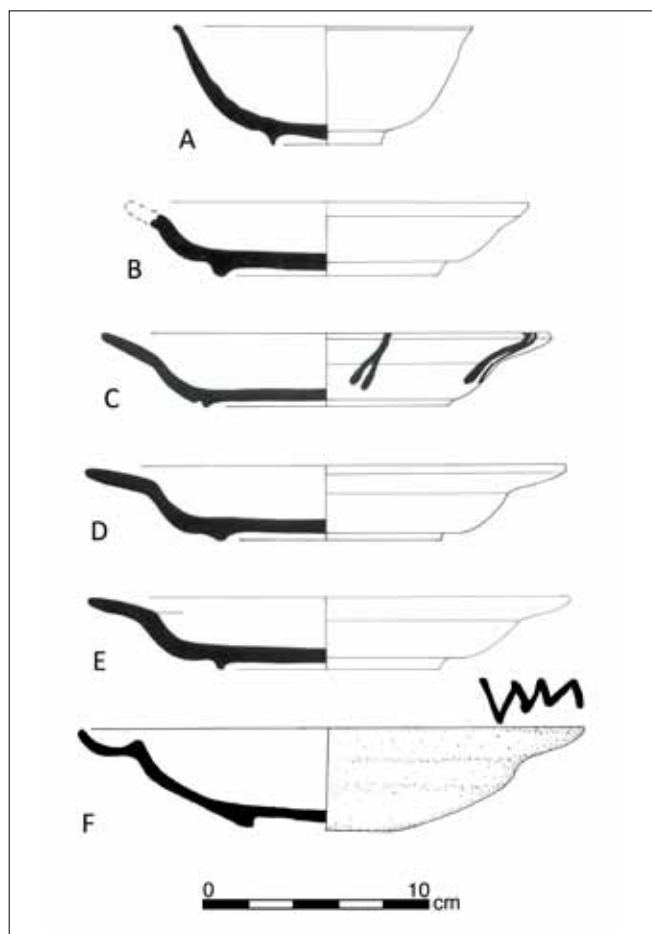


Fig. 3. Tortugas shipwreck tin-glazed tablewares.
A. Type 4B Seville White bowl (TOR-90-00036-CS).
B. Type 1A Seville Blue on Blue plate (TOR-90-00084-CS).
C. Type 2A Seville Blue on White plate (TOR-90-00015-CS).
D. Type 1A Seville Blue on Blue plate (TOR-90-00041-CS).
E. Type 1A Seville Blue on Blue plate (TOR-90-00085-CS).
F. Type 4A Seville White plate with blue rim motif (TOR-90-001172-CS).

Morisco RB (Tables 2-3). A more accurate means of estimating the relative vessel type quantities is by omitting all RBH sherds and relying exclusively on counts of intact or largely intact vessels in addition to unique rim or base fragments. This approach generates a different bias caused by the reduced sample size, but is utilized in this study as the least problematic quantification tool.

This methodology indicates that a minimum of 61 tin-glazed tablewares (34 plates, 11 bowls, four cups, seven jugs/pitchers and five small jugs), ten unglazed coarsewares (five jars, four jugs, one plate) and seven lead-glazed wares (four small jugs, two jars, one jug) were used onboard the Tortugas ship (Table 4). Some 70 tin-glazed rim fragments in the collection are too small or indistinct to confirm their derivation from individual vessels and are thus omitted from the analysis. Using this 78-vessel data set to estimate type quantities provides the following quantitative results for relative percentages of the combined tablewares (Figs. 13-14):

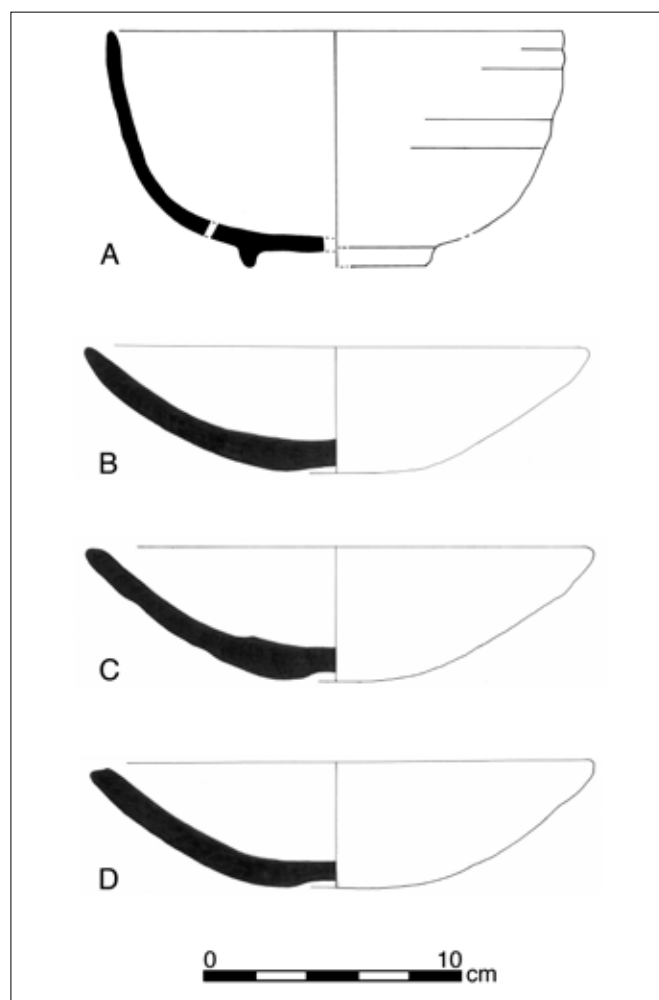


Fig. 4. Tortugas shipwreck tin-glazed tablewares.

- A. Type 5B Seville Polychrome bowl (TOR-90-00100-CS).
 B-D. Type 3B Plain White Morisco plates (top to bottom: TOR-90-00028-CS, TOR-90-00029-CS, TOR-90-00030-CS).

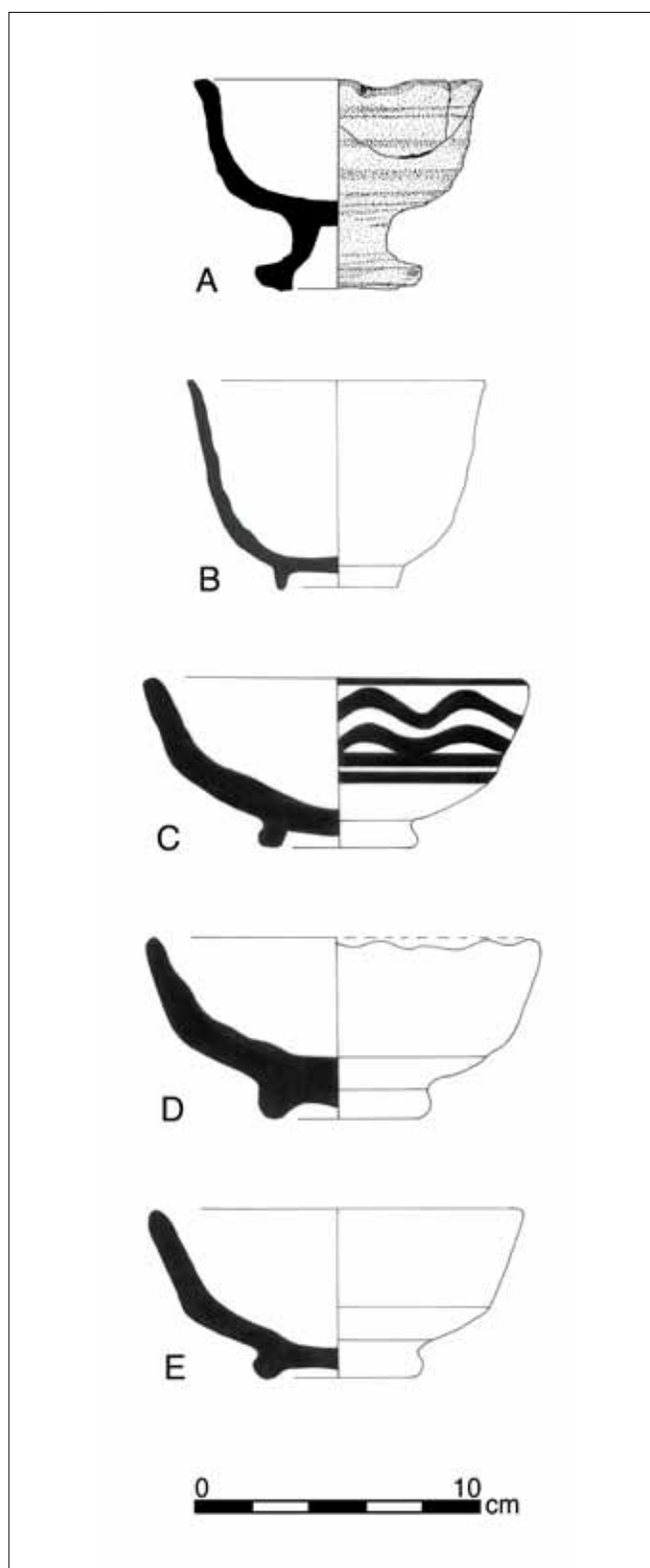


Fig. 5. Tortugas shipwreck tin-glazed tablewares.

- A. Type 8A Mottled Blue Morisco cup (TOR-90-00038-CS).
 B. Type 4C Seville White cup (TOR-90-00065-CS).
 C. Type 6C Linear Blue Morisco bowl (TOR-90-00009-CS).
 D. Type 3D Plain White Morisco bowl (TOR-90-00021-CS).
 E. Type 3D Plain White Morisco bowl (TOR-90-00073-CS).

Tortugas Type	Class	Vessel Form	Vessel Quantity
Type 1A	Seville Blue on Blue	Plate	16
Type 1B	Seville Blue on Blue	Plate	1
Type 1C	Seville Blue on Blue	Bowl	4
Type 1D	Seville Blue on Blue	Small Jug	1
Type 2A	Seville Blue on White	Plate	8
Type 2B	Seville Blue on White	Bowl	2
Type 3A	Plain White Morisco	Plate (Large)	1
Type 3B	Plain White Morisco	Plate (Regular)	6
Type 3C	Plain White Morisco	Plate (Flanged)	1
Type 3D	Plain White Morisco	Bowl	2
Type 4A	Seville White	Plate	1
Type 4B	Seville White	Bowl	1
Type 4C	Seville White	Cup	1
Type 5A	Seville Polychrome	Small Jug	3
Type 5B	Seville Polychrome	Bowl	1
Type 6A	Linear Blue Morisco	Two-handle Jar	1
Type 6B	Linear Blue Morisco	One-handle Pitcher	1
Type 6C	Linear Blue Morisco	Bowl	1
Type 6D	Linear Blue Morisco	One-handle Small Jug	1
Type 7	Decorated Blue Morisco	One-handle Pitcher	4
Type 8A	Mottled Blue Morisco	Cup	3
Type 8B	Mottled Blue Morisco	Jug	1
Type 11A	Unglazed Coarseware	Jar	2
Type 11B	Unglazed Coarseware	Bowl	1
Type 12	Unglazed Coarseware	One-handle Jug	1
Type 13	Unglazed Coarseware	Jug	1
Type 14	Unglazed Coarseware	Jug	1
Type 15	Unglazed Coarseware	Jug	1
Type 16	Unglazed Coarseware	Bizcocho Flanged Saucer	1
Type 18	Unglazed Coarseware	Jar	1
Type 19A	Unglazed Coarseware	Costrel	1
Type 19B	Lead-glazed Ware	Costrel	2
Type 20	Lead-glazed Ware	Half-dipped Jug	1
Type 21	Lead-glazed Ware	Small Jug	1
Type 22	Lead-glazed Ware	Small Jug	3

Table 4. Minimum numbers of tablewares recovered from the Tortugas shipwreck based on unique vessel counts.

- Seville Blue on Blue (Type 1): 28.2%
- Seville Blue on White (Type 2): 12.8%
- Plain White Morisco (Type 3): 12.8%
- Seville White (Type 4): 3.9%
- Seville Polychrome (Type 5): 5.1%
- Linear Blue Morisco (Type 6): 5.1%
- Decorated Blue Morisco (Type 7): 5.1%
- Mottled Blue Morisco (Type 8): 5.1%
- Unglazed Coarsewares (Type 11-19A): 12.8%
- Lead-glazed Wares (Type 19B-22): 9.0%

In terms of provenance, a dominant 98.4% (of 61 unique vessels) of the Tortugas shipwreck's tin-glazed wares originate in Spain, manufactured either in or close to Seville. Only one Tortugas Type 3C Plain White Morisco plate does not fit into the Seville region clay chemistry pattern and its place of production remains unassigned (Hughes, 2014; Fig. 87). Several examples of lead-glazed Merida-type vessels and coarseware products may have originated in Portugal, such as clearly Tortugas Type 12 unglazed coarseware jug (Fig. 110).

Tortugas Type	Class	Vessel Form	Vessel Quantity	Condition
Type 1A	Seville Blue on Blue	Plate	7	Largely Intact/ Rim to Base Sections
Type 1A	Seville Blue on Blue	Plate	2	Rim Fragments
Type 1A	Seville Blue on Blue	Plate	6	Bases
Type 1A	Seville Blue on Blue	Plate	11	Body Sherds
Type 1B	Seville Blue on Blue	Plate	1	Largely Intact
Type 1C	Seville Blue on Blue	Bowl	1	Largely Intact/ Rim to Base Section
Type 1C	Seville Blue on Blue	Bowl	3	Bases
Type 1D	Seville Blue on Blue	Small Jug	1	Largely Intact
Type 1	Seville Blue on Blue	Plate/Bowl	70	Rim Fragments
Type 1	Seville Blue on Blue	Plate/Bowl	13	Base Fragments
Type 1	Seville Blue on Blue	Plate/Bowl	823	Body Sherds
Type 2A	Seville Blue on White	Plates	5	Intact Rim to Base Sections
Type 2A	Seville Blue on White	Plate	16	Rim Fragments
Type 2A	Seville Blue on White	Plate	7	Base Fragments
Type 2A	Seville Blue on White	Plate	255	Body Sherds
Type 2B	Seville Blue on White	Bowl	2	Inscribed Bases
Type 3A	Plain White Morisco	Plate (Large)	1	Intact
Type 3B	Plain White Morisco	Plate (Regular)	6	Intact
Type 3C	Plain White Morisco	Flanged Plate	1	Rim to Base Section
Type 3D	Plain White Morisco	Bowl	2	Intact
Type 3	Plain White Morisco	Plate	4	Rim Fragments
Type 3	Plain White Morisco	Plate/Bowl	2	Body Sherds
Type 4A	Seville White	Plate	1	Intact
Type 4B	Seville White	Bowl	1	Intact
Type 4B	Seville White	Bowl	6	Rim Fragments
Type 4C	Seville White	Cup	1	Rim to Base Section
Type 4C	Seville White	Cup	4	Base Fragments
Type 4	Seville White	Bowl/Cup	89	Body Sherds
Type 5A	Seville Polychrome	Small Jug	2	Largely Intact
Type 5A	Seville Polychrome	Small Jug	3	Body Sherds
Type 5B	Seville Polychrome	Bowl	1	Rim Fragment
Type 5B	Seville Polychrome	Bowl	1	Base Fragment
Type 5	Seville Polychrome	Small Jug?	42	Sherd Fragments
Type 6A	Linear Blue Morisco	Two-handle Jar	1	Largely Intact
Type 6B	Linear Blue Morisco	Pitcher	1	Largely Intact
Type 6C	Linear Blue Morisco	Bowl	1	Largely Intact
Type 6D	Linear Blue Morisco	One-handle Jug	1	Largely Intact
Type 7	Decorated Blue Morisco	Pitcher	3	Largely Intact
Type 7	Decorated Blue Morisco	Jug	1	Base Fragment
Types 6-7	Linear/Decorated Blue Morisco	Pitcher/Jug	75	Body Sherds
Type 8A	Mottled Blue Morisco	Cup	3	Largely Intact
Type 8B	Mottled Blue Morisco	Jug	1	Intact

Table 5. Quantities of tin-glazed tablewares from the Tortugas shipwreck (RBHS).

A total of 49 separate product lines co-exist amongst the eight classes of tin-glazed wares based on individualistic vessel shapes and rim and base style decoration (21 Seville

Blue on Blue, eight Seville Blue on White, four Plain White Morisco, three Seville White, four Seville Polychrome, four Linear Blue Morisco, three Decorated Blue Morisco,

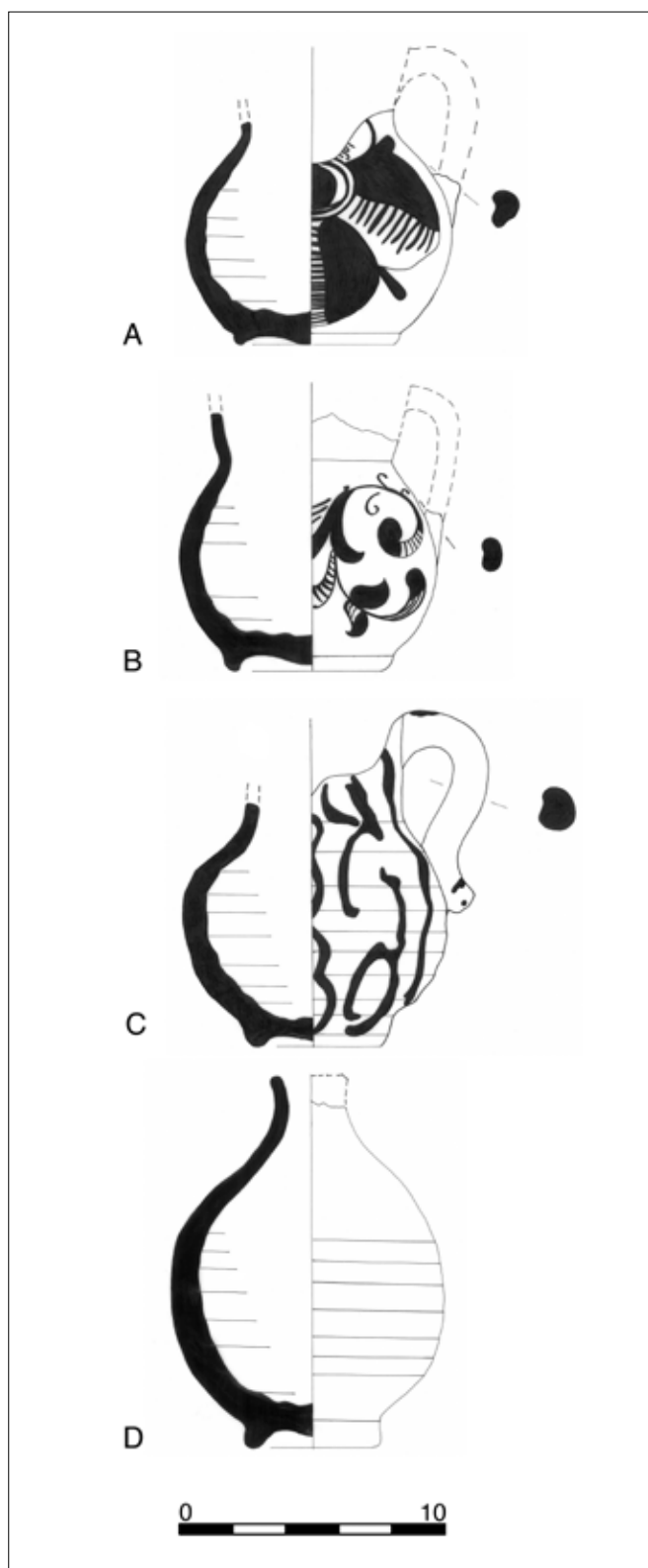


Fig. 6. Tortugas shipwreck tablewares.
A. Type 5A Seville Polychrome jug (TOR-90-00070-CS).
B. Type 5A Seville Polychrome jug (TOR-90-00032-CS).
C. Type 6D Linear Blue Morisco jug (TOR-90-00023-CS).
D. Type 21 lead-glazed jug (TOR-90-00040-CS).



Fig. 7. Tortugas shipwreck tin-glazed tablewares.
A. Type 7 Decorated Blue Morisco pitcher (TOR-90-00068-CS). B. Type 6A Linear Blue Morisco jar (TOR-90-00069-CS).

two Mottled Blue Morisco). These forms comprise plates, bowls, cups, pitchers and small jugs (Figs. 3-8). Whether multiple decorative styles were produced simultaneously in the same firing is largely impossible to ascertain from the data set. The diversity of decorative schemes gives the impression that the tin-glazed vessels were mainly produced separately at different times and assembled piecemeal by the owner/s based on individual taste.

Even though two Type 1A Seville Blue on Blue plates bearing a painted apple or pear-like motif on the interior base betray the probable hand of identical craftsmen, the rims are dissimilar: one features dual sets of short diagonal lines and a triple concentric outer rim border (TOR-90-00085-CS; Fig. 54), while the other is plain (TOR-90-00052-CS; Fig. 55). The Type 1D small jug features the same motif and may betray the hand of the same potter/painter responsible for one of these plates (Fig. 69). The Type 2 Seville Blue on

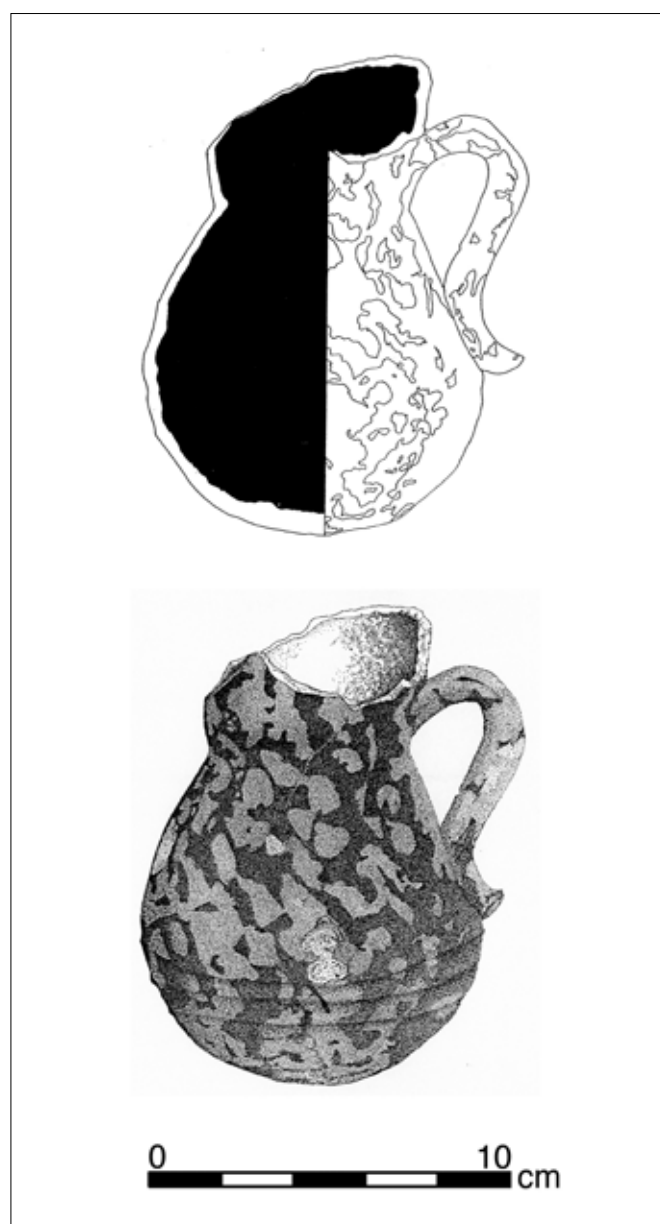


Fig. 8. Tortugas Type 8B Mottled Blue Morisco jug (TOR-90-1A-00052).

White products are particularly dissimilar stylistically (Figs. 74-79, 121), apart from the twin sets of papal seal plates and the 'CAR/MO' bowls, which give every appearance of having originated in the same kiln firing.

All three of the Type 7 Decorated Blue Morisco ware pitchers are dissimilarly decorated or morphologically divergent (TOR-90-00019-CS, TOR-90-00068-CS, TOR-90-1A-003240; Figs. 101-103), but even within the two examples that are stylistically similar, their dimensions, shape and decoration suggest production at different times or in different workshops within Seville. Other than the above Type 2 papal crest plates and 'CAR/MO' bowls, perhaps only the six standardized Type 3B Plain White

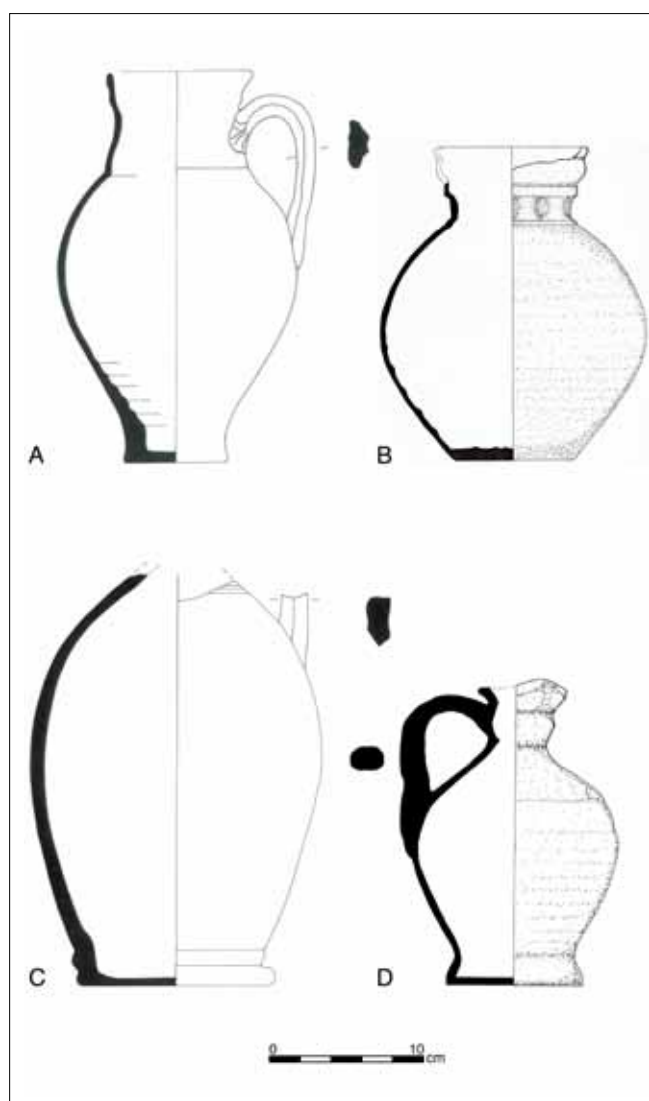


Fig. 9. Tortugas shipwreck tablewares.
A. Type 12 one-handle Merida-type jug (TOR-90-00031-CS).
B. Type 18 unglazed coarseware jar (TOR-90-1A-002849).
C. Type 19B lead-glazed Merida-type costrel (TOR-90-00071-CS). D. Type 20 half-dipped green-glazed jug (TOR-90-00016-CS).

Morisco ware plates (Figs. 81-86) and three Type 7A Mottled Blue Morisco cups (Fig. 104) may have derived from the same kiln firings. For the unglazed coarsewares and lead-glazed pottery, only the three Type 22 small lead-glazed jugs may have derived from the same firing or at least a single workshop (Fig. 119).

Within this report European definitions of tin-glazed types are used (Table 3). Current literature classifies the late medieval and post-medieval pottery made in Seville under two general headings: Morisco and Seville wares. Both groups have different characteristics and are subdivided into a range of decorative types according to colors and motifs (Deagan, 1987: 28; Gutiérrez, 2000: 47-8).

Tortugas Type	Class	Vessel Form	Vessel Quantity	Condition
Type 11A	Unglazed Coarseware	Jar	2	Rim Fragments
Type 11B	Unglazed Coarseware	Ledge-handle Bowl	1	Rim Fragment
Type 12	Unglazed Merida-type Coarseware	One-handle Jug	1	Intact
Type 13	Unglazed Coarseware	Jug	1	Intact Base
Type 14	Unglazed Merida Ware	Jug	1	Intact Base
Type 12-14	Unglazed Coarseware	Small Jug	10	Rim Fragments
Type 12-14	Unglazed Coarseware	Small Jug	5	Base Fragments
Type 13-14	Unglazed Coarseware	Small Jug	193	Body Sherds
Type 15	Unglazed Coarseware	Jug	1	Intact Base
Type 16	Unglazed Bizcocho Ware	Saucer	1	Mainly Intact
Type 18	Unglazed Coarseware	Jar	1	Intact
Type 19A	Unglazed Coarseware	Costrel	1	Mainly Intact, Two Handles
Type 19B	Lead-glazed Ware	Costrel	1	Mainly Intact, Single Handle
Type 19B	Lead-glazed Ware	Costrel	1	Base
Type 19B	Lead-glazed Ware	Costrel	3	Rim Fragments
Type 19B	Lead-glazed Ware	Costrel	1	Handle
Type 19B	Lead-glazed Ware	Costrel	5	Base Fragments
Type 19B	Lead-glazed Ware	Costrel	320	Body Sherds
Type 20	Lead-glazed Ware	One-handle Jug	1	Intact
Type 21	Lead-glazed Ware	Small Jug	1	Intact
Type 22	Lead-glazed Ware	Small Jug	3	Intact

Table 6. Quantities of unglazed coarsewares and lead-glazed wares from the Tortugas shipwreck (RBHS).

The origin of the Seville pottery found on the Tortugas shipwreck has been confirmed by Inductively-Coupled Plasma Spectrometry (ICPS) chemical analysis (Hughes, 2014; Table 7).

Although these headings are useful tools to characterize production, in the case of the Tortugas ship these tablewares cannot have been manufactured literally by Morisco potters because this ethnic group of cheap labor was exiled from Spain in 1610, 12 years prior to the final voyage of the *Buen Jesús* (see section 10 below). Instead, these vessel types may be described as of Morisco tradition.

This report presents the Tortugas tablewares, including a catalogue (Appendix 1), and examines their parallels on terrestrial sites and other shipwrecks (section 9). It concludes with a socio-economic analysis of whether the early 17th-century reliance on Seville region ceramics identified within the Tortugas wreck was a cultural preference, a characteristic shared by contemporary European seafaring or was an extreme nationalistic example of domestic consumption and, if so, for what purpose (section 10).

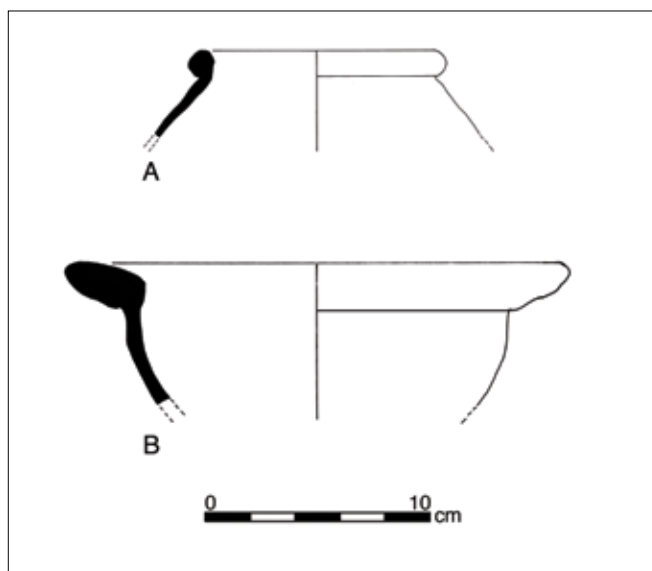
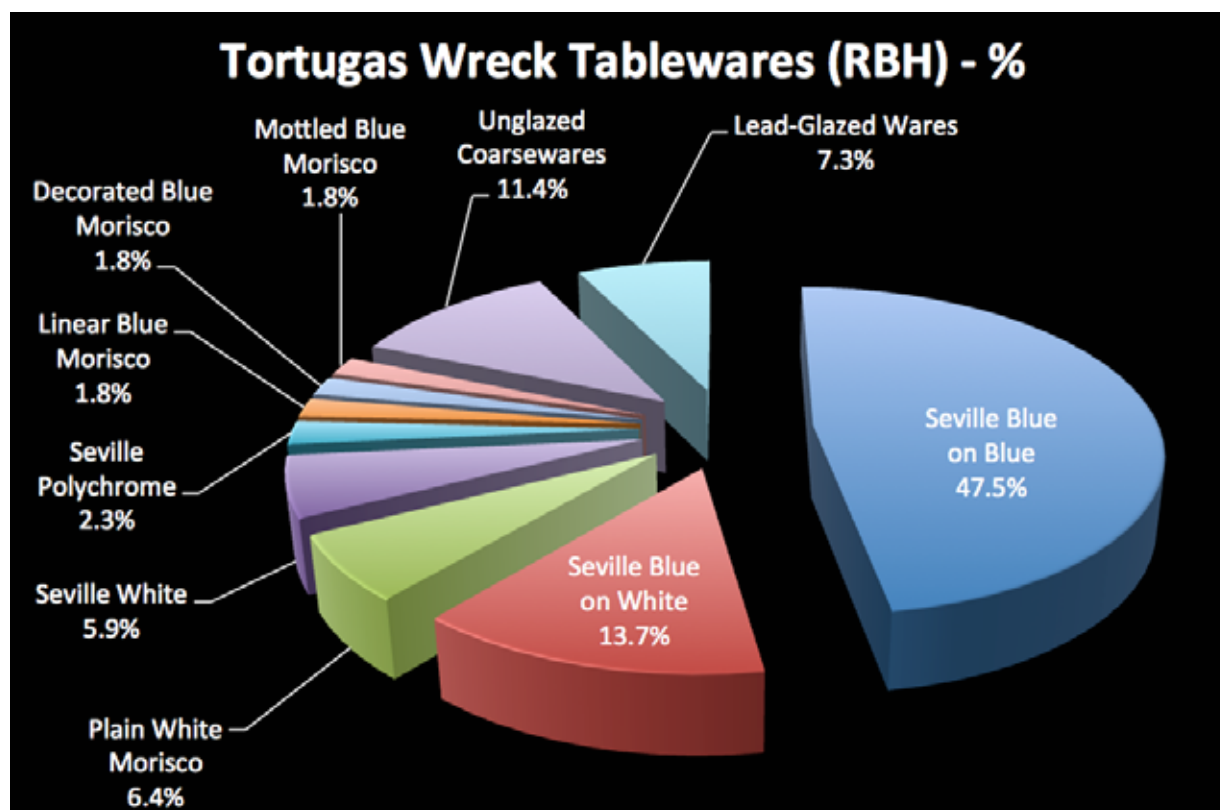
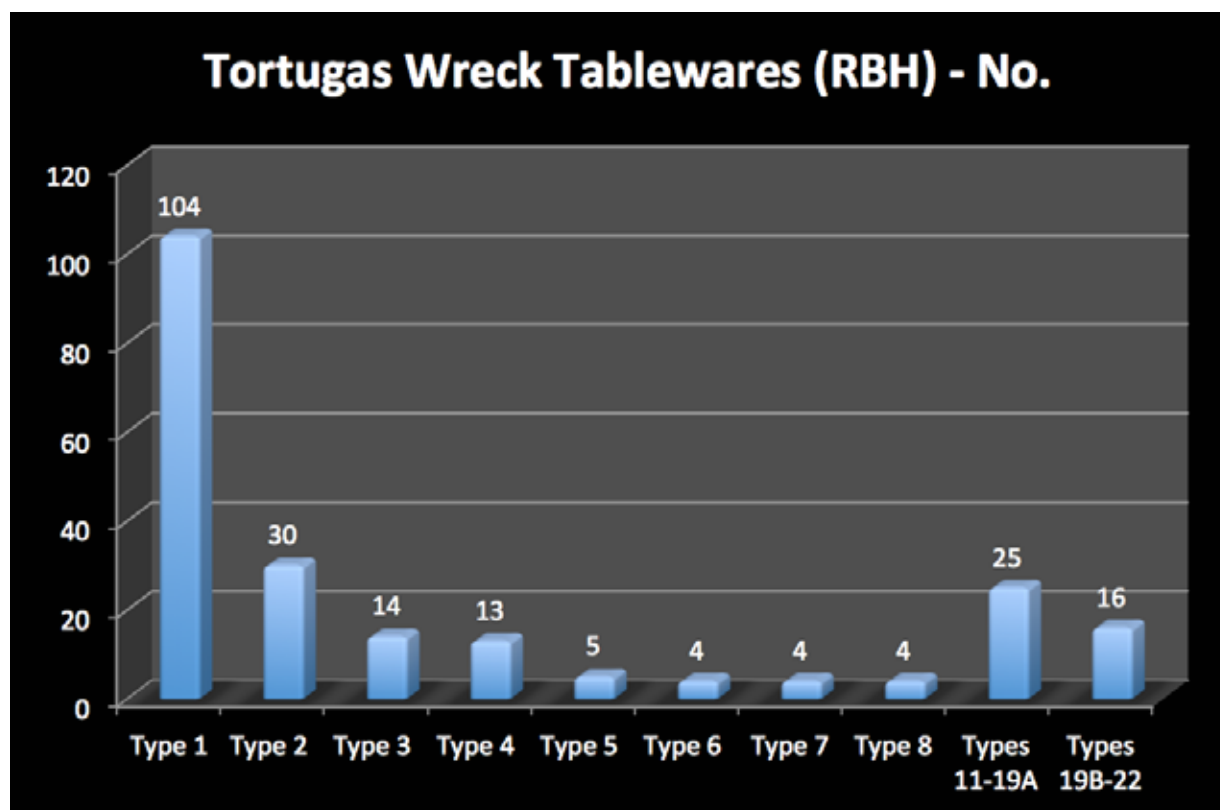
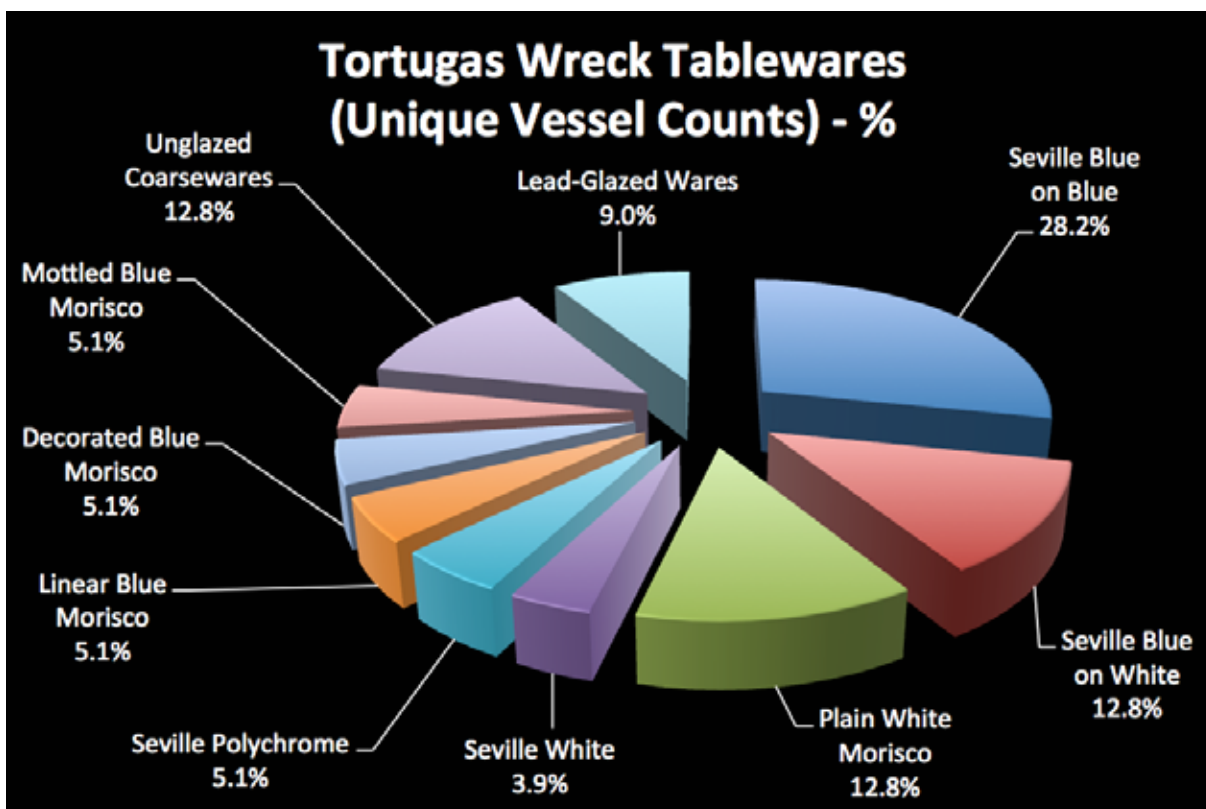
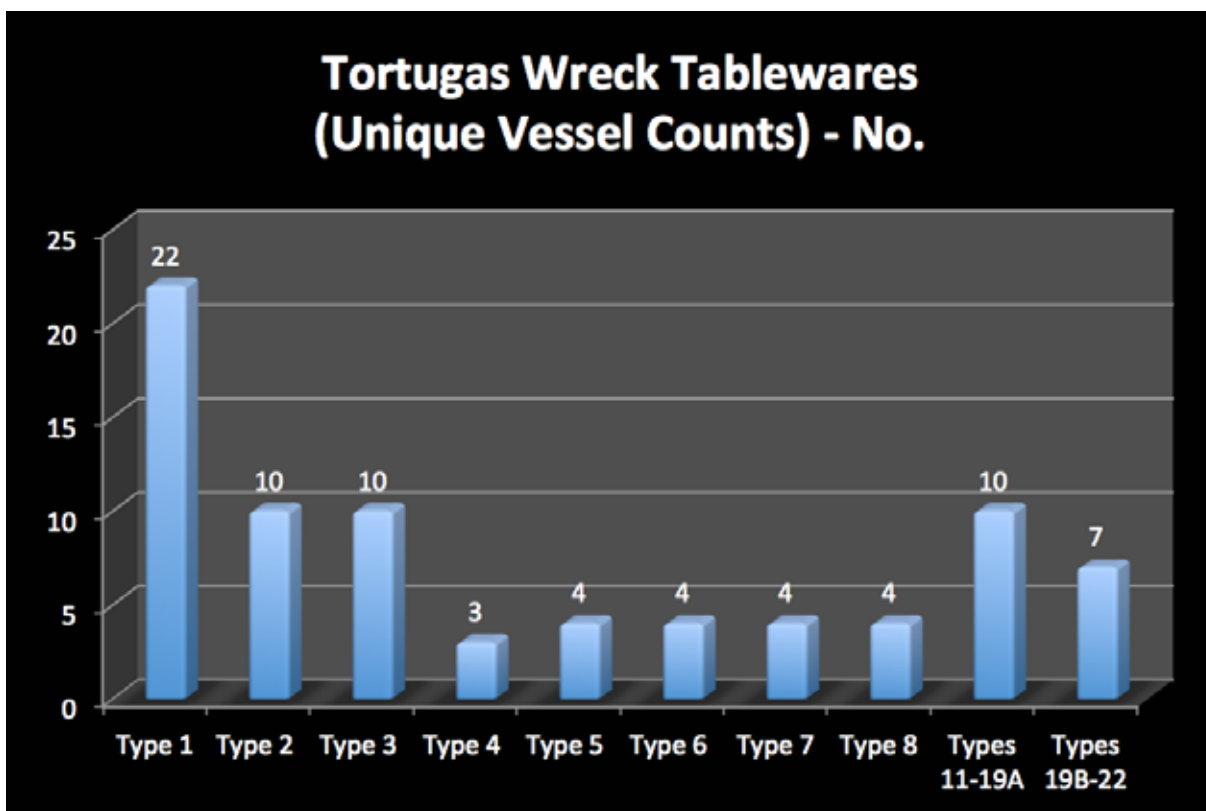


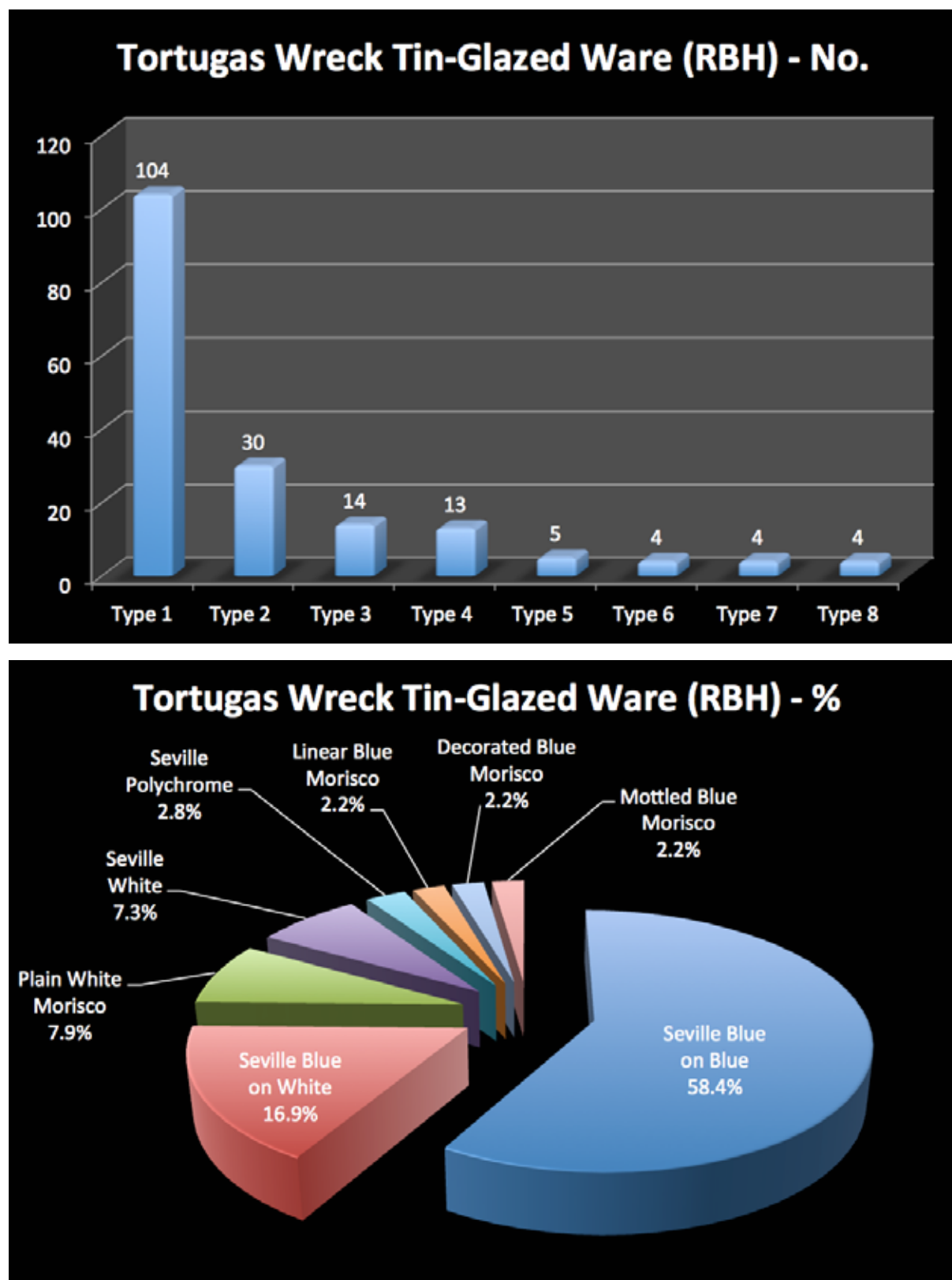
Fig. 10. Tortugas shipwreck unglazed coarsewares.
A. Type 11A jar (TOR-90-01225-CS).
B. Type 11B bowl (TOR-90-01226-CS).



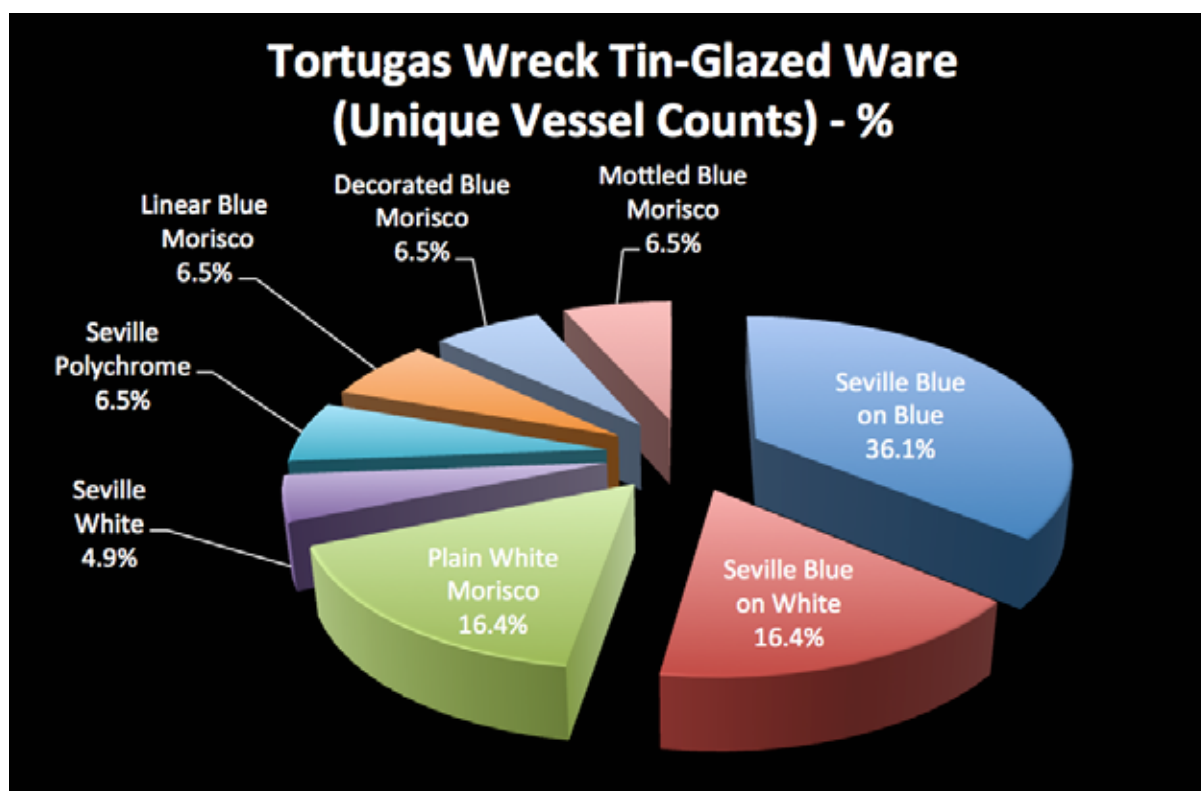
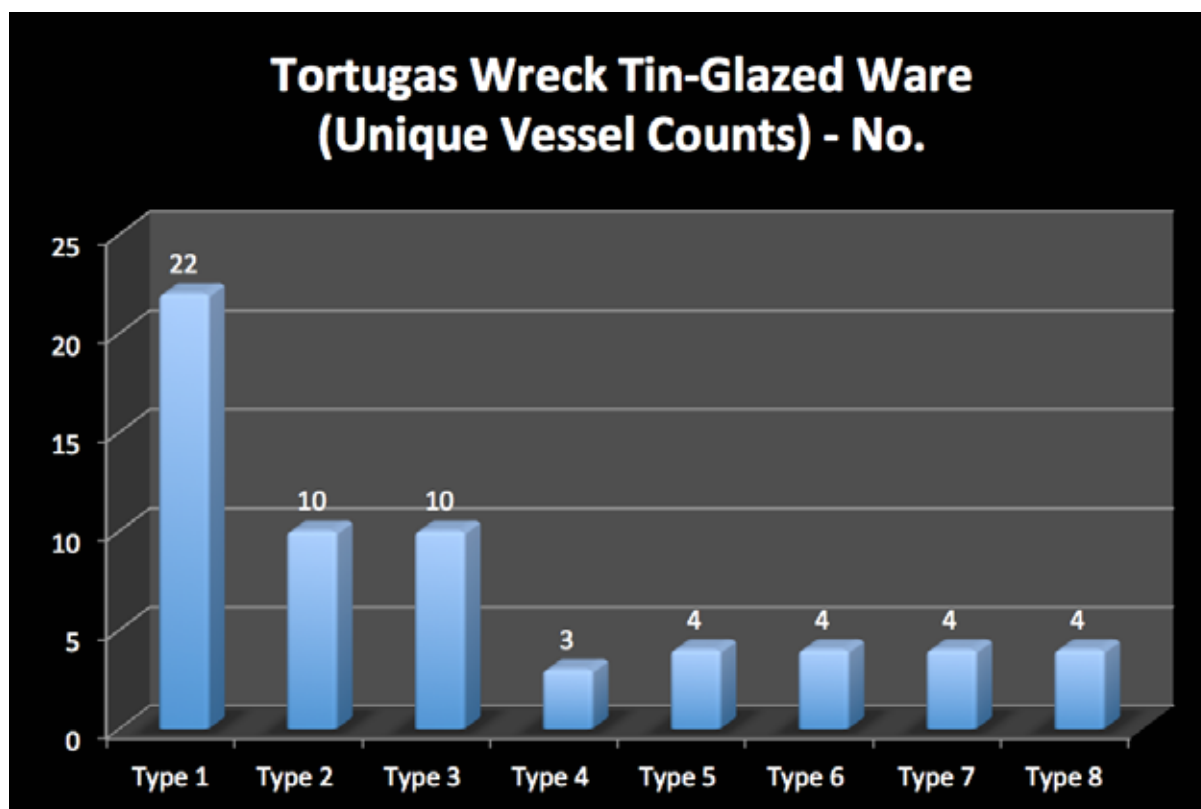
Figs. 11-12. Tortugas shipwreck tableware quantification by rim, base and handle count (number and percent).



Figs. 13-14. Tortugas shipwreck tableware quantification by unique vessel count (number and percent).



Figs. 15-16. Tortugas shipwreck tin-glazed ware quantification by rim, base and handle count (number and percent).



Figs. 17-18. Tortugas shipwreck tin-glazed ware quantification by unique vessel count (number and percent).

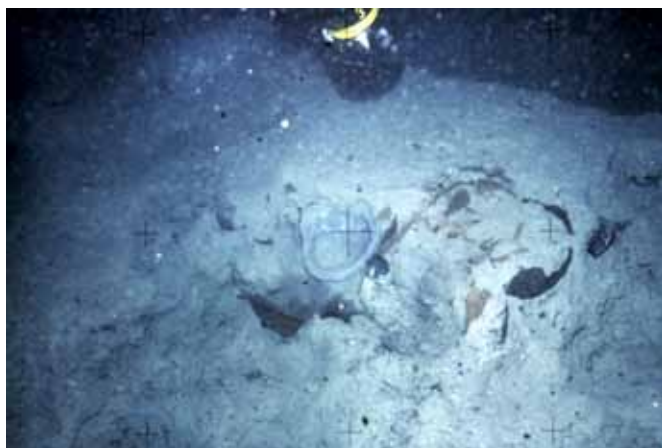


Fig. 19. Seville Blue on Blue tin-glazed plate in situ (Type 1A, TOR-90-00086-CS).



Fig. 20. Seville Blue on Blue tin-glazed plate in situ (Type 1A, TOR-90-00085-CS).



Fig. 21. Tortugas Type 1A Seville Blue on Blue tin-glazed plate in situ with olive jars and a Decorated Blue Morisco ware Type 7 pitcher.



Fig. 22. Seville Blue on Blue tin-glazed jug in situ (Type 1C, TOR-90-00035-CS).



Fig. 23. Merida-type jug in situ alongside olive jars (Type 12, TOR-90-00031-CS).



Fig. 24. Tortugas Type 3B Plain White Morisco tin-glazed plate in situ.



Fig. 25. Two Tortugas Type 3B Plain White Morisco tin-glazed plates in situ alongside olive jars.



Fig. 26. Tortugas Type 22 lead-glazed jug in situ (TOR-90-1A-001965) alongside olive jars.



Fig. 27. Tortugas Type 6B Linear Blue Morisco tin-glazed pitcher in situ (TOR-90-1A-1665-CS) alongside olive jars and anchor A1 south of the site.



Fig. 28. Tortugas Type 22 lead-glazed jug in situ alongside olive jars.



Fig. 29. Tortugas Type 3B Plain White Morisco tin-glazed plate in situ alongside olive jars and the ship's cauldron.



Fig. 30. Tortugas Type 7 Decorated Blue Morisco tin-glazed pitcher in situ alongside olive jars (TOR-90-00068-CS).



Fig. 31. A Tortugas Type 3B Plain White Morisco tin-glazed plate in situ alongside olive jar fragments.



Fig. 32. A Tortugas Type 2A Seville Blue on White tin-glazed plate in situ alongside olive jar fragments and hull planking in the stern.



Fig. 33. Tortugas Type 4C Seville White tin-glazed cup in situ beneath the arms of anchor A3 at the north end of the site (TOR-90-00065-CS).

2. Seville Blue on Blue Ware (Tortugas Type 1; Ichucknee Blue on Blue)

The Type 1 Seville Blue on Blue products used on the Tortugas ship account for 28.2% of all tablewares and 36.1% of tin-glazed wares by counts of largely intact or unique vessels (Figs. 13-14, 17-18). The 938 RBHS or 104 RBH derive from a minimum of 17 plates, four small bowls and one small jug (Figs. 3, 48-69). Of the total assemblage, 70 small rim fragments, 13 base fragments and 823 body sherds could not be distinguished as deriving from distinctly separate vessels.

The assemblage comprises a restricted range of four forms: predominantly Type 1A wide-flanged plates (H. 3.1-3.9cm, Diams. 20.9-21.3cm, rim W. 3.2-3.4cm; Figs. 3B, 3D, 3E); a Type 1B plate with a short rounded rim and

inter-crossing u-shaped swirls covering the entire outer body (H. 4.2cm, Diam. 21.2cm, rim W. 1.6cm; Fig. 64); Type 1C shallow bowls with flat bases and gently curved rims (H. 4.5cm, W. 7.3cm; Figs. 65-68); and a Type 1D one-handle small jug (H. to mid-neck 9.6cm, body Diam. 10.0cm; Fig. 69).

Seville Blue on Blue fabric has been defined generically as pale cream, extremely chalky, with surfaces covered with heavy enamel coating up to 1mm thick (Goggin, 1968: 135-40). The Tortugas assemblage consists of varying background hues of light blue and differing qualities of matt and gloss tin-glazed enamel fired over well-levigated fine white to pale yellow fabric (2.5Y 8/3). The darker blue overlying painted schemes vary widely in darkness and quality of execution. All examples strictly employ a blue on blue color scheme except for bowl TOR-90-00051-CS, where the introduction of yellow pigment brings a golden hue to the design (Fig. 67), and small jug TOR-90-00035-CS, which incorporates brown lines to frame a fruit motif (Fig. 69). The Type 1A imitation of a Ligurian plate with floral decoration is by far the best finished Seville Blue on Blue ware represented (TOR-90-00061-CS; Fig. 48).

Ten decorative rim and 13 base styles exist within the assemblage (Figs. 43-47). The designs are generally crudely conceived, consisting of heavily schematized motifs that have debased almost beyond recognition from their original Chinese and subsequent Italian derivations. Only plates TOR-90-00061-CS of clear Ligurian imitative style (Fig. 48) and the Chinese scheme of TOR-90-00088-CS (Fig. 57) display any convincing naturalism. Even where fruit are depicted on three central plate roundels (Figs. 54-56), the effect appears imbalanced and visually crude. The Tortugas ship's Seville Blue on Blue wares give every indication of mass-market production to supply a far-flung demand.

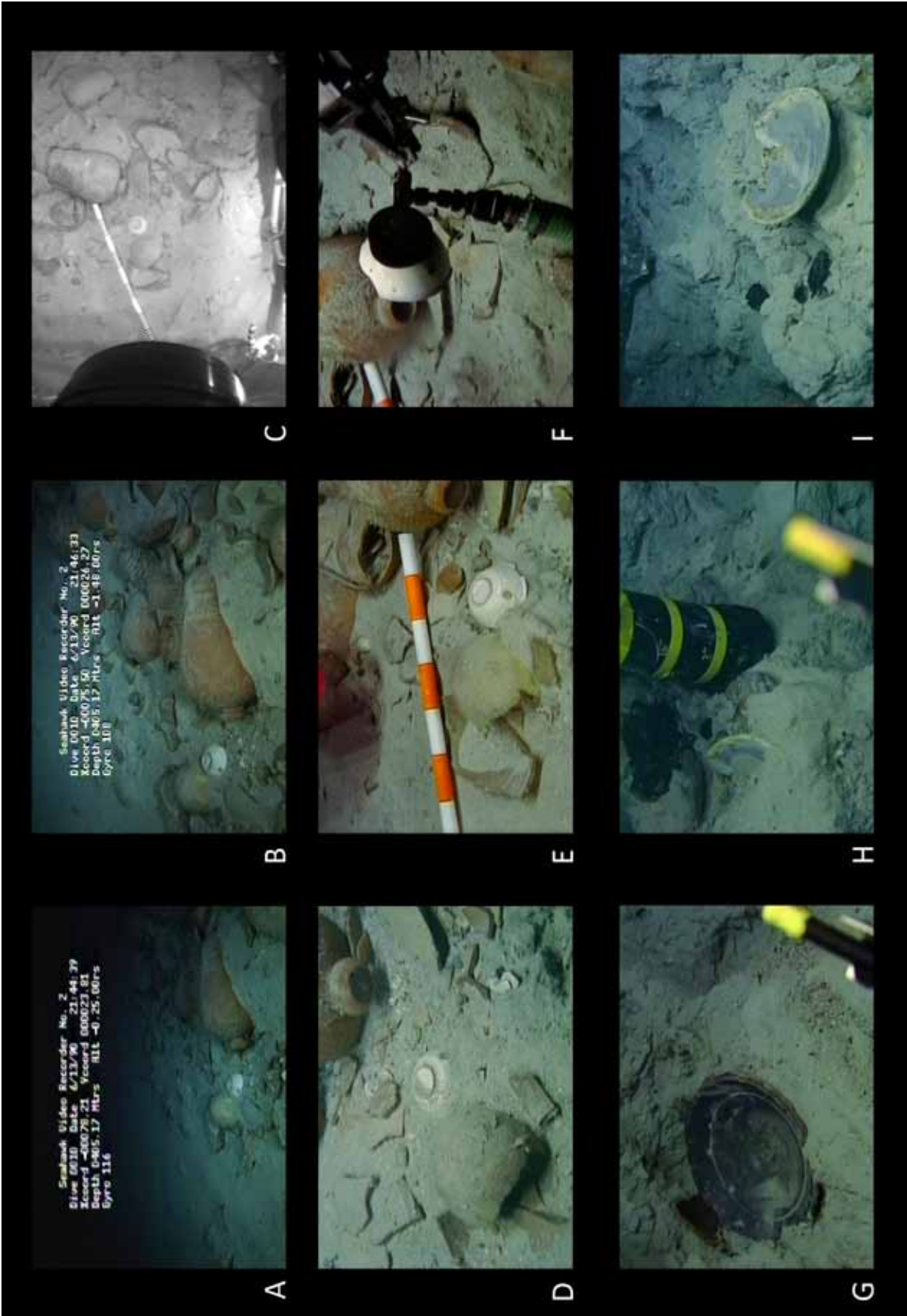


Fig. 34. A-F. Seville White tin-glazed bowl in situ alongside intact olive jars and being recovered (Type 4B, TOR-90-00036-CS).
G-H. Two Tortugas Type 3B Plain White Morisco tin-glazed plates in situ (G, H) and uncovered (I).

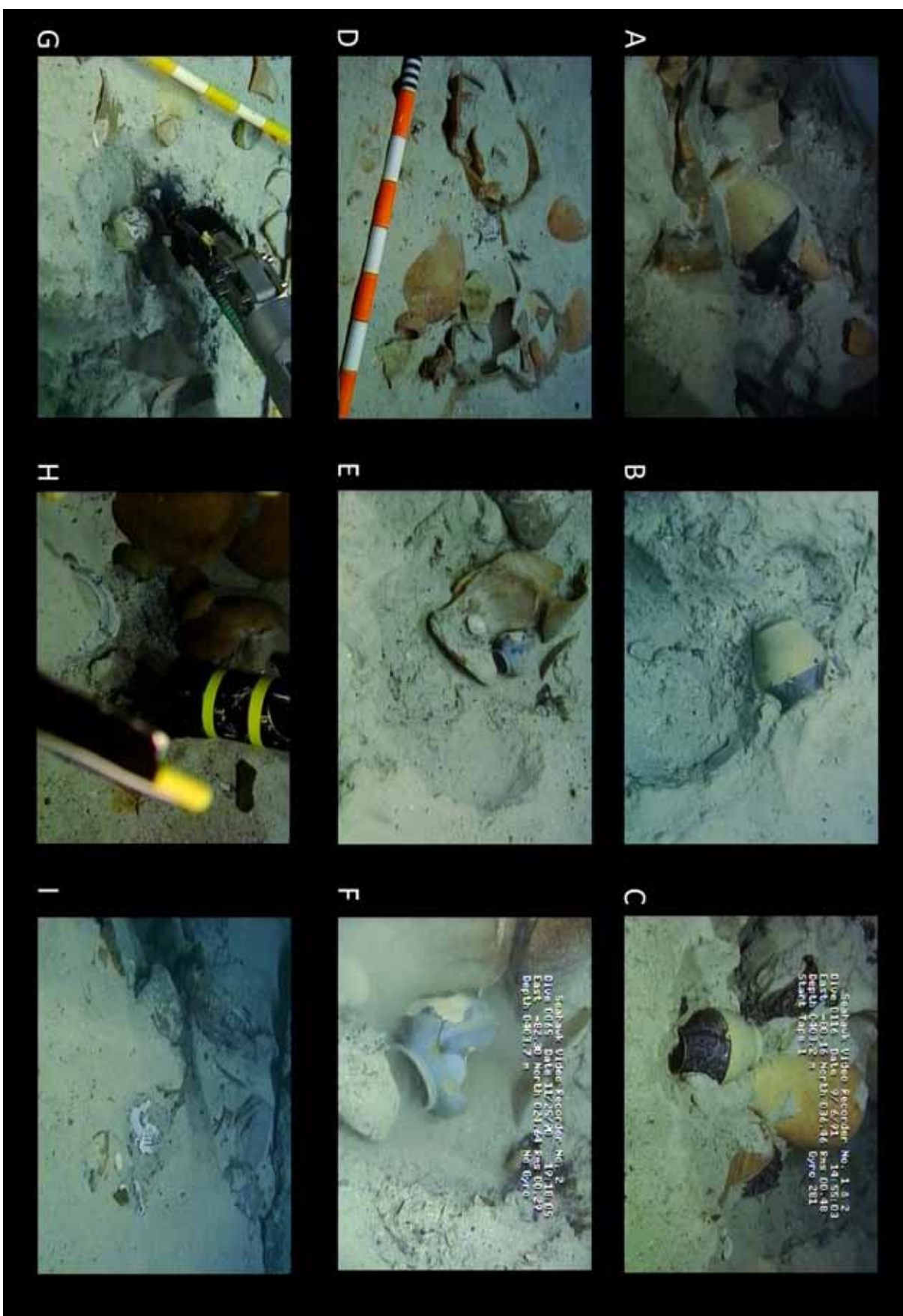


Fig. 35. Tortugas tablewares in situ. A. Half-dipped lead-glazed jug (Type 20, TOR-90-00016-CS). B. Linear Blue Morisco jar (Type 6A, TOR-90-00069-CS). C. Decorated Blue Morisco pitcher (Type 7, TOR-90-1A-003240). D. Mottled Blue Morisco jug (Type 8B, TOR-90-1A-00052). E-F. Sevillie Blue on Blue jug (Type 1D, TOR-90-00035-CS). G. Sevillie Polychrome jug (Type 5A, TOR-90-00032-CS). H-I. Two Type 2A Sevillie Blue on White plate fragments (I: TOR-90-00057-CS).



Fig. 36. A. Plain White Morisco tin-glazed flanged plate (Type 3C, TOR-90-00047-CS).
B-D. Tortugas Type 1A Seville Blue on Blue tin-glazed plate bases and fragments in situ.

All of the rim decoration comprises variations on floral/vegetation themes (Figs. 43-44). These range from neatly ordered buds on stalks creeping around rims (Rim Style A) to mere horizontal and vertical discontinuous slashes/lines (Rim Styles H-I). Two classic decorative styles are evident, whose devolved yet related progression may be proposed. Firstly, Rim Style Bi represents outward oriented symmetrical and schematized swirling floral motifs, composed of continuous curved lines with minimal naturalistic semblance. In the Bii variety the floral motifs become discontinuous and schematized: while the motif unity remains evident, it has devolved into two separated v-shaped symbols painted on either side of two solid dots. Bi motifs alternate adjacent to the Bii variety on the same plates and bowls. Any recollection that these were perhaps once inspired by garden scenes is long forgotten in Rim Style C, where the floral concept is replaced by three crude v-shaped motifs arranged in a triangular configuration.

Rim Style D may be considered an additional devolved sub-form of Bi, where any attempt at naturalism has been replaced by the naïve schematic of four outward oriented concave curved lines partitioned by upside-down v-shaped motifs. In all cases, the above are bordered above and below on the rim edges by dual blue lines.

In the second classic scheme, Rim Style E consists of hollow circles framed by an undulating blue line (Fig. 44). The circles have devolved in Rim Style F into curved lines with solid ellipptoids above, alternately facing outwards and rotated 180° inwards; the undulating dividing line has become careless and more loosely rendered. Finally, the circles have seemingly devolved into v-shaped motifs in Rim Style G, again separated by a faint undulating line. While it is not suggested that these patterns represent a chronological change, they do seem to reflect contemporary ever-distant departures from the Oriental ideal and Italian tradition in differing stages preferred by separate pottery workshops.



Fig. 37. Tortugas Type 1 Seville Blue on Blue tin-glazed sherds.

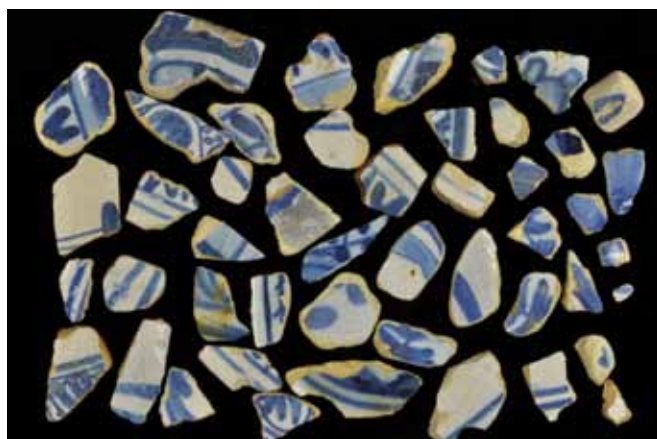


Fig. 38. Tortugas Type 2 Seville Blue on White tin-glazed sherds.



Fig. 39. Tortugas Type 4 Seville White tin-glazed sherds.



Fig. 40. Tortugas Type 5 Seville Polychrome tin-glazed sherds



Fig. 41. Tortugas Types 6-7 Linear/Decorated Blue Morisco tin-glazed sherds.



Fig. 42. Honey and green lead-glazed sherds of Tortugas Type 19B form.

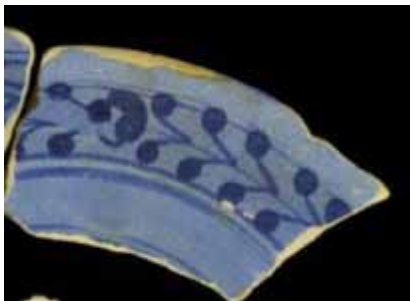

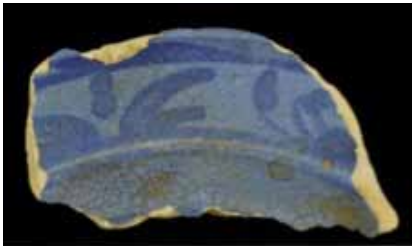


<p>Rim Style A Horizontal vegetation oriented anti-clockwise, creeping around the rim perimeter with sets of two buds on stalks & occasional central flowering bud. Bordered by two concentric lines at outer edge & three at inner edge (plate, TOR-90-00061-CS).</p>	
<p>Rim Style Bi Outward oriented schematized swirling floral motifs composed of continuous curved lines, bounded by double concentric lines at both edges. Occurs alternatively alongside Rim Style Bii (plate, TOR-90-00044-CS).</p>	
<p>Rim Style Bii Outward oriented schematized floral motif composed of two v-shaped elements set sideways with two solid circles at center. Bounded by thick single line on upper edge & double concentric line on lower edge. Occurs alternatively alongside Rim Style Bi (plate, TOR-90-00054-CS; bowl, TOR-90-00049-CS).</p>	
<p>Rim Style C Outward oriented schematized floral motifs composed of three discontinuous v-shaped lines, bounded by double concentric lines on outer and inner edges. Occurs alternatively alongside Rim Style Bi (plates, TOR-90-00081-CS, TOR-90-00084-CS).</p>	
<p>Rim Style D Sets of four vertical concave lines facing outwards & lengthening outwards as they descend to inner edge, partitioned by thick v-shaped floral motifs oriented inwards; bordered by double concentric lines on both edges (plate, TOR-90-00041-CS).</p>	

Fig. 43. Rim styles for Tortugas Type 1 Seville Blue on Blue tin-glazed wares.


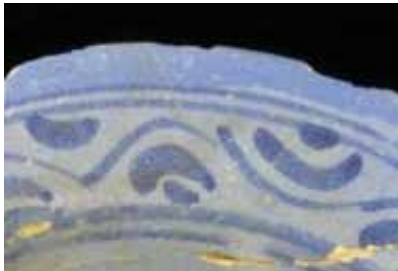
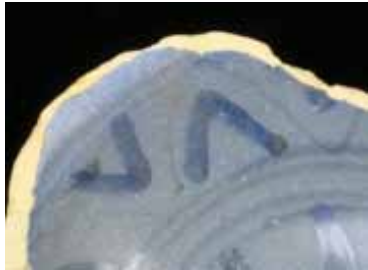

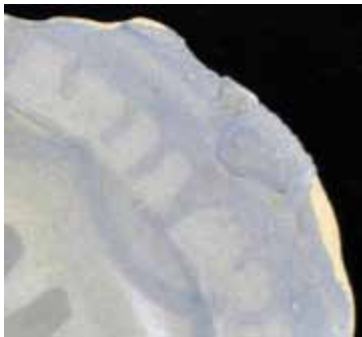
<p>Rim Style E Narrow brimmed rim with hollow oblong geometric motifs separated by wavy line frame alternately rising & falling to rim edge. Bordered at both outer & inner edge by dual concentric lines (plate, TOR-90-00086-CS).</p>	
<p>Rim Style F Elliptoids with oblong circles above set alternatively facing out & inwards, separated by shallow wavy line; bordered by dual lines on both outer and inner edge/body wall (plate, TOR-90-00046-CS).</p>	
<p>Rim Style G Schematic decoration across rim & body interior composed of thick v-shaped motifs alternately facing outwards & rotated 180° inwards, set within thin-lined diagonal frame. Delineated from lower body by two sets of concentric circles (bowl, TOR-90-00048-CS).</p>	
<p>Rim Style H Sets of dual gently diagonal straight lines bordered at rim edge by band of three concentric lines (plate, TOR-90-00085-CS).</p>	
<p>Rim Style I Lines of uneven length & thickness dripping inwards. Bordered at outer edge by dual concentric lines & by wavy line merging between inner edge & upper body wall (plate, TOR-90-00058-CS).</p>	

Fig. 44. Rim styles for Tortugas Type 1 Seville Blue on Blue tin-glazed wares.

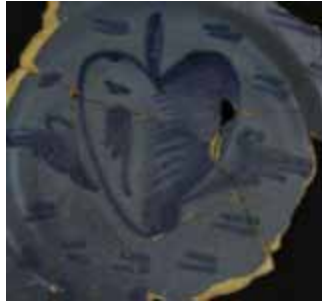
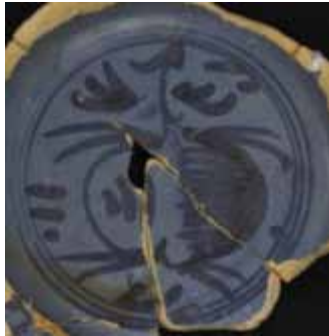
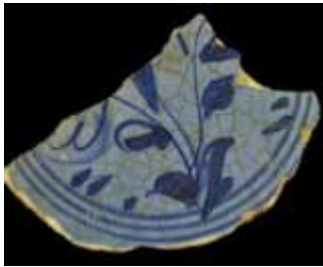
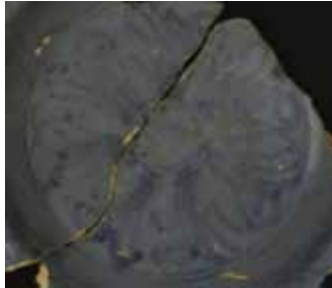
<p>Base Style A Pear/apple within central roundel with wing-like motif to each side, & short dual diagonal lines on roundel edge (mirroring the rim style); sometimes bordered by three concentric lines (plate, TOR-90-00052-CS, TOR-90-00085-CS).</p>	
<p>Base Style B Pomegranate/peach within central roundel attached at top to a stalk, flanked by triple diagonal lines at bottom and left; bordered by three concentric lines (plate, TOR-90-00084-CS).</p>	
<p>Base Style C Naturalistic flowering vegetation with petals emanating from central stalk, bordered by three concentric lines (plate, TOR-90-00088-CS).</p>	
<p>Base Style D Elaborate large flower with hollow circle at center, & around 14 overlapping petals radiating outwards; flanked by two concentric lines (plate, TOR-90-00086-CS).</p>	

Fig. 45. Base styles for Tortugas Type 1 Seville Blue on Blue tin-glazed wares.

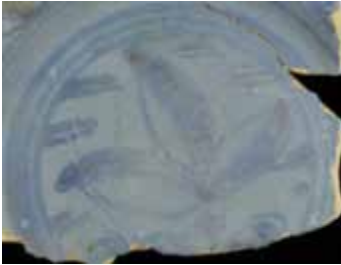

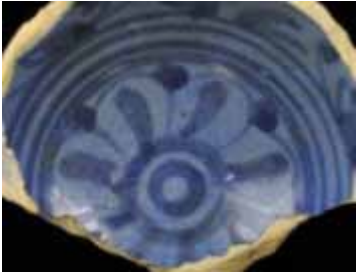
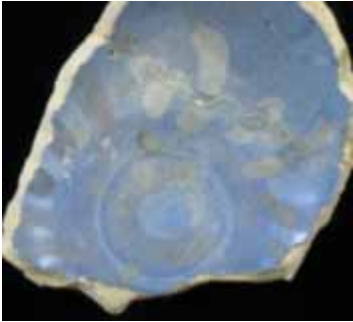
<p>Base Style E Three-petalled flower motif with further foliage below, surrounded by dual short diagonal lines; framed by three concentric lines (plates, TOR-90-00044-CS, TOR-90-00055-CS).</p>	
<p>Base Style F Schematized floral motif with six elliptical petals radiating from two central hollow circles at center; double v-shaped motifs between, the inner one long, the outer short. Flanked by three concentric lines (plate, TOR-90-00053-CS).</p>	
<p>Base Style G Schematized floral motif with eight petals, curving anti-clockwise & thickening towards outer base, radiating outwards from two central hollow circles. In between, thick buds linked by thin rounded lines reaching to central circle. Roundel & body separated by four concentric lines (plates TOR-90-00046-CS, TOR-90-00061-CS; bowls TOR-90-00049-CS, TOR-90-00056-CS).</p>	
<p>Base Style H Schematized floral motif of Base Style G form, but with alternating long & short petals oriented anti-clockwise, radiating outwards from two central hollow circles. No background buds/vegetation (bowl, TOR-90-00051-CS).</p>	

Fig. 46. Base styles for Tortugas Type 1 Seville Blue on Blue tin-glazed wares.

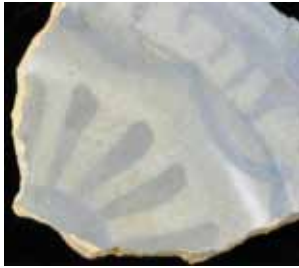
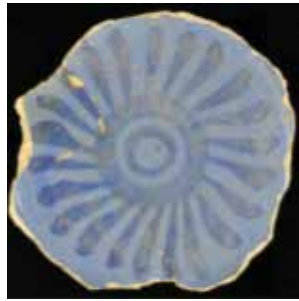


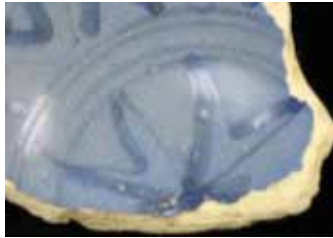
<p>Base Style I A floral motif with two central hollow circles, curved petals radiating outwards anti-clockwise; wavy line at outer edge (plate, TOR-90-00058-CS).</p>	
<p>Base Style J Degraded floral motif schematized to a sun-like symbol, with 22 curved anti-clockwise petals radiating out from two thick hollow central circles (plate, TOR-90-00045-CS).</p>	
<p>Base Style K Heavily schematized sun-like floral motif consisting of eight concentric circles; remains of two petals radiating outwards (plate, TOR-90-00050-CS).</p>	
<p>Base Style L Sets of three outward oriented concave swirls set vertically and lengthening inwards (replicating the rim style), surrounding a highly schematized five-pronged star at center framed by three concentric lines (plate, TOR-90-00041-CS).</p>	
<p>Base Style M Debased floral motif resembling a star, with four v-shaped petals surviving framed by two sets of concentric circles (bowl, TOR-90-00048-CS).</p>	

Fig. 47. Base styles for Tortugas Type 1 Seville Blue on Blue tin-glazed wares.



Fig. 48. Tortugas Type 1A, Seville Blue on Blue tin-glazed flanged plate (Rim Style A/Base Style G) (TOR-90-00061-CS).

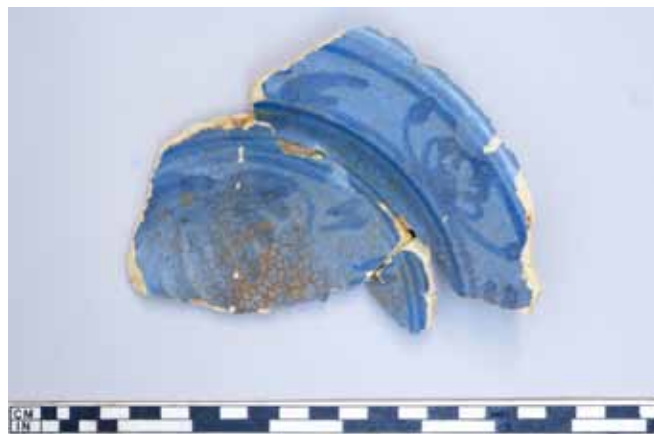


Fig. 49. Tortugas Type 1A, Seville Blue on Blue tin-glazed flanged plate (Rim Style Bi/Bii and Base Style E?) (TOR-90-1A-002146). Photo: courtesy of the Mel Fisher Maritime Museum.

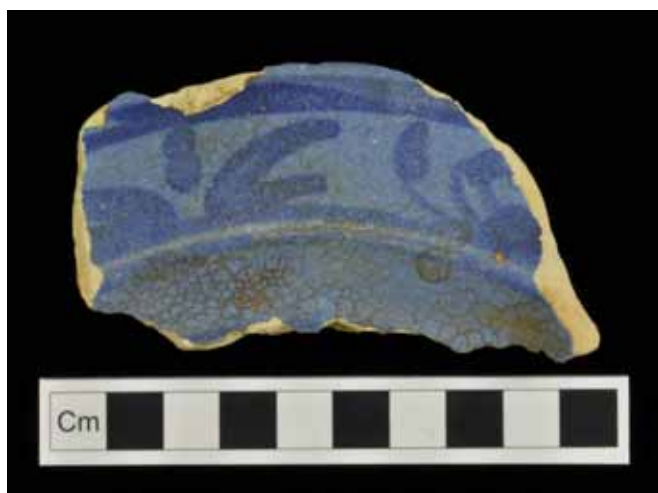


Fig. 50. Tortugas Type 1A, Seville Blue on Blue tin-glazed flanged plate (Rim Style Bi/Bii) (TOR-90-00054-CS).



Fig. 51. Tortugas Type 1A, Seville Blue on Blue tin-glazed flanged plate (Rim Style D/Base Style L) (TOR-90-00041-CS).



Fig. 52. Tortugas Type 1A, Seville Blue on Blue tin-glazed flanged plate (Rim Style Bi/C) (TOR-90-00081-CS).



Fig. 53. Tortugas Type 1A, Seville Blue on Blue tin-glazed flanged plate (Rim Style F/Base Style G) (TOR-90-00046-CS).

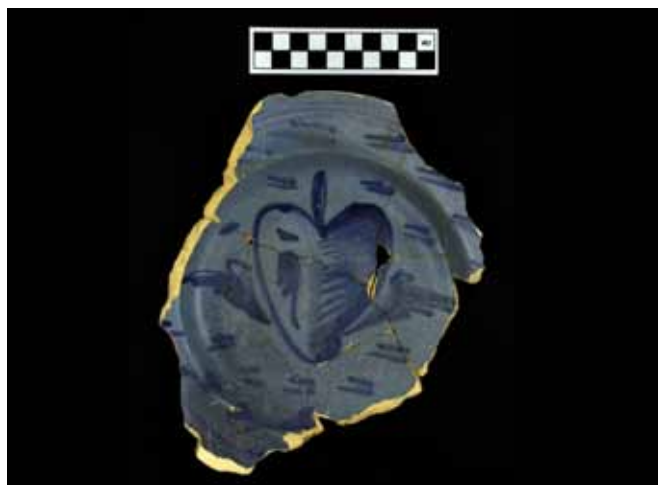


Fig. 54. Tortugas Type 1A, Seville Blue on Blue tin-glazed flanged plate (Rim Style H/Base Style A) (TOR-90-00085-CS).



Fig. 55. Tortugas Type 1A, Seville Blue on Blue tin-glazed plate (Base Style A) (TOR-90-00052-CS).

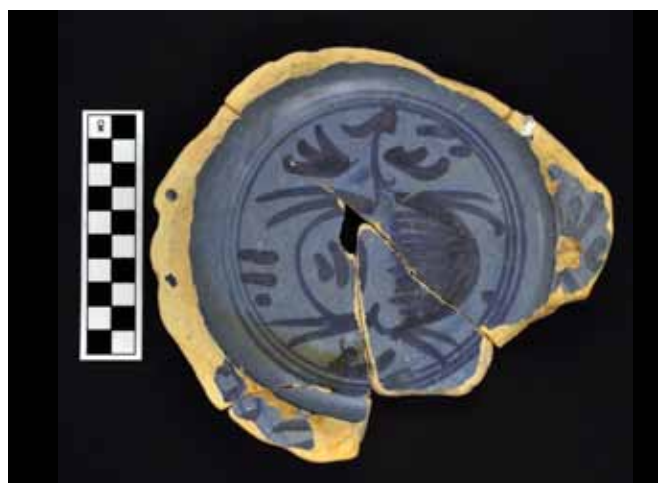


Fig. 56. Tortugas Type 1A, Seville Blue on Blue tin-glazed flanged plate (Rim Style Bi & C/Base Style B) (TOR-90-00084-CS).



Fig. 57. Tortugas Type 1A, Seville Blue on Blue tin-glazed plate (Base Style C) (TOR-90-00088-CS).



Fig. 58. Tortugas Type 1A, Seville Blue on Blue tin-glazed plate (Base Style C) (TOR-90-00055-CS).



Fig. 59. Tortugas Type 1A, Seville Blue on Blue tin-glazed plate (Rim Style Bi/Base Style E) (TOR-90-00044-CS).



Fig. 60. Tortugas Type 1A, Seville Blue on Blue tin-glazed plate (Base Style F) (TOR-90-00053-CS).



Fig. 61. Tortugas Type 1A, Seville Blue on Blue tin-glazed flanged plate (Rim Style I/Base Style I) (TOR-90-00058-CS).

Comparatively greater energy and retention of naturalism is expressed in the 13 base styles (Figs. 45-47). Base Style A and B focus on awkwardly positioned and hastily rendered and schematized pieces of fruit (pear/apple and pomegranate) dominating the central roundel interior. The naturalistically flowering vegetation with petals emanating from a central stalk retained in Base Style C is the closest comparison to Oriental themes perceived within the Tortugas tableware assemblage. Further, the enamel on TOR-90-00088-CS is conspicuously lighter blue than on the other plates in this series and the painted internal decoration is darker blue. Unlike the rest of the Seville Blue on Blue tin-glazed series, this Base Style C plate features extensive surface crazing on both the interior and exterior surfaces, perhaps a deliberate attempt to replicate Oriental porcelain. Base Style D is dominated by a large exuberant flower with a central hollow circle from which a series of around 14 overlapping petals radiate outwards; the scheme appears rushed and created with little care.

The flower depicted in Base Style E takes the form of a plain and heavily schematized three-petalled flower with further foliage below (Fig. 46); its scheme is similar to Base Style A. In Base Style F a star-like floral schematic has replaced any naturalism, a feature that continues in Base Styles G-J and ends with Base Style K's completely star-like motif consisting of eight concentric circles, with sections of two petals radiating outwards. The result is predominantly geometric in style and satisfaction (Fig. 47). The central motif adopted in Base Styles L and M seems more planetary than naturalistic.

In terms of origins, Rim Style A is a Seville imitation of a highly popular Ligurian maiolica decorative scheme (Deagan, 1987: pl. 2), which has been identified in its Italian form as far afield as 17th-century Calle Salinas, Malaga, in the Convento de San Francisco, Dominican Republic, in Santa Elena in South Carolina and in Mexico City in the second half of the 16th century (Goggin, 1968: 137, fig. 12a; Lister and Lister, 1976: 32, fig. 3b; 1982: 74, fig. 4.41; Skowronek *et al.*, 1988: 238; Pérez-Malumbres Landa and González-Hernández, 1991: 4, no. 127-21).

The Italian prototype has been excavated from a 16th-century kiln in Genoa and is also known from wasters at Savona dated to 1568, which in turn imitated Turkish variants of Chinese originals (Blake, 1981: 113, 114, fig. 8.10). It has been excavated from the Cathedral of S. Michele, Albenga, on 16-18cm-diameter plates that include the prototype of Base Style M, in contexts of the first half of the 16th century (Chilosi, 2011: 33.13, 34.16).

This precise Ligurian monochrome rim style (as well as a close variant of the Tortugas Base Style G decorative motif) was very common in the Netherlands during the

second half of the 16th century (Jaspers, 2012: 13, fig. 2), but is only present on one of 16 sites in England dated 1550-1625 (Hurst, 1991: 214, 230, fig. 10a). The same style is represented on the wreck of the *Atocha* (Mel Fisher Artifact Research Database, MFARD, no. M80/81.1581 and A82.7709).²

Rim Style A is the most common Italianate form excavated in Barcelona, where it is defined as of Ligurian *blu bezzettino* production, *calligrafico a volute* Type C, and occurs with bases similar to Tortugas Base Style G. The so-called *calligrafico* style includes plant motifs painted in a more or less abstract manner with scrolls and curves drawn with the tip of the brush to form a very fine line (Beltrán de Heredia Bercero and Miró i Alaix, 2007: 31-2, 111, pl. 29).

The ICPS analysis of the Tortugas tablewares (Hughes, 2014) does not sustain a Ligurian provenance for plate TOR-90-00061-CS (Fig. 48). Ligurian ceramics have not been studied to comparable standards as Seville wares, but neutron activation analyses has revealed two chemical patterns for Liguria: among other features the Albisola/Savona clay composition has very high chromium (over 300ppm), while those from Genoa are in the range of 120-180ppm. In a problematic twist of nature, the chemistry of Seville and Genoa pottery is very similar for quite a few elements. Plate TOR-90-00061-CS is unlike Savona/Albisola clay, but exhibits some similarities to Genoa pottery. When examined in detail, however, it has lower chromium than any Genoa ceramics analyzed and differs from the Genoa range in regard to four major elements (aluminium, iron, sodium and titanium) and two other trace elements (for which data exist). On these grounds, the Tortugas plate does not appear to conform to the Genoa chemical pattern; the results are more consistent with a Seville origin. Because it is not entirely typical in chemistry to the Blue on Blue series, or to any of the other Tortugas samples, it may have originated from a different kiln in the Seville region (pers. comm. Michael Hughes, 18 July 2013).

Rim Style Bi again originates in far more naturalistic form amongst Ligurian maiolica, as excavated in the Netherlands (Jaspers, 2007: 105). The popular Rim Style Bii, based on a more naturalistic version of the first half of the 16th century excavated in Savona (Chilosi, 2011: 35.20), has also been recovered from beneath floors in Seville (Lister and Lister, 1987: 159, fig. 102) and circulated as far as the Convento de San Francisco in the Dominican Republic (Goggin, 1968: 137, fig. 12b). Rim Style Bii and Base Style H occur on a plate of 1600 from the Jerez de la Frontera Collection, Cadiz (Pleguezuelo, 1999: 373).

The combination of Seville Blue on Blue tin-glazed Rim Style Bi/Base Style E occurs on a plate from Mexico City (Lister and Lister, 1982: 44, fig. 3.44p). The style is

represented on the *Atocha* of 1622 (no. A770, but with a figurative base roundel motif depicting a dwelling/*hacienda*). Rim Style C's schematized swirling motifs are also represented on the *Atocha* (MFARD nos. M80/81.1154, 1238, 1347).

Rim Style D again imitates Ligurian wares originally produced by immigrant Italian potters who settled in Seville in the 16th and 17th centuries, perhaps as early as 1513-29 (Gutiérrez, 2000: 51). The same is true of Rim Style E, which also occurs on Talavera plates excavated at Santiago de Compostela in northwest Spain (Castro Lorenzo, 2009: 145, fig. 8). Rim Style G perhaps imitates the decoration of Montelupo maiolica, such as a blue on white example found in Mexico City (Lister and Lister, 1976: 31, fig. 2a), and is encountered as far as the Dominican Republic. It is similarly conspicuous on the wreck of the *Atocha* (Marken, 1994: 219, fig. 6.28).



Fig. 62. Tortugas Type 1A Seville Blue on Blue tin-glazed plate (Base Style J) (TOR-90-00045-CS).



Fig. 63. Tortugas Type 1A, Seville Blue on Blue tin-glazed plate (Base Style K) (TOR-90-00050-CS).

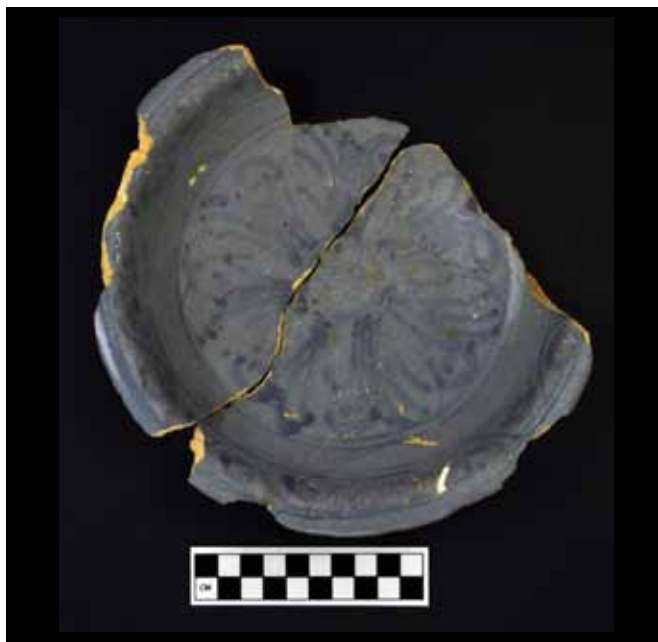


Fig. 64. Tortugas Type 1B, Seville Blue on Blue tin-glazed plate (Rim Style E/Base Style D) (TOR-90-00086-CS).



Fig. 65. Tortugas Type 1C, Seville Blue on Blue tin-glazed bowl (Rim Style G/Base Style M) (TOR-90-00048-CS).



Fig. 66. Tortugas Type 1C, Seville Blue on Blue tin-glazed bowl (Base Style G) (TOR-90-00056-CS).



Fig. 67. Tortugas Type 1C, Seville Blue on Blue tin-glazed bowl (Base Style H) (TOR-90-00051-CS).

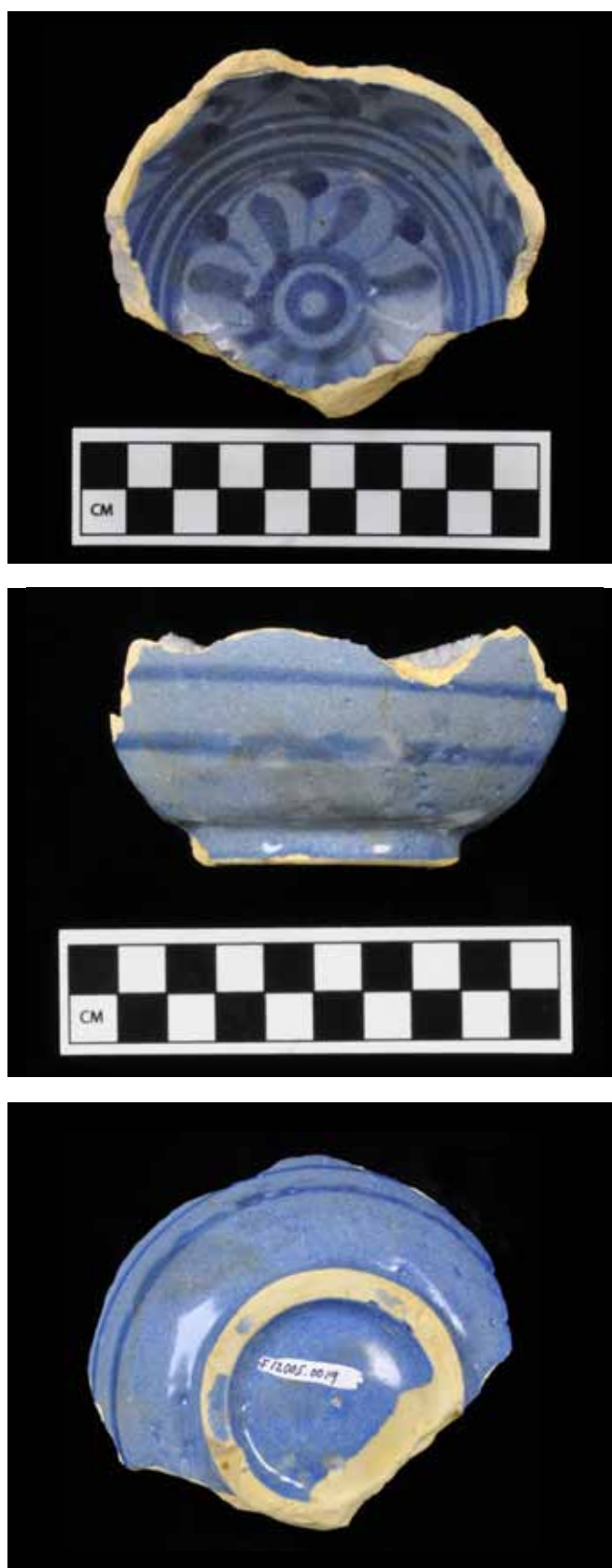


Fig. 68. Tortugas Type 1C, Seville Blue on Blue tin-glazed bowl (Rim Style Bi & Bii/Base Style G) (TOR-90-00049-CS).

In terms of more immediate cultural transmission, Base Style B imitates what are described as leaf motifs painted onto Ligurian maiolica (Jaspers, 2012: 19, fig. 12.4) and palmettes on San Juan Polychrome excavated in Mexico City (Lister and Lister, 1982: 17). In its derivative form depicted on Tortugas Base Style B, the motif most closely resembles a pomegranate, perhaps inspired more directly by an Italian decorative scheme, such as occurs on a spouted jug of 1470-90 from Pesaro (Berardi, 1984: 259, fig. 39). Plates dated to the 17th century featuring pomegranate decoration along the outer edge of the base roundel and inner rim exist within Ligurian forms (Barile, 1965: tav. 23-24). San Juan Polychrome plates decorated with a large pomegranate motif in the roundel center and around the rim have been recovered from the wreck of the *Concepción* sunk off Hispaniola in 1641 (Marken, 1994: 233, pl. 39). The only general Spanish parallel identified in this study is a similar motif painted onto a dish of 1575-1625 from Puente del Arzobispo in Toledo (Houkjaer, 2005: 111).

Base Style B parallels excavated beneath floors in Seville are now in the city's Museo Arqueológico Provincial (Lister and Lister, 1987: 146, fig. 87). The linear sets of lines framing the roundel edge are replicated on a base from the Convento de San Francisco, Dominican Republic (Fairbanks, 1972: 156, fig. 3c).

The decorative scheme of Base Style C is duplicated on a small Ligurian Blue on Blue *plato* from the wreck of the *San Pedro* lost in 1595 (Marken, 1994: 217, pl. 34). Base Style D is reminiscent of a small roundel scheme used for Ligurian Blue on White in Santo Domingo (Lister and Lister, 1976: 32, fig. 3a) and once again imitates Ligurian polychrome maiolica excavated in Holland (Jaspers, 2012: 14, fig. 3.2). The external overlapping petal scheme is represented on the *Atocha* (MFARD nos. M80/81.1135 and 1154). Base Style F is identical to another example from the *Atocha*, which features a 'x' inscribed within the central circle (Marken, 1994: 219, fig. 6.28).

Base Style G, the most popular form amongst the Tortugas wreck's Seville Blue on Blue tin-glazed wares, has been excavated beneath floors in Seville (Lister and Lister, 1987: 146, fig. 87) and corresponds to an example from the *Atocha*, including the triple linear border (MFARD no. A/M82).

The design of Base Style J is once again duplicated on the *Atocha* (Marken, 1994: 219, pl. 35). Base Styles G-J exhibit derivative decorative features originating on far more sophisticated incised Pisan slip ware (Blake, 1981: 110-11, fig. 8.8), as well as Ligurian maiolica of the 16th century (Barile, 1965: tav. 23-24). The Base Styles G-K concept is also familiar on dishes from Valencia of 1525-60 (Ray, 2000: 118). Base Style K is associated with a footless

flanged plate of the second half of the 16th century from Madrid (Lister and Lister, 1987: 159, fig. 102).

The Seville Blue on Blue Type 1D small jug (Fig. 69) is identical to the shape of the Tortugas wreck's Type 5A Seville Polychrome wares (Figs. 93-95), which may suggest cultural transmission from Italian inspiration to Seville Polychrome and then finally to Seville Blue on Blue products. A crudely rendered piece of fruit painted over the body of the Type 1D jug was seemingly produced by the same hand that crafted the two Seville Blue on Blue plates bearing the same motif (Figs. 54-55), although the design on the jug is bordered by a lightly incised line in-filled with brown paint. The fabric is a finely levigated pale yellow clay (2.5Y 8/3) with a thin blue matt tin-glaze and dark blue overlying paint. On stylistic criteria, it would not be surprising if this jug was produced in the same workshop as the above plates.

Seville Blue on Blue has been identified in Spain in Barcelona, Malaga and Seville (Fairbanks, 1972: 155), and is present at the San Francisco Convent site on the Canary Islands (Iñáñez *et al.*, 2007: 382). It appeared in the New World *c.* 1550, peaked around 1600 and fell into disuse *c.* 1630-40 (Deagan, 1987: 64). This class is not represented at Nueva Cadiz in Venezuela or in Northern New Spain (Cohen-Williams, 1992; Willis, 1976).

From the opening years of colonial expansion, represented by the type's presence at Concepción de la Vega founded by Christopher Columbus in 1495 on the island of Hispaniola (Kulstad, 2008: 264), Seville Blue on Blue wares penetrated over long distances as far as Araya in Venezuela, Trinidad, Isla del Tesoro on Panama, the Convento de San Francisco and Alcazar de Colón on Santo Domingo in the Dominican Republic, Cuba and Jamaica (Lister and Lister, 1974: 21; Vaz and Cruxent, 1975: 75; Cruxent and Vaz, 1978: 362, 363), but typically in far lesser volumes than Plain White Morisco. In Mexico the class is represented at Yucatan and Puebla. At Florida it reached Fig Springs, Fox Pond, the Richardson site, St. Augustine, Santa Catalina de Guale and elsewhere in the southern USA, including Jamestown, Virginia (Goggin, 1968: 135-40; Myers *et al.*, 1992: 133; Weisman, 1992: 120).

In terms of relative volume, at the Augustinian convent of Dulce Nombre de Jesús in Baños de la Reina Mora, Seville, established in 1550, the 721 Seville Blue on Blue sherds represent 28% of the tin-glazed wares, compared to 32% for Plain White Morisco ware (McEwan, 1992: 93-4). Whereas Plain White Morisco wares accounted for 1.73% of the total assemblages at the Joseph de Leon, Palm Row and Trinity Episcopal sites in 16th-century St. Augustine, Florida, Seville Blue on Blue was the second highest represented tin-glazed ware at 1.0% (tin-glazed

wares accounted for 4.8% of the total pottery; Deagan, 1978: 28, 41, 43). The 43 sherds within this class were less numerous than Plain White Morisco wares (59 sherds) and Mexican San Juan Polychrome (66 sherds) at the Fig Springs site, Florida, interpreted as the Franciscan mission of San Martín de Timucua (Weisman, 1992: 172).

The class's visibility at the Spanish Mission site of Santa Catalina de Guale in Florida (1567-1680) was far lower: Seville Blue on Blue accounted for just two of 77 tin-glazed sherds (Myers *et al.*, 1992: 133). Similarly, amongst a sample of 1,327 sherds from the Sagrario excavations in Mexico City, only seven Seville Blue on Blue examples were recorded within ten Spanish and various Italian forms (0.5% of the total sample; Lister and Lister, 1982: 11).

The Seville Blue on Blue products found in the New World would seem to derive from multiple sources, of

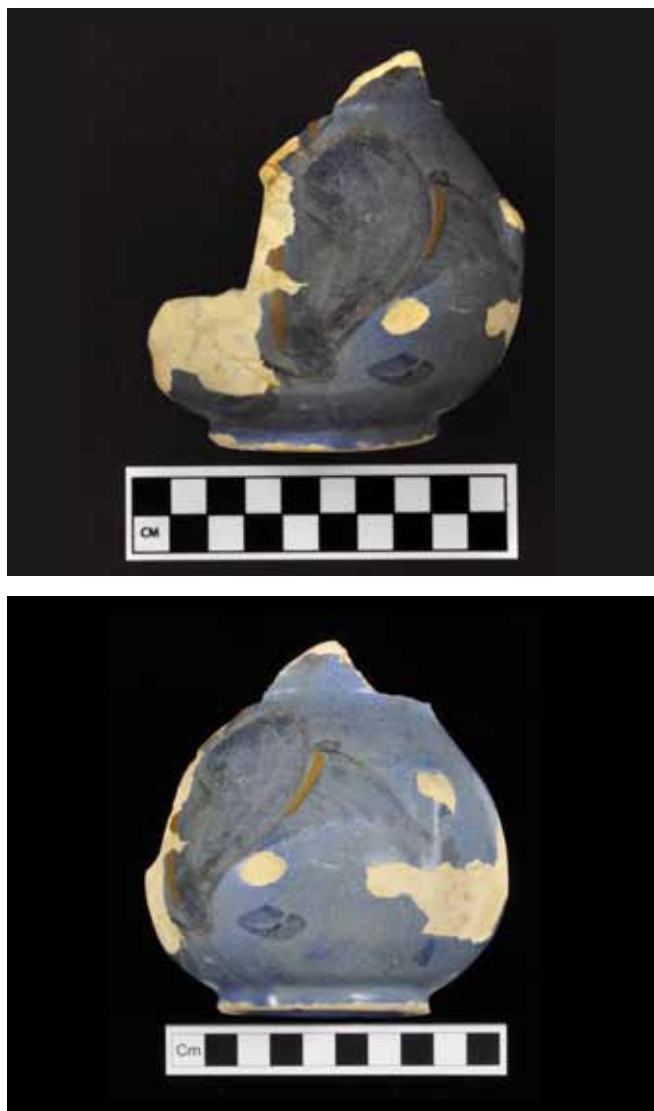


Fig. 69. Tortugas Type 1D, Seville Blue on Blue tin-glazed jug (TOR-90-00035-CS).



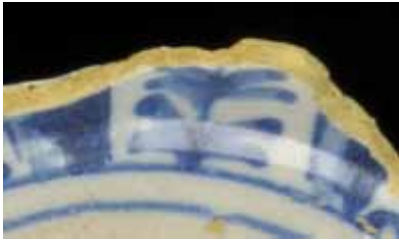
<p>Rim Style A Naturalistic foliate vegetation ending with berries, divided by vertical double-lined, concave-edged panels (plate, TOR-90-00090-CS).</p>	
<p>Rim Style B Naturalistic foliate vegetation, debased & schematized, divided by single thick-lined vertical concave-edged panels (plate, TOR-90-00057-CS).</p>	
<p>Rim Style C Naturalistic palm-like vegetation, debased and schematized, possibly divided by vertical panels with straight edges; double concentric lines at lower edge (plate, TOR-90-00090-CS).</p>	

Fig. 70. Rim styles for Tortugas Type 2 Seville Blue on White tin-glazed wares.

which Seville has long been considered the obvious original provenance (Goggin, 1968: 135-40). The class's inspiration is credited to transient Ligurian craftsmen, whose potting of this ware in Seville – prior to which no former blue glaze tradition existed in Spain – was based on the Italian version's wide export to the Indies in the second half of the 16th century. In turn, the Seville production line eventually inspired a blue ground Mexican variety (Lister and Lister, 1976: 37).

X-ray fluorescence, neutron activation analysis and x-ray diffraction conducted on Seville Blue on Blue sherds derived from the San Francisco Convent site on the Canary Islands identified a Sevillian manufacture (Iñáñez *et al.*, 2007: 382, 395). However, the examples analyzed from Santa Catalina de Gualpe proved to be outliers from the separately identified Seville group. One example closely matched an Italian variant from Mexico City and the composition of sherds from Albisola, Italy. Two others derived from Spain, but categorically not Seville (Myers *et al.*,

1992: 137-8). The Inductively-coupled Plasma Spectrometry (ICPS) analysis conducted on the Tortugas wreck's Blue on Blue wares sourced the entire collection exclusively to Seville (Hughes, 2014; Table 9).

3. Seville Blue on White Ware (Tortugas Type 2; Talavera-Style Blue on White, Ichucknee Blue on White)

The Type 2 Seville Blue on White tin-glazed products from the Tortugas shipwreck account for 12.8% of all tablewares and 16.4% of tin-glazed wares by counts of largely intact or unique vessels (Figs. 13-14, 17-18). The 285 RBHS or 30 RBH derive from a minimum of eight plates and two bowls. A further 13 rim fragments, seven base fragments and 255 body sherds could not be distinguished as deriving from distinctly separate vessels.



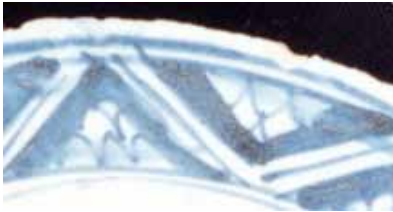
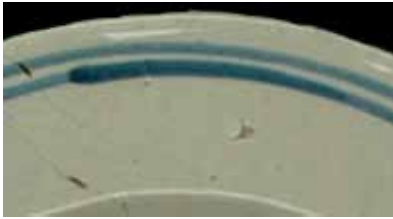
<p>Rim Style D Elegant blue mottled buds/berries overlying lighter blue stems framed by single concentric line above & by double concentric lines below (plate, TOR-90-00090-CS).</p>	
<p>Rim Style E Elaborate form with thin blue-framed circles containing palm-like leaves alternating pointing upwards & down; between each circle above & below three blue circles in-filled with golden yellow paint; double concentric lines on upper & lower rim edge (plate, TOR-90-00017-CS).</p>	
<p>Rim Style F Thick geometric v-shaped motifs, thin lattice lines within, alternately facing out & inwards, framed by thin diagonal lines; double concentric lines on both rim edges (plate, TOR-90-1A-001901).</p>	
<p>Rim Style G Plain rim without decoration, framed on exterior edge by double concentric line (plate, TOR-90-1A-000577).</p>	

Fig. 71. Rim styles for Tortugas Type 2 Seville Blue on White tin-glazed wares.

Type 2 incorporates an eclectic variety of decorative schemes that in fabric and decoration remain most closely reminiscent of Chinese porcelain (Figs. 74-79, 121). Six different stylistic rim variants and seven base styles amongst the wreck assemblage are indicative of production in different kiln firings, if not different workshops (Figs. 70-73). Light surface crazing is present on two plates (e.g. TOR-90-1A-000577; Fig. 78). Intact plates measure around 19.9cm in diameter and 3.5cm in height.

The wares' decorative schemes can be classified according to their naturalistic, emblematic and geometric imagery. The naturalistic product line with foliate vegetation, buds and fruit imitates Chinese kraak porcelain through rims sub-divided by vertical blue-painted panels framing vegetation that is both quite faithfully rendered (Rim Style A) and schematically debased (Rim Style B-C) (Fig. 70).

Rim Style D comprises a continuous horizontal trail of mottled blue budding vegetation and is the most




<p>Base Style A Effective naturalistic scene covering entire roundel, with bird at center surrounded by dense foliate vegetation, leaves & seemingly fruit at top left & bottom; chest of a second bird seems visible at top right (plate, TOR-90-00015-CS).</p>	
<p>Base Style B Naturalistic garden scene occupying half of roundel diameter, with foliate vegetation & perhaps a rock, heavily schematized; framed by double concentric lines (plate, TOR-90-00057-CS).</p>	
<p>Base Style C Naturalistic scene across whole roundel, debased, with dog running across an undulating landscape; schematized foliate vegetation & hills (plate, TOR-90-1A-001901).</p>	

Fig. 72. Base styles for Tortugas Type 2 Seville Blue on White tin-glazed wares.

naturalistically adept variant amongst the wreck's Seville Blue on White ware plates (Fig. 71). The form is paralleled by Seville imitations of Ligurian tin-glazed products excavated from the Casa del Déan in Santiago de Compostela in northwest Spain (Castro Lorenzo, 2009: 144, fig. 6b). Rim Style E retains an overall naturalistic initiative of dense schematized leaves and blue buds in-filled golden yellow. Geometric Rim Style F comprises a crude design of consecutive thick v-shaped motifs facing alternatively outwards and inwards. This scheme shares some stylistic affinities with the unsophisticated Seville Blue on Blue Rim Style G.

Schematized foliage in thin blue lines fills each 'v' motif. Finally, Rim Style G is a simple concept defined by just two concentric lines framing the outer plate edge (Fig. 71).

In Base Style A two birds sit amongst well rendered dense foliage, leaves and fruit-bearing trees that cover the entire roundel (Fig. 72). This naturalism is heavily schematized in Base Style B and confined to the center of the roundel, whose outer half remains plain. The hilly landscape through which a dog runs in Base Style C is artistically mixed in terms of naturalism and schematized vegetation (Fig. 121E).


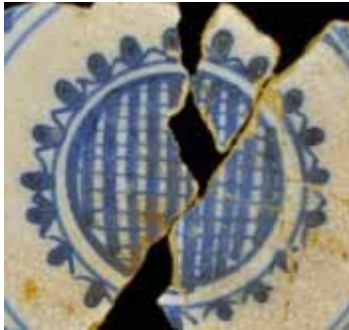


<p>Base Style D Complex flower motif with hatched circle at center, 16 short petals radiating outwards; in between each a longer petal extends to roundel edge, flanked by solid semi-circle & thin wavy line beneath. Between each long petal a solid circle. Some petals in-filled with golden yellow paint (plate, TOR-90-00017-CS).</p>	
<p>Base Style E Geometric motif, large central circle with hatched interior, framed by single concentric line, around which solid blue buds linked by continuous wavy line (plate, TOR-90-00090-CS).</p>	
<p>Base Style F Papal seal dominating three-quarters of roundel, composed of two crossed Keys of Heaven surmounted by triple crown tied together with cordon (plate, TOR-90-1A-000577).</p>	
<p>Base Style G Central roundel painted with letters, probably abbreviated, 'CAR/MO' (bowls?, TOR-90-1A-0022074.0012; TOR-90-1A-002066.0071).</p>	

Fig. 73. Base styles for Tortugas Type 2 Seville Blue on White tin-glazed wares.



Fig. 74. Tortugas Type 2A, Seville Blue on White tin-glazed plate (Rim Style A/Base Style A) (TOR-90-00015-CS).

Base Style D depicts a complex geometric floral design with a hatched circle at center and 16 short petals radiating outwards, gently oriented anti-clockwise (Fig. 73). The flower extends outwards to fill three-quarters of the roundel; in between each petal is a longer petal that extends to the roundel's edge, where each of the 16 is flanked by solid semi-circles and an underlying thin wavy line. Between each long petal is a solid circle in-filled golden yellow. Two thin light blue lines run around the roundel perimeter between the short petals and base edge. Although the theme is transitional schematized naturalistic and geometric, the effect is impressive, well executed and displays greater artistic investment than some of the purely naturalistic base styles. Base Style E incorporates the geometric motif of a hollow circle with hatched lines bordered inside by buds inter-connected by a wavy line. The scene is contained within three-quarters of the roundel; the outer third is left plain white (Fig. 73).



Fig. 75. Tortugas Type 2A, Seville Blue on White tin-glazed plate (Rim Style B/Base Style B) (TOR-90-00057-CS).

Base Style F is characterized by the unusual dark blue emblematic decoration of two crossed keys below a triple crown surmounted by a cross painted over a white ground and covering three-quarters of the roundel (Fig. 73). The finish displays surface crazing. This decorative scheme occurs on two plates with an identical design, clay fabric, glaze texture and color. The motif is rare on Spanish tin-glazed wares of the 16th-18th centuries.

Keys as represented in Base Style F possessed an important symbolic value of safety and peaceful relations in colonial Spain. Their manufacture was a specialty of Moors and their successors. Two keys stored in the shrine of Seville Cathedral are particularly renowned (Calvert, 1907: 83). The 6in-long iron Moorish example is traditionally identified as the city key submitted to King Ferdinand II by Axataf, the Moor's governor of Seville, when Spain conquered the city on 23 November 1248 (Riaño, 1890; Calvert, 1906: 384). Given the powerful symbolism of Axataf's iron key to the



Fig. 76. Tortugas Type 2A, Seville Blue on White tin-glazed plate (Rim Style E/Base Style D) (TOR-90-00017-CS).

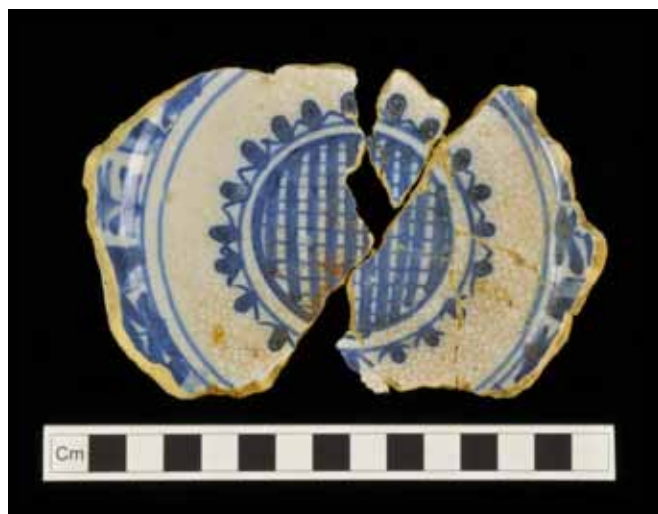


Fig. 77. Tortugas Type 2A, Seville Blue on White tin-glazed plate (Rim Style C/Base Style E) (TOR-90-00090-CS).

conquered Moriscos, one could envisage Morisco potters adding this symbol to the decorative repertoire of Triana wares, re-interpreted to signify peaceful coexistence with Spain and the Church.

A far more logical interpretation may be proposed. The specific combination of the crossed keys surmounted by a triple crown signifies the papal coat of arms. The Tortugas plate's papal arms and keys motif was first depicted in 1267 on a loggia in the papal palace of Viterbo. Thereafter, the crossed keys became the most enduring device of the Church (Galbreath, 1930: 6-8). Symbolizing the keys of heaven entrusted to St. Peter (Matthew 16:19), they represent the power to administer the treasures of redemption merited by Christ and to teach his doctrine with authority (Heim, 1978: 54). Since the 14th century the crossed keys served as the emblem of the papacy.

The second characteristic emblem of the papacy is the tiara, the most exalted heraldic insignia associated with the Catholic Church, representing the sovereign power of the papacy and worn by the Pope on occasions of great solemnity (Galbreath, 1930: 17). The third crown was added to the tiara either under Pope Benedict XI (1303-04) or Clement V (1305-1314) and is first listed in an inventory of papal treasure dated to 1315, since when the triple crown has always been the symbol of papal authority (Heim, 1978: 50).

The year when the *Buen Jesús* sank witnessed a significant re-ordering of the Church's administration of its overseas missions, which it is proposed the Tortugas wreck's plates may reflect archaeologically. On 6 January 1622, Pope Gregory XV established the Sacra Congregatio Propaganda Fide (Sacred Congregation of the Propagation of the Faith) to coordinate missionary initiatives. The doctrine was based around the final fundamental charge of Christ to the Apostles to go forth, teach (Matthew 28:19) and thus ensure the propagation of the faith, preservation of the faith and defence of the faith.

Also classifiable amongst the Tortugas wreck's emblematic decoration are the roundels of two Type 2B Base Style G bowls, on which survive two painted sets of letters 'CAR/MO' (fragment 90-1A-0022074.0012, W. 4.7 x 4.0cm; fragment 90-1A-002066.0071, W. 6.5 x 5.3cm; Figs. 73, 121C-D). Plates produced in Seville between the second half of the 16th century and early 17th century bear identical scriptive decoration to the two Tortugas examples, but in the Spanish cases display an 'AM' monogram for Ave Maria at the center. These inscriptions were produced for ecclesiastical use at the Carthusian monastery at Jerez de la Frontera (Lister and Lister, 1987: 150, fig. 92).

An ecclesiastic usage for both Tortugas papal seal plates and the 'CAR/MO' bowls is highly probable and may point

to the presence on the Tortugas ship of clergymen. It may be hypothesized that in early September 1622 a member of the Sacra Congregatio Propaganda Fide and a companion were returning to Seville on the Tortugas ship, following missionary work in the Americas, when tragedy struck. The papal plates could have been commissioned by the Church as material expressions of the Congregation's work overseas. The presence of two additional bowls on the wreck painted with the letters 'CAR/MO' may indicate that these ecclesiastic brethren were based in a monastery in Carmona, located 30km east of Seville (cf. Kingsley, 2014).

Seville Blue on White tin-glazed ware is uncommon on Spanish colonial sites across the Americas and Caribbean world, not least because it presumably found little market due to the imitation of Talavera tin-glazed wares in Pueblo, Mexico (Connors McQuade, 2003: 212). Within the Sagrario excavations in Mexico City, just eight sherds combined were Talavera Polychrome and Talavera Blue on White examples (0.6% of the total sample); neither class was identified as products of Seville (Lister and Lister, 1982: 11).

The Type 2 Blue on White tin-glazed products on the Tortugas shipwreck have been identified by ICPS analysis as originating in Seville (Hughes, 2014; Table 9). The genre's emergence in the capital of Andalusia may have been inspired in part by immigrant Italian potters from Talavera de la Reina, a town located 160km southwest of Madrid that was renowned by the end of the 16th century for its high-quality white, blue on white and distinctive three-color family polychrome tin-glazed products, a local interpretation of the Faenza *compendiario* style. In 1566 Jeronimo Montero was dispatched from Seville to Talavera at the king's command to experiment with white glazed, marbled blue and colored wares typical of the town's ceramic repertoire. In the early 17th century Talavera potters enjoyed royal patronage, such as Luis do Loaisa, who was appointed the king's servant and official potter in 1635 (Ray, 2000: 158, 172).

By the early 17th century Talavera ware was widely admired and copied throughout Spain. Craftsmen were exchanged between Talavera and Seville, making the attribution of production origins hard to assess (Deagan, 1987: 64-5). Italian immigrants settled in the *collacion* of San Vicente in Seville, where they readily turned out southern counterfeit Talavera style tin-glazed pottery (Lister and Lister, 1987: 151).

The rarity of Talavera-style wares in the New World may perhaps be explained by its relative high cost compared to other products represented on the Tortugas shipwreck. In the 17th century Talavera pottery replaced silver as the preferred dining form due to royal accusations of



Fig. 78. Tortugas Type 2A, Seville Blue on White tin-glazed plate (Rim Style G/Base Style F) (TOR-90-1A-000577).



Fig. 79. Tortugas Type 2A, Seville Blue on White tin-glazed plate (Rim Style D/Base Style A) (TOR-90-00090-CS).

avarice in the excessive silver plate owned by the Church and wealthy houses following an inventory of silver services collated in 1601 (Ray, 2000: 172). Recommendations were proposed to convert silver into coin and for Talavera earthenware to replace these metallic dining wares (Frothingham, 1944: 23-24). As the biographer of Juan de Palafox y Mendoza, the Bishop of Puebla, Mexico, and Viceroy of New Spain, explained in 1642 (Frothingham, 1944: 25), “The table is set not with silver but with white-glazed Talavera pottery, in spite of the fact that he brought back from the Indies a dinner set of silver handsome enough to adorn a bishop’s table...”

In the absence of detailed historical evidence describing Seville’s potteries, the possible partial source of inspiration behind the Tortugas wreck’s Type 2 Blue on White tin-glazed wares provides useful comparative testimony. According to Pedro Alonso Ajofrín’s *Historia de Talavera*, eight potteries were producing fine wares in Talavera by 1651, earning 50,000 ducats a year. Its tin-glazed pottery was renowned for its “perfect imitations of oriental china” and as a consequence was “used all over Spain, and sent to India, France, Flanders, Italy and other countries, and was esteemed everywhere for the perfection of the coloring and brilliancy of the glaze” (Bibl. Nac. G. 187). In 1568, Fr. Andres de Torrejon, who was resident in Talavera’s convent of Santa Catalina, described the town workshops’ output thus (Bib. Nac. F. 142; Riaño, 1890):

The earthenware pottery made here has reached to a great height of perfection; it is formed of white and red clay. Vases, cups, bucaros and brinquiños are made of different kinds, dishes and table centers, and imitations of snails, owls, dogs and every kind of fruits, olives, and almonds. These objects are painted with great perfection, and the imitations of porcelain brought from the Portuguese Indies are most excellent. Every one wonders that in so small a town such excellent things should be made. The varnish used for the white pottery is made with tin and sand, it is now found to be more acceptable than colored earthenware, so much so, that persons of importance who pass by this town although they have in their houses dinner services of silver, buy earthenware made at Talavera, on account of its excellence. The sand which was used to make the white varnish was brought from Hita, it is now found at Mejorada, near Talavera. This sand is as fine and soft as silk.

Intriguingly in regard to the Tortugas wreck’s Base Style F plate bearing the papal seal, Fr. Andres de Torrejon also referred to “the different medals” painted onto tin-glazed wares in Talavera, before adding how “A certain scent is added in the manufacture of this pottery which excites the appetite and taste of the women” (Riaño, 1890). Little

wonder that Seville’s potters chose to cash in on Talavera’s reputation, by producing Talavera-style imitations by the end of 16th century (see section 10 below).

However, it is equally conceivable that the Tortugas Type 2 products were inspired directly by Seville and not Talavera. Historical documentation records that in 1587 a “Luis García, a Moorish maker of Talavera glazed ware” lived in Triana. A *tienda de Talavera* shop for making Talavera-style products operated in the city in 1597 in the Casa de Colón near the Puerta de Goles under the supervision of Jusepe Pesaro’s, who was registered as still turning out dishes and bowls in 1615. The *Tasa de Precios* price regulations inscribed on 12 October 1627 confirmed the manufacture in Seville of plain white *platos de Talavera contrahechos en Sevilla* (plates of Talavera imitated in Seville) and *platos pintados contrahechos de Talavera* (painted plates of Talavera in imitation of Talavera) (Ray, 2000: 172, 180). Decorative styles were not specified, other than *de primavera* (spring). If this implies floral designs, the Tortugas wreck’s Rim Styles A-E and Base Styles A-C may fall within this category.

4. Plain White Morisco Ware (Tortugas Type 3; Columbia Plain)

The Type 3 Plain White Morisco wares recovered from the Tortugas shipwreck account for 12.8% of all tablewares and 16.4% of tin-glazed wares by counts of largely intact or unique vessels (Figs. 13-14, 17-18). The total 16 RBHS or 14 RBH derive from at least ten vessels.

The assemblage comprises a limited range of four forms: one large plate (Type 3A: Diam. 32.5cm, H. 6.5cm; Fig. 80), six regular-sized plates (Type 3B: Diam. 19.5-19.8cm, H. 4.8-5.7cm; Figs. 4, 81-86), one flanged plate (Type 3C: Diam. 15.7cm, H. 3.4cm; Fig. 87) and two bowls (Type 3D: Diam. 13.0cm, H. 5.9-6.2cm; Figs. 5D, 5E, 88-89). Due to their thick walls, the Columbia Plain vessels were by far the best preserved tin-glazed wares encountered; unlike all the other shipwreck types, fragmentation into small sherds did not occur within the marine environment (Figs. 24, 25, 31, 34G-I, 36A). Only four other rim fragments and two body sherds were registered.

The regular-sized Type 3B plates are standardized, heavy wares produced in a pink fabric (7.5YR 7/4) with a pale yellow gloss finish (2.5Y 8/2) that exhibit an almost stone-like medium (Figs. 81-86). The wall contours are gently curved with very lightly undulating surfaces (TOR-90-00029-CS), which are almost imperceptible in some examples (TOR-90-00028-CS, TOR-90-00030-CS). Solely TOR-90-00029-CS incorporates a sharp ridge just above

the base on the plate interior (Fig. 4C). Prior to marine erosion, the rims were all gently rounded into u-shape form. The identical footless bases are all composed of a flattened roundel with an imperceptible basal depression.

A conspicuous feature of the Plain White Morisco plates is their asymmetry and thus inability technically to sit flat on a table. They were evidently mass-produced with an emphasis on speed and volume. Crudity is also evident in the rough finish and conspicuous set of three sub-circular firing scars (up to 1.2 x 0.8cm) positioned around the interior roundel of the bowls, remains of crutches onto which the vessels were stacked within kilns. TOR-90-00030-CS is particularly poorly finished, with a broad strip of clay adhering to half of the outer surface (Fig. 82).

Tortugas Type 3C is an unusual form of Plain White Morisco flanged plate with more steeply curved sides than in the above series (Fig. 87). It is far better finished than Type 3B, exhibiting a consistent glaze inside and outside and a symmetrical concave base. Three kiln divider scars are again present on the inside base. The fabric is identical to Type 3B.

The shipwreck's Plain White Type 3D bowls display subtle morphological differences (Figs. 88-89). Both examples have gently rounded rims and are typified by carinated walls rising to the rim at angles of 21° off vertical. The ring-foots are pronounced (Figs. 5D, 5E). The carination of TOR-90-00073-CS is more acute and its base step is everted. TOR-90-00021-CS exhibits an undulating interior wall and its base is symmetrically rounded. These features are suggestive of production at the hands of different potters. Both bowls are less well levigated than the above series.

The presence of Plain White Morisco products on the Tortugas shipwreck is not unexpected. The form is highly conspicuous on Spanish wrecks dated between 1554 and 1715 (see section 9; Table 7). Contrary to the traditional proposed cutoff date of 1600-50 for its export to New Spain (Cohen-Williams, 1992: 122), a Plain White Morisco sherd was found on the 1715 Spanish fleet off Florida (Clausen, 1965: 9). Marken (1994: 163, 169-70) has also demonstrated continuity into the first half of the 18th century in the form of 19 *escudillas* and pitchers from the *Tolosá* and *Guadalupe* sunk in 1724. The *San José y Las Animas* wrecked in 1733 was also associated with *escudillas* (Marken, 1994: 166-7), the latest archaeologically attested presence of this ceramic tradition.

On land Plain White Morisco wares traveled to all areas of Spanish colonization and beyond. These products are the most frequently encountered tin-glazed vessels on New World sites of the 16th to early 17th centuries. A light cream or yellow smooth Morisco paste with a



Fig. 80. Tortugas Type 3A, Plain White Morisco large tin-glazed plate (TOR-90-1A-000906-CS).



Fig. 81. Tortugas Type 3B, Plain White Morisco tin-glazed plate (TOR-90-00013-CS).



Fig. 82. Tortugas Type 3B, Plain White Morisco tin-glazed plate (TOR-90-00030-CS).

Fig. 83. Tortugas Type 3B, Plain White Morisco tin-glazed plate (TOR-90-00039-CS).

granular, spongy clay texture is covered with thin opaque lead glaze opacified by tin oxide that is subject to wear, crazing, pinholing and other irregularities (Lister and Lister, 1974: 17; Deagan, 1987: 56). At the Western extreme the ware has been documented at 11 sites in Britain, including the Carthusian Monastery of Mount Grace, Yorkshire, which closed in 1539, and five sites in Ireland mainly clustered along the southern coast (Hurst, 1995: 49-50). The form reached London, where a 16th-century *escudilla* has been excavated from a waterfront development site at Adlards Wharf, Bermondsey (Jarett, 2002: 104, fig. 50.2).

Five Plain White Morisco sherds from the San Francisco site, amongst a small sample of 55 sherds, reflect the Canary Islands' key strategic location as a stopping point for Span-

ish shipping to the Americas (Iñáñez *et al.*, 2007: 382). The form penetrated as far as Mexico City's Cathedral (Lister and Lister, 1978: 4, fig. 1a), Havana, Cuba (Alvarez and Arrazcaeta, 2003: 136), the Convento de San Francisco, Juan Dolio and La Vega Vieja in the Dominican Republic, and eastwards to Nueva Cadiz in Venezuela during the 16th century (Olin and Sayre, 1975: table 1).

Statistically, Plain White Morisco plates and bowls are the most numerous tin-glazed wares on Spanish New World and circum-Caribbean colonial sites, where they account for 10-40% of tin-glazed wares dated between 1550 and 1600 (Cohen-Williams, 1992: 122). Accounting for 14 of 77 tin-glazed sherds, this class dominated a very small assemblage from the Spanish Mission site of Santa Catalina de Gualé in Florida (1567-1680) (Myers *et*



Fig. 84. Tortugas Type 3B, Plain White Morisco tin-glazed plate (TOR-90-00029-CS).

Fig. 85. Tortugas Type 3B, Plain White Morisco tin-glazed plate (TOR-90-00028-CS).

al., 1992: 133). At 16th-century Spanish St. Augustine in Florida, Plain White Morisco is conspicuously represented by 63 sherds at the Joseph de Leon site (SA- 26-1), the Palm Row site (SA-36-4), and the Trinity Episcopal site (SA-34-1), where its accounted for 1.73% of the total pottery (Deagan, 1978: 28).

At the Convento de San Francisco to the northeast of St. Augustine, Plain White Morisco accounted for 12% of the 16th-century assemblages (Hoffman, 1991: 148). St. Augustine was founded in 1565 by Pedro Menéndez de Avilés of Spain to protect the Spanish claim to the Florida province and to strengthen Spanish control over the treasure fleet route originating in Mexico (King, 1984: 77-8). Plain White Morisco was the second largest tin-glazed assemblage at the Fig Springs site in Florida, identified as the

Franciscan mission of San Martín de Timucua (Weisman, 1992: 172).

At 79.3% Plain White Morisco predominated amongst the tin-glazed wares excavated from St. Elena in North Carolina in contexts of 1566-87 (South, 1983: 34; Skowronek *et al.*, 1988: 209-10), where the base kick of this earlier dish series is far more pronounced than within the Tortugas assemblage. In Mexico City it dominated the Spanish and Italian tin-glazed pottery from the Sagrario excavations (Lister and Lister, 1982: 11).

Due to the imbalance between extensive interest in the Colonial Spanish history of the USA and a multitude of excavated data, compared to a paucity of data for the Caribbean, it is difficult to assess scales of use over time east of Florida. Small quantities certainly reached inland



Fig. 86. Tortugas Type 3B, Plain White Morisco tin-glazed plate (TOR-90-1A-000968).
Photo: courtesy of the Mel Fisher Maritime Collection.



Fig. 87. Tortugas Type 3C, Plain White Morisco tin-glazed flanged plate (TOR-90-00047-CS).

indigenous sites: three of the 29 Late Postclassic sites in the Chikinchel region of northeast Yucatán, Mexico, contained surface scatters of olive jar and Plain White Morisco ware fragments (Palka, 2009: 308).

Small quantities reached the early 16th-century indigenous interior hilltop site of La Loma del Convento, Cuba (Knight, 2010: 34), and again were associated with Early Style olive jars of c. 1500-70 at El Chorro de Maíta, 4km inland at northeast Cuba, a site populated by an indigenous Arawak group related to the Taíno culture (Valcárcel Rojas *et al.*, 2010: 111). One sherd of Plain White Morisco ware has been identified at the large Taíno site of En Bas Saline in northeast Haiti and was again represented amongst 100 sherds from the Taíno village community of El Cabo in the Dominican Republic (Ernst, 2011: 41, 49).

Wherever Madrid established centers of industry and trade accessible by ship, horse and wagon, irrespective of geography Spanish pottery was introduced as a tool of cultural assimilation. In the peripheral colonial territories of eastern Venezuela, inhabited as a frontier town for the pearl trade, European pottery enjoyed conspicuous consumption. Some 62.5% of the 13,385 sherds excavated at Nueva Cadiz and deposited between 1498-1545 (and mostly 1520-35) were European. The attractive qualities of Plain White Morisco are demonstrated by its very high representation: 1,606 sherds, 89.9% of all the tin-glazed wares or 19.2% of the total ceramic record (Willis, 1976: 107, 110; 1980: 37). Similarly, at La Isabela in the northern Dominican Republic, a Spanish settlement founded by Christopher Columbus during his second voyage of 1493 and abandoned as a Spanish town by 1498, Plain White Morisco was most prevalent at 57% of the tin-glazed assemblage (Deagan and Cruxent, 2002: 1, 8, 153, 156). At Puerto Real on Haiti this form accounted for 8,634 of the 10,333 sherds from Locus 19 and 33/35 (Deagan, 1995: 441).

Plain White Morisco ware is primarily envisioned as a principal component of the 'Caribbean Complex' group of a half dozen ceramic types believed to have originated in the area of Seville, which were widely dispersed around the Caribbean basin in the wake of Spanish exploration and settlement (Lister and Lister, 1974: 19). As other scholars have long observed, an origin in Seville is supported by the ware's depiction in paintings of the city's highly famed artists, most notably Diego Velázquez and Bartolomé Esteban Murillo (see section 10 and Jordan, 1985: 88; Lister and Lister, 1987: 307-309; Skowronek *et al.*, 1988: 209, 213, 216-17; Jordan and Cherry, 1995: 41, 101; Pleguezuelo, 2003a: 108; Figs. 130-134).

Alongside this striking artistic evidence, the high volume of Plain White Morisco wares at the Baños de la Reina Mora site in Seville, established in 1550 as the

Augustinian convent of Dulce Nombre de Jesús, lends credibility to the argument for primary manufacture in this city. The 847 sherds of Plain White Morisco from a total sample of 2,618 sherds accounted for 32% of all Spanish tin-glazed tablewares, the dominant proportion (McEwan, 1992: 93-4). A Seville provenance has been confirmed by the association of Plain White Morisco wares with a kiln excavated at Pureza Street in Triana, Seville, which was in use between *c.* 1500 and 1600 (Myers *et al.*, 1992: 134-6).

In the earliest phase of this ceramic tradition's production, typified by 55 carinated tin-glazed bowls from Qsar es-Seghir, a Portuguese garrison in northern Morocco occupied from 1458 to 1550, instrumental neutron activation analysis (INAA) once more confirmed that the wares were all imported from a single source in Seville. The population of the settlement peaked between 1500 and 1520, when it was inhabited by an estimated 750-850 soldiers, tradesmen, merchants, women and children (Boone, 1984; Myers *et al.*, 1992: 139). The carination of these early *escudillas* is far more acute than on the Tortugas examples produced a century later.

Based on INAA evidence that between 1567 and 1680 the tin-glazed wares from Santa Catalina de Guale, a Spanish Franciscan town and mission in Florida, derived from multiple locations that are clearly distinct from the Seville source (with one exception). Myers *et al.* (1992: 139) hypothesized that production became diversified after the economic and administrative apparatus underpinning Spain's New World territories was established.

Scientific evidence for multiple nodes of production, even in the early decades of colonization, is not isolated. Local plates from Mexico City imitating Plain White Morisco wares in the first half of the 16th century were characterized by pinker pastes and glazing that was glossy rather than grainy matte and creamy rather than white (Lister and Lister, 1974: 24, fig. 3a). The Mexican imitations also extended to a wider range of Seville Blue on Blue and Decorated Blue on White types (Monroy-Guzman and Fournier, 2003: 157). Production imitating Plain White carinated bowls has also been suggested for a kiln site at Mata da Machada in Lisbon, Portugal, operating *c.* 1550-70 (Casimiro, 2011: 144, fig. 71).

This expanded pattern of multiple provenances is supported by the Tortugas shipwreck. Inductively-coupled Plasma Spectrometry (ICPS) conducted on the assemblage by Michael Hughes concluded that the four Plain White Morisco plates and bowls examined contained three different chemical paste compositions: one Type 3B with the chemical signature of Seville (TOR-90-00013-CS, Fig. 81); one Type 3C, an unidentified outlier that does not match tin-glazed wares from Seville, Mexico or Lisbon



Fig. 88. Tortugas Type 3D, Plain White Morisco tin-glazed bowl (TOR-90-00021-CS).



Fig. 89. Tortugas Type 3D, Plain White Morisco tin-glazed bowl (TOR-90-00073-CS).

(TOR-90-00047-CS, Fig. 87); and the other two Type 3B and 3D (TOR-90-00030-CS, TOR-90-00073-CS, Figs. 82, 89) formed part of a previously unreported group containing high levels of magnesium present as the clay mineral montmorillonite (up to around 11% magnesium oxide in the paste, compared to 2-3% present in Seville pottery) originating in a rural Andalusian context 18-24km west of Seville, close to the Rio Guadiamar, Benacazón and Aznalcázar (Hughes, 2014; Table 9).

5. Other Seville Wares (Tortugas Types 4-5; Sevilla White & Andalusia Polychrome)

The Type 4 Seville White series from the Tortugas shipwreck accounts for 3.9% of all tablewares and 4.9% of tin-glazed wares by counts of largely intact or unique vessels (Figs. 13-14, 17-18). The 102 RBHS or 13 RB derive from one intact large plate (Type 4A: H. 4.6cm, Diam. 20.8cm; Figs. 3F, 90), one largely intact bowl (Type 4B: Diam. 14.3cm, H. 5.85cm; Figs. 3A, 91) and one cup (Type 4C: Diam. 10.1cm, H. in excess of H. 7.8cm; Figs. 5B, 92). Both the plate (TOR-90-1A-001172) and bowl (TOR-90-00036-CS) display highly visible kiln firing scars on the interior roundel. A further six bowl rim fragments, four cup base fragments and 89 sherds were registered.

The Seville White fabrics have a yellowish red clay core (5YR 5/6) and are relatively coarse for fine wares, with common gray inclusions. A creamy yellow tin-glaze covers all outer and inner surfaces. The cup has a very pale brown fabric (10YR 7/4) and again is relatively coarse for a fine ware, but with a lower frequency of impurities. Its tin-glaze is creamy yellow. The sole decorative scheme is a continuous seven-line zig-zag motif on the plate's rim and two sets of three blue lines opposite one another on the



Fig. 90. Tortugas Type 4A, Seville White tin-glazed plate with blue rim motif (TOR-90-001172-CS).



Fig. 91. Tortugas Type 4B, Seville White tin-glazed bowl with blue rim motif (TOR-90-00036-CS).



bowl rim. The cup is entirely plain. Because these vessels are predominantly plain, and notably different in style and decoration to Type 2 Seville Blue on White products, they are classified in this study as Seville White.

Seville White followed the usual distributive sealanes, leaving behind a ceramic trail at the San Francisco and La Cueva Pintada sites on the Canary Islands (Iñáñez *et al.*, 2007: 381-2). The class was exploited in both a church and Native Indian structure at Fig Springs, Florida, which is interpreted as the Franciscan mission of San Martín de

Timucua (Weisman, 1992: 120), and reached Santa Elena in the second half of the 16th century (Skowronek *et al.*, 1988: 237). Seville White was used in Mexico City's Cathedral (Lister and Lister, 1978: 6, fig. 2a), and at 19.5% of the sample from the Sagrario excavations in the same city was comfortably the second highest registered Spanish and Italian tin-glazed wares (Lister and Lister, 1982: 11). Further east, Seville White can presumably be equated with 253 sherds of Fine White wares from a sample of 10,333 excavated at Puerto Real, Haiti (Deagan, 1995: 441).

Type 5 Seville Polychrome is undoubtedly the liveliest tableware assemblage identified on the Tortugas shipwreck and is represented by two largely intact small jugs (Type 5A: H. 9.6cm, Diam. 9.8-10.0cm; Figs. 6A, 6B, 93-94), sherds from a third small jug (Fig. 95) and one bowl rim section and associated base fragment (Type 5B; Figs. 4A, 96). They represent 5.1% of all tablewares and 6.5% of tin-glazed wares by counts of largely intact or unique vessels (Figs. 13-14, 17-18).

The small jugs have symmetrically rounded body walls, very low flat bases, strongly everted rims and originally two handles attached from mid-body to the rim. Each is individually decorated and derived from different kiln-firing lines. Capable of holding only small volumes of liquid, it may be proposed that this class plausibly contained oil for pouring at table.

Jug TOR-90-00032-CS has a broad body and low base; a handle stump survives to one side (Figs. 6B, 35G, 93). The fabric is finely levigated pale yellow clay (2.5Y 8/2). The interior and exterior surfaces are coated with a well-rendered continuous brownish cream glaze. The outer body is decorated on both sides with a single motif comprising swirling foliage and leaves; blue paint is used to depict the in-filled areas and dark brown to define their edges, while the scene is brought to life with touches of yellowish brown detail.

Jug TOR-90-00070-CS is typologically similar to the above, albeit slightly wider, exhibits very low ridging across the lower body and is finished in finely levigated pale yellow clay (2.5Y 8/3). The interior and exterior surfaces are coated with a very thin continuous brownish cream glaze (Figs. 6A, 94). On both sides of the outer body is a repeated single motif comprising an exotic four-petalled flower with a center composed of a solid blue circle surrounded by a rough brownish yellow circle framed by a thin blue circle outside. The petals repeat this color scheme, with one half of each solid blue, the other featuring brownish yellow parallel lines enclosed in a blue border.

The decoration on three sherds from a third Type 5A Seville Polychrome jug is again different and comprises leaved branches, one half dark blue and framed by brown



Fig. 92. Tortugas Type 4C, Seville White tin-glazed cup (TOR-90-00065-CS).

lined edges, and the other half with horizontal reddish-brown lines (TOR-90-00173-CS; Fig. 95).

The Type 5B bowl rim is decorated with a lively band just below the rim edge consisting of three gently curved lines, the external ones blue and the middle one reddish yellow (TOR-90-00100-CS: H. 9.6cm, mouth Diam. 19.0cm; Figs. 4A, 96). Below is the main decorative scheme: vertical and angular blue and reddish yellow thick lines framed below by a repeated band of two blue lines with a reddish yellow one in between. Wavy blue lines extend horizontally towards the center.

The Type 5A small jugs replicate in general form and exuberant decoration an Italian tradition that dates back to the early 16th century, for instance examples with taller necks and narrower bodies transported on a Genoese ship



Fig. 93. Tortugas Type 5A, Seville Polychrome tin-glazed jug (TOR-90-00032-CS).



Fig. 94. Tortugas Type 5A, Seville Polychrome tin-glazed jug (TOR-90-00070-CS).



Fig. 95. Body fragments from a Tortugas Type 5A Seville Polychrome tin-glazed jug (TOR-90-00173-CS).



Fig. 96. Tortugas Type 5B, Seville Polychrome tin-glazed bowl rim and base fragment (TOR-90-00100-CS).

lost off Villefranche, southern France, *c.* 1516 (Guérout *et al.*, 1989: fig. 80, 128). The shape is known from Pesaro, Italy, between 1520-49 and the first half of the 17th century (Berardi, 1984: 29, 309). Seville Polychrome is rare on New World and circum-Caribbean sites. Closer to home within the Augustinian convent of Baños de la Reina Mora established in Seville in 1550, the type accounted for less than 2% of 2,618 tin-glazed sherds (McEwan, 1992: 94).

ICPS analysis conducted by Michael Hughes determined that the Tortugas Type 4 Seville White and Type 5 Seville Polychrome wares are Seville-produced tin-glazed pottery (Hughes, 2014; Table 9). The Type 5 forms may have been inspired by the three-color Talavera family, *serie tricolor*, which in turn derived from Faenza *compendiario* wares that came into fashion *c.* 1550 (Ray, 2000: 173).

6. Other Morisco Wares (Tortugas Types 6-8; Yayal Blue on White, Santo Domingo Blue on White, Santa Elena Mottled Blue on White)

The Type 6 Linear Blue Morisco tableware range comprises 5.1% of all tablewares and 6.5% of tin-glazed wares by counts of largely intact or unique vessels (Figs. 13-14, 17-18). The wares consist of one intact Type 6A jar, one Type 6B flat-base pitcher, one Type 6C bowl and one Type 6D jug. Some 75 body sherds of broad Type 6-7 Linear/Decorated Blue Morisco form were registered.

The intact Type 6A jar is characterized by a very low everted rim with a flattened lip, relatively large and strongly bent handles attached from mid-neck to a broad mid-body (TOR-90-00069-CS: H. 16.2cm, maximum body W. 13.9cm; Figs. 7B, 35B, 97). The base is flat. The jar is executed in a reddish yellow fabric (7.5YR 6/6) with a yellow surface (2.5Y 7/6). The lower three-quarters of the vessel are plain, while a light gray-white tin glaze adheres to the upper body between the lower handle lugs and outer rim edge, including extending across the entire handles. Six sets of dual curving lines extend off vertical over the glaze, ending at the outer rim edge. The same double curved blue line decoration appears on the summit of each handle.

The intact Type 6B pitcher, no longer in the Tortugas collection, features a pinched spouted mouth with a ridge below the rim, a sharply bent handle and a broad body that gently descends to a flat base (TOR-90-1A-1665; Figs. 27, 98). As with the Type 6A jar, this vessel is also half dipped with gray-white tin glaze coating the upper half, over which sets of dual linear blue paint occur diagonally at random. The lower half is plain and characterized by shallow horizontal corrugation.

The Type 6C bowl closely replicates the morphology of Plain White Morisco ware *escudilla* and is produced in a cleanly levigated pale yellow clay (2.5Y 8/3), over which light crazing is present across all surfaces, covered inside and out with a thin creamy yellow tin-glaze (TOR-90-00009-CS: H. 6.1cm, mouth Diam. 13.2cm; Figs. 5C, 99). Both the exterior and interior feature a simple blue double-banded decorative scheme of medium thickness. Externally this consists of two solid blue horizontal lines encircling the vessel near its base, above which are two wavy blue lines and a blue painted rim. On the bowl interior are six horizontal thick lines: three straight lines on the outer edge, two wavy lines across the lower body and at the roundel center two further concentric circular lines. At center, the bowl interior exhibits three oblong kiln divider scars.



Fig. 97. Tortugas Type 6A, Linear Blue Morisco tin-glazed jar (TOR-90-00069-CS).



Fig. 98. Tortugas Type 6B, Linear Blue Morisco tin-glazed pitcher (TOR-90-1A-1665).



Fig. 99. Tortugas Type 6C, Linear Blue Morisco tin-glazed bowl (TOR-90-00009-CS).

The thin-walled Type 6D Linear Blue Morisco small jug is characterized by a tall, vertical neck, an elegant s-shaped single handle, strongly rounded body, deeply ridged, and a very short flat base (TOR-90-00023-CS: H. 13.2cm to top of handle, body Diam. 10.1cm; Figs. 6C, 100). The very pale brown glaze (10YR 7/3) is covered with around 17 crudely designed wavy blue lines extending vertically down the jug's sides from at least the top of the neck (at which point the vessel is broken). Five dark blue angular lines adorn the handle.

Tortugas Type 7 Decorated Blue Morisco wares account for 5.1% of all tablewares and 6.5% of tin-glazed wares by counts of largely intact or unique vessels (Figs. 13-14, 17-18). The assemblage is represented by three one-handled pitchers, as well as one pitcher base fragment.

All three Type 7 one-handle pitchers display different painted decoration. The class is characterized by a flat base, gently rounded body and a single heavy handle extending from mid-body to the top of the neck. Very low horizontal ridging extends between the upper and mid-body. TOR-90-00068-CS (H. 17.9cm, body Diam. 11.8cm) has a long everted neck and a pinched trifoliate rim that terminates with a pouring spout (Figs. 7A, 30, 102). A blue line frames the lip, while a single groove below was seemingly designed to 'catch' dripped liquid. The pitcher's fabric is reddish yellow (5YR 7/6) with a pale yellow exterior (2.5Y 8/2), which is highly coarse and very soft. A grayish-white enamel is confined to between the lower handle lug and the lip. The body is painted between the bottom of the neck and level of the lower handle lug, both points framed by a single thick blue line. Between is a highly schematic floral motif consisting of crude swirls. Four splashes of blue paint run down the handle edge.

The rim and neck of Type 7 TOR-90-00019-CS (H. 15.4cm to top of handle, body Diam. 11.2cm; Fig. 101) are not preserved, but were probably comparable to TOR-90-00068-CS. The pale yellow fabric (2.5Y 8/2) is highly coarse and very soft. Heavily eroded, the dark blue painted scheme set over a grayish-white glaze across the exterior body consists of a series of inverted s-shaped swirls and schematized floral motifs framed by a thick horizontal blue band at the height of the lower handle lug. The glaze is restricted to the upper body band, neck and handle. Two thick sub-oblong solid dashes of blue paint adorn the side of the handle.

On a third pitcher (90-1A-003240) the blue painted decoration is again restricted to between the mid-body and neck, but its dense schematized vegetation is far more exuberant (Fig. 35C, 103). No handle survives (and the vessel is not preserved within the Tortugas shipwreck collection).



Fig. 100. Tortugas Type 6D, Linear Blue Morisco tin-glazed jug (TOR-90-00023-CS).

The Mottled Blue Morisco wares comprise three typologically identical Type 8A cups, of which only TOR-90-00038-CS (Diam. 10.3cm, H. 7.3cm) remains within the Tortugas shipwreck collection, and one Type 8B small jug (TOR-90-1A-00052). They account for 5.1% of all tablewares and 6.5% of tin-glazed wares by counts of largely intact or unique vessels (Figs. 13-14, 17-18).

The Type 8A cups are wide-mouthed in relation to their relatively high and elevated, yet narrow flat bases that have heavily concave kicks (TOR-90-00038-CS: H. 7.3cm, Diam. 10.3cm; TOR-90-1A-003269: H. 6.5cm, Diam. 9.9cm; TOR-90-1A-002857: H. 6.7cm, Diam. 10.7cm). The body walls are mildly angled and the rims gently everted with rounded lips (Figs. 5A, 104, 105). The body is deeply ridged. The clay is cleanly levigated light reddish brown clay (5YR 6/4) with common small impurities. The vessels' exteriors are covered with off-vertical dark blue straight and wavy lines painted between the rim edge and lower body. The paint on TOR-90-00038-CS is almost completely eroded. The paste and surface finish of the Mottled Blue Morisco ware cups compare closely to the Plain White Morisco *escudilla* tradition.

A single Type 8B Mottled Blue Morisco small jug exhibits a single handle set between the lower shoulder and upper neck (TOR-90-1A-00052: preserved H. 12.0cm, Diam. 9.6cm; Figs. 8, 35D, 106). A tall, everted neck surmounts a bulbous body and rounded base. The rim is not intact. Broad ribbing covers the lower body. The jug is thickly glazed with dark blue naturalistic sponge-applied mottled motifs overlying a creamish green underglaze. This artifact is not present in the Tortugas shipwreck collection.

In shape Type 8B is not dissimilar to globular San Juan Polychrome 'cups' with a tall, everted rim of Mexican

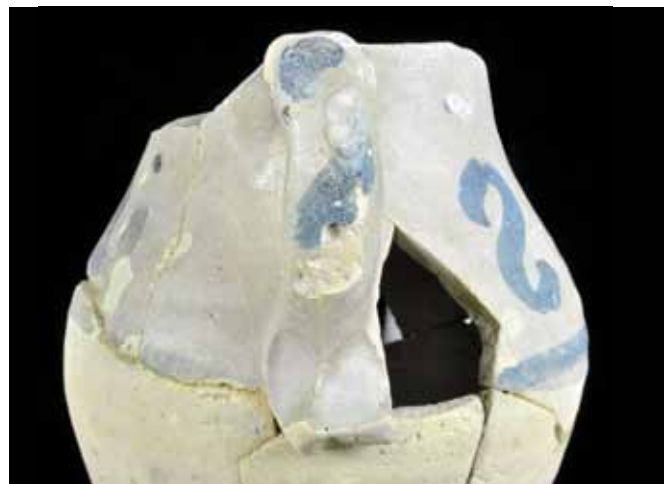
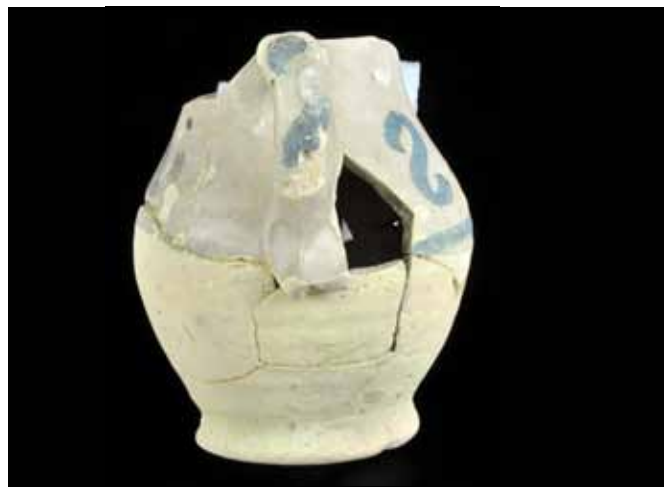


Fig. 101. Tortugas Type 7, Decorated Blue Morisco tin-glazed pitcher (TOR-90-00019-CS).



Fig. 102. Tortugas Type 7, Decorated Blue Morisco tin-glazed pitcher (TOR-90-00068-CS).

manufacture associated with the wreck of the *Concepción* of 1641 (Marken, 1994: 233: pl. 40). However, the tin-glaze and decoration of the Tortugas wreck example match Mottled Blue Morisco ware (pers. comm. Ellen Gerth, 14 August 2013; Beverly Straube, 19 August 2013; Alejandra Gutiérrez, 20 August 2013).

ICPS analysis conducted by Michael Hughes determined that the Tortugas Type 6A Linear Blue Morisco jar (TOR-90-00069-CS; Fig. 97), Type 6C Linear Blue Morisco ware bowl (TOR-90-00009-CS; Fig. 99) and Type 7 Decorated Morisco Blue pitcher (TOR-90-00019-CS; Fig. 101) is Seville-produced tin-glazed pottery. By contrast, the Type 6D Linear Blue Morisco jug (TOR-90-00023-CS; Fig. 100), a second Type 7 Decorated Blue Morisco pitcher (TOR-90-00068-CS; Fig. 102) and the Type 8A Mottled Blue cup (TOR-90-00038-CS; Fig. 105) all corresponded to the high magnesium group, for which a source 18-24km west of Seville, close to the Rio Guadimar, Benacazón and Aznalcázar, has been proposed (Hughes, 2014; Table 7).

At the Augustinian convent of Baños de la Reina Mora, established in Seville in 1550, Mottled Blue Morisco wares comprised 2%, Decorated Blue 3% and Linear Blue 9% of 2,618 tin-glazed sherds (McEwan, 1992: 94). Decorated Blue Morisco ware is found throughout the Spanish Caribbean colonies c. 1550-1630 (Deagan, 1987: 61), while Linear and Mottled Blue Morisco wares were not extensively exported. The types have not been recorded on the Canary Islands (Iñáñez *et al.*, 2007: 381-82).

Linear and Decorated Blue Morisco products occur in 16th-century contexts in Spanish Florida in very small quantities (Deagan, 1978: 28). At the Spanish Mission site of Santa Catalina de Gualé in Florida (1567-1680), two of 77 tin-glazed sherds were Decorated Blue, one was Mottled Blue and five were Linear Blue (Myers *et al.*, 1992: 133). Just two sherds were excavated from the Franciscan mission of San Martín de Timucua, Fig Springs, Florida (Weisman, 1992: 120). Both Type 7 Decorated Blue pitchers and a Mottled Blue jar are represented at Santa Elena on Parris Island, South Carolina (Skowronek *et al.*, 1988: 206, 228, 230, 236, 240-41, fig. 14, pl. 24). Type 7 pitchers are attested from the wrecks of the 300-ton *San Antonio* of 1621, lost off Bermuda, and the *Atocha* of 1622 (Marken, 1994: 226-29). An intact Type 8B jug, wider than the Tortugas wreck example, was excavated from the Augustinian convent of Baños de la Reina Mora in Seville (McEwan, 1988: 112).

Neither forms were especially significant at Puerta Real in Hispaniola, where Decorated and Linear Blue Morisco wares represented just 0.2% and 0.9% of 10,333 tin-glazed sherds and Mottled Blue was not registered (Deagan, 1995:



Fig. 103. Tortugas Type 7, Decorated Blue Morisco tin-glazed pitcher (TOR-90-1A-003240).



Fig. 104. Tortugas Type 8A, Mottled Blue Morisco tin-glazed cups (90-1A-003269; 90-1A-002857; 90-00038-CS).



Fig. 105. Tortugas Type 8A, Mottled Blue Morisco tin-glazed cup (TOR-90-00038-CS).



Fig. 106. Tortugas Type 8B, Mottled Blue Morisco tin-glazed jug (TOR-90-1A-00052).

441). The export pattern exception is Mexico City Cathedral (Lister and Lister, 1978: 4, fig. 1d), where Decorated Blue Morisco was highly conspicuous at 11.4%, Linear Blue registered lowly registered at 1.3% and Mottled Blue again unattested amongst the Sagrario excavation's Spanish and Italian tin-glazed wares (Lister and Lister 1982: 11). Decorated Blue Morisco penetrated as far as Havana, Cuba (Alvarez and Arrazcaeta, 2003: 137), while Linear Blue reached Nueva Cadiz in Venezuela (Lister and Lister, 1974: 21, fig. 2b; Olin and Sayre, 1975: table 1.3).

7. Unglazed Coarsewares (Tortugas Types 11-19A)

The Tortugas ship's unglazed coarsewares comprise ten individual vessel forms in varying degrees of preservation, which account for 12.8% of the largely intact or unique tablewares (Figs. 13-14). Some 193 miscellaneous body sherds were present.

Two rims of Type 11A short and broad jars were identified, characterized by no neck and a short rim, undercut and flattened where it meets the shoulder, and with a gently rounded lip (TOR-90-01224-CS, TOR-90-01225-CS, mouth Diam. 12.6-15.0cm; Figs. 10A, 107-108). The fabric is soft reddish yellow clay (7.5YR 8/6) with abundant gray inclusions.

Type 11B is a bowl typified by a flat ledge handle and an incurved body in soft yellowish red clay (5YR 5/6) with abundant gray inclusions (TOR-90-01226-CS, mouth Diam. 23.4cm; Figs. 10B, 109).

Type 12 is an intact one-handle Merida-type jug characterized by a prominent pouring spout and single bifurcated wide strap handle (TOR-90-00031-CS, H. 28.8cm,



Fig. 107. Tortugas Type 11A, unglazed coarseware jar rim (TOR-90-01224-CS).



Fig. 108. Tortugas Type 11A, unglazed coarseware jar rim (TOR-90-01225-CS).

maximum W. 16.5cm; Figs. 9A, 23, 110). The elegant form has a swollen neck and broad body that descends quite sharply to a flat base that is surprisingly narrow given the jug's need for stability. This vessel would otherwise be perfect for pouring water or wine at a dining table. A single horizontal ridge extends across the upper neck. Neck and body are separated by a recessed ridge. From the neck downwards to the base, the entire vessel is covered with lightly incised vertical striations. The fabric is reddish yellow fabric (5YR 6/8) with a red external finish (2.5YR 5/8).

These red micaceous vessels featuring characteristic red burnished stripes were produced in Aveiro and Lisbon, Portugal. They are highly represented within the Type 12A and 19B cargo from the Ria de Aveiro A shipwreck excavated in north central Portugal (Bettencourt *et al.*, 2005). Given their stylistic similarities to the Tortugas example dated to 1622, the proposed mid-15th century date for the



Fig. 109. Tortugas Type 11B, unglazed coarseware ledge-handle bowl rim (TOR-90-01226-CS).

Portuguese wreck may need re-consideration in line with its 16th-century radiocarbon dates (Alves *et al.*, 2001: 12). A direct parallel to the Tortugas Type 12 jug was excavated from a context of *c.* 1617-24 down a well in James Fort, Virginia, and is identified as a Portuguese import (pers. comm. Beverly Straube, 16 November 2011). Examples reached as far as Newfoundland (Newstead, 2008: 85).

Types 13-15 comprise jug bases of which Type 14 is a Merida-type product paralleled on the *Atocha* in a wider repertoire of five forms (Marken, 1994: 188, 190, fig. 6.8) (Fig. 112). Merida coarseware is defined by a brick-red fabric with quartz and mica inclusions believed to originate in the High Alentejo extending inland from Lisbon and to the east into Spain (Gutiérrez, 2007). Tortugas Type 16 is a small Bizcocho bevel-rim saucer with a squat rim lip (pers. comm. Beverly Straube, 4 July 2013) that could have been used to present olives or small foodstuffs at table, but is often defined as an open form *salero*, a salt-cellar (TOR-90-00063-CS: H. 2.2cm, Diam. 11.35cm; Fig. 114). The fabric is reddish yellow (5YR 6/6).

The singular nature of the Bizcocho wares on the Tortugas shipwreck is perhaps anomalous given the types' popularity in Seville. Bizcocho dominated the Spanish unglazed tablewares excavated from the Augustinian Convent at Baños de la Reina Mora in Seville at 95% from a sample of 1,386 sherds (McEwan, 1992: 94). The same



Fig. 110. Tortugas Type 12, Merida-type jug (TOR-90-00031-CS).



Fig. 111. Tortugas Type 13, unglazed coarseware jug base (TOR-90-00060-CS).



Fig. 112. Tortugas Type 14, unglazed Merida-type jug base (TOR-90-00072-CS).



Fig. 113. Tortugas Type 15, unglazed coarseware jug base (TOR-90-00062-CS).



Fig. 114. Type 16, unglazed coarseware Bizcocho saucer (TOR-90-00063-CS).

vessel form is associated with the wreck of the *Atocha*, as well as a globular vessel and a two-handle pitcher in Bizcocho fabric (Marken, 1994: 207-209). The type was represented at La Isabela in the northern Dominican Republic by the last decade of the 15th century, including a beveled-rim *plato* of comparable form to Tortugas Type 16 (Deagan and Cruxent, 2002: 155-56, 177, fig. 7.12G), and reached Concepción de la Vega in the Dominican Republic, Yayal in Cuba, Caparra in Puerto Rico, Puerto Real on Haiti and Nueva Cadiz in Venezuela (Deagan, 1987: 43).

Type 17 consists of two miniscule solid clay cylinders with flaring bases to which a single handle extends upwards to mid-body (TOR-90-00074-CS: L.1.8cm, TOR-90-00075-CS: L.1.6cm) of unidentified South American or circum-Caribbean origin and function. Now believed to have been used possibly as children's toys or amulets, these artifacts are not tablewares and are thus discussed elsewhere (Stemm *et al.*, 2013b: 101, 104).

Tortugas Type 18 is a coarse redware jar with a tall, strongly rounded convex neck, rounded rim, finger-indented neck decoration, an ovoid body and flat base (TOR-90-1A-002849: H. 21.0cm, body Diam. 18.0cm; Figs. 9B, 121B). Narrow horizontal ridges extend across the body and the vessel has a conspicuous ridged rim. Type 19A is a large, thick-walled redware standing costrel characterized by a very narrow mouth and two highly raised strap handles (Fig. 121A). Light ridging covers the body. This jar is typologically identical to the Type 19B green-glazed jar (section 8 below). Both seem to be Merida-type products of a form known from Southampton (Hurst, 1977: fig. 32.45, 96-97; Gutiérrez, 2000: fig. 2.53, 77). Both Types 18 and 19A are otherwise unique within the Tortugas pottery assemblage and are best interpreted as kitchen storage wares rather than cargo containers. Neither survives within the Tortugas pottery collection.

8. Lead-Glazed Wares (Tortugas Types 19B-22)

The Tortugas ship's lead-glazed wares are characterized by six largely intact individual vessels: one costrel, also represented by one base, one handle, five bases and 320 body sherds (Type 19B), a half-dipped green-glazed jug (Type 20) and four small jugs in two styles (Types 21-22). The wreck's lead-glazed wares account for 9.0% of the largely intact or unique tablewares (Figs. 13-14).

Tortugas Type 19B is a thick-walled Merida-type standing costrel with a narrow mouth typologically comparable to Type 19A unglazed coarseware, originally with two highly raised strap handles (TOR-90-00071-CS:



Fig. 115. Tortugas Type 19B, Merida-type green-glazed costrel and related fragments (TOR-90-00071-CS).



Fig. 116. Tortugas Type 19B, Merida-type green-glazed costrel (TOR-90-00071-CS).



Fig. 117. Tortugas Type 20, half-dipped green-glazed jug (TOR-90-00016-CS).

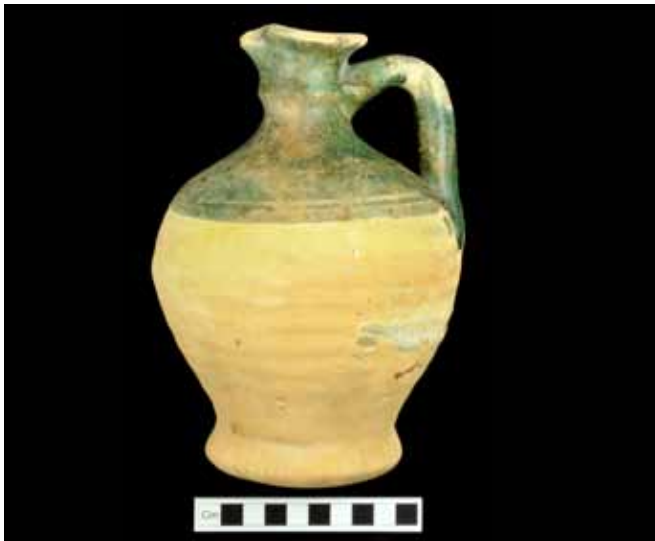


Fig. 118. Tortugas Type 21 lead-glazed jug (TOR-90-00040-CS).



Fig. 119. Tortugas Type 22 lead-glazed jugs (90-1A-001965; 90-1A-001238; 90-1A-001961).

surviving H. 31.9cm including reconstructed handle, base Diam. 12.8cm) (Figs. 9C, 115, 116). A thick dark green glaze once covered the entire body from base to neck and handles (only preserved in patches). A wide and depressed channel separates the lower neck from the upper body. The base is composed of two tiers, a lower wide foot that narrows to a second strip of clay. The red clay fabric (2.5YR 6/8) is micaceous.

Type 20 is an elegant small green-glazed jug characterized by a spout rim and a single handle set between the lower shoulder and the mid-neck, where the upper lug is supported by a thickened ridge (TOR-90-00016-CS: 18.1cm, Diam 11.9cm; Figs. 9D, 35A, 117). The pear-shaped body descends to a flat, gently stepped base. The vessel is half-dipped. Green glaze coats the rim, neck and handle, ending at the upper shoulder. The lower body is entirely unglazed, but has a broadly corrugated surface.



Fig. 120. Tortugas Type 22, lead-glazed jug (TOR-90-1A-001965). Photo: courtesy of the Mel Fisher Maritime Museum.

This jug type is well known from both the still life paintings of Diego Velazquez (see section 10; Figs. 129, 132, 133) and the archaeological record. Remains of five Type 20 jugs, green-glazed all over, were recovered off Ireland from the 1588 Spanish Armada ships the *Trinidad*, *Valencera* and *Santa Maria de la Rosa* (Martin, 1979: 292, 294, figs. 10.68-72). The jugs' anatomy is identical to a lead-glazed pitcher from the wreck of the *San Pedro*, sunk in 1595, which has a beaked mouth and brownish red glaze with emerald green glaze on the interior and exterior, but is not half-dipped (Marken, 1994: 194). The type remained in circulation in 1724, when an extremely similar green-glazed example was lost on the wreck of the *Tolosa* or *Guadalupe* (Marken, 1994: 201, fig. 6.17). An identical green-glazed jug has been excavated from Nueva Cadiz, Cubagua, along the Pearl Coast of eastern Venezuela (Rouse and Cruixent, 1963: pl. 51A), notably the Tortugas ship's ultimate destination in 1622.

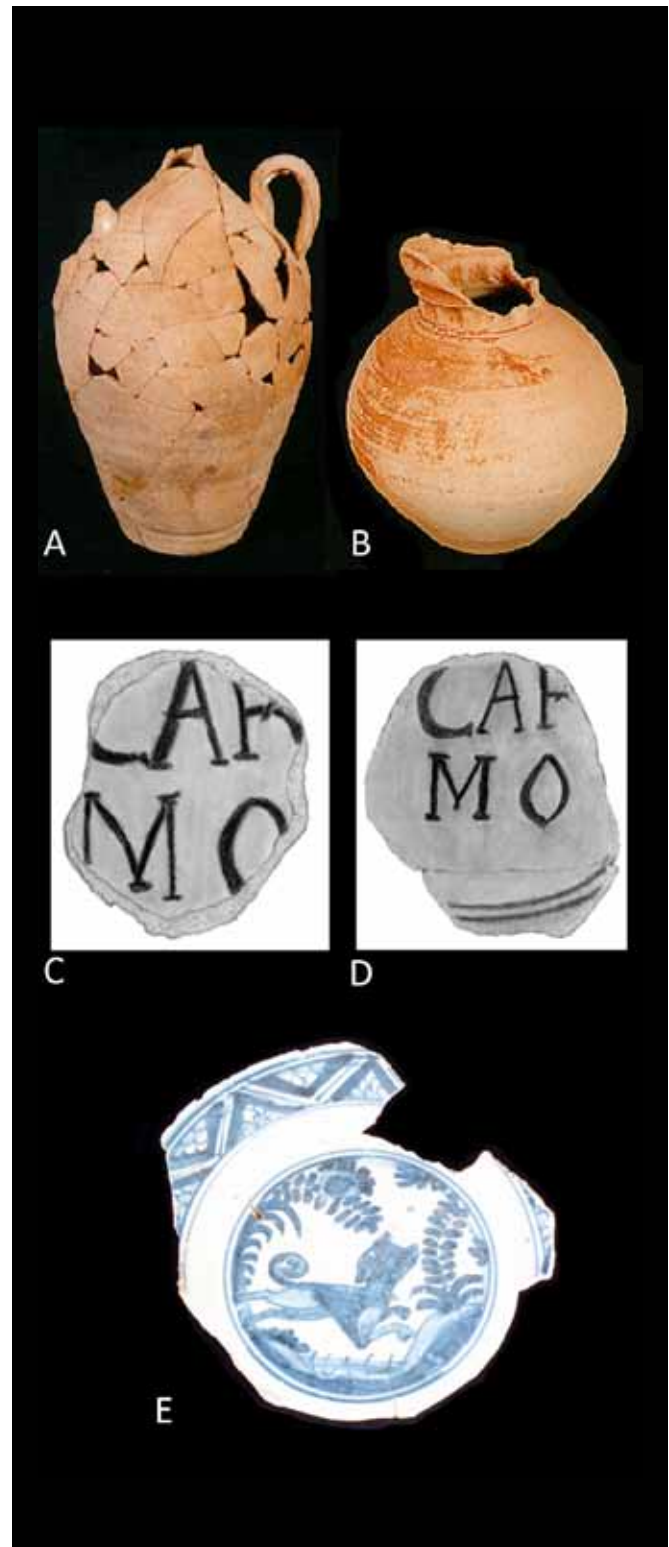


Fig. 121. A. Type 19A unglazed coarseware Merida-type costrel (90-1A002960). B. Type 18 unglazed coarseware jar (90-1A-002849). C-D. Type 2B Seville Blue on White tin-glazed bowl bases with ecclesiastical inscriptions (90-1A-0022074.0012; 90-1A-002066.0071). E. Type 2A Seville Blue on White tin-glazed plate (TOR-90-1A-001901).

Tortugas Type 21 is a heavy-bodied bottle without handles and a very narrow, flat base with a convex outer edge (TOR-90-00040-CS: H. 14.8cm, maximum body Diam. 11.1cm; Figs. 6D, 118). Eight deep horizontal ridges extend between the shoulder and lower body. The vessel is lightly glazed with a dark brownish-yellow enamel, which ends just above the base, and is reminiscent of Plain White Morisco fabric. Type 21 is a traditional *redoma* shape known from as early as the 12th-13th century in Andalusia and in 13th to 14th-century Triana (cf. Juguete XX-XXI in Pleguezuelo and Pilar Lafuente, 1995: 221, fig. 18.1, no. 7; Vera Reina and López Torres, 2005: 190-91). A broader-bodied variant without body ribbing is associated with the wreck of the *San Pedro* of 1595 (Marken, 1994: 195).

The three small redware jugs classified as Tortugas tableware Type 22 are distinguished by far broader mouths than Type 21 (TOR-90-1A-001965, TOR-90-1A-001238, TOR-90-1A-001961: H. 14.0cm, body Diam. 11.0cm; Figs. 26, 28, 119, 120). The mouths and bases are of similar widths, resulting in a symmetrical vessel. Body ridging is present and a grayish-white glaze covers the entire vessel on top of a light red coarse fabric.

9. The *Buen Jesús* & Shipwreck Tablewares

A total of 98.4% of the visually eclectic tin-glazed wares from the Tortugas shipwreck derive from multiple workshops almost exclusively in or focused on Seville. The sourcing of the shipboard vessels relied strongly on domestic products from the hometown of the *Buen Jesús* and its crew – or at the very least from the departure point of its final voyage, where multiple consignments were stowed. Is such consumer conservatism comparable to other Iberian shipwrecks and more broadly to the cultural preferences of foreign merchants?

Albeit containing earlier ceramic forms, the wrecks of Spanish ships dating to the second half of the 16th century replicate the dominance of Spanish pottery amongst the Tortugas tablewares. A small assemblage from the *Esperitu Santo* from the 1554 *flota* lost off Padre Island, Texas, includes eight El Morro lead-glazed sherds from Iberia or Mexico and one Plain White Morisco sherd. A slightly larger collection from its sister ship, the *San Estaban*, consisted of 11 Plain White Morisco sherds, five El Morro, three Linear Blue, two Decorated Blue Morisco and one Green and White sherd, but also non-Spanish tablewares in the form of seven Cologne Stoneware sherds from Germany, four Montelupo Blue on White and Polychrome sherds originating in Italy, and a Mexican Red Painted

ware (Skowronek, 1987: 104). The foreign component from the 1554 fleet exceeds in range that identified on the Tortugas wreck.

Iberian El Morro ware (128 sherds) predominated on the Emanuel Point I wreck from the *flota* of Tristán de Luna, lost off Pensacola Bay, Florida, in a hurricane in 1559 during the first European attempt to colonize Florida. The excavated tablewares included a lesser quantity of Melado sherds, followed by 46 Plain White sherds, a Seville Blue on White sherd, a Linear Blue Morisco chamberpot and one intact plate of Blue and Purple Morisco ware (59 tin-glazed sherds total). Non-Spanish tablewares are restricted to six sherds of post-classic Aztec wares (*negro grafitto sobre rojo pulido*) from the stern (Smith *et al.*, 1995: 100-101, 105, 106; Wells, 1995: 57; Williams, 1998: 141-3). Although a very small collection, the dominance of Spanish products thus seems to parallel the Tortugas shipwreck ceramic structure. The necessity to stock what was in effect an immigrant ship with home products for life in an alien environment is logical.

The small volume of tablewares excavated from the Spanish St. John's wreck, lost off the Little Bahama Bank soon after 1554 and prior to *c.* 1575, was dominated by Plain White Morisco *platos* and *escudillas*. Nine sherds of white ware plates with flaring rims (Seville White?) were registered, in addition to Melado ware and Green on White tin-glazed vessels. Non-Spanish tablewares consisted of four Italian Faenza sherds and one white glazed Caparra Blue *albarello* (Malcom, 1996a). Italian products are not replicated on the Tortugas wreck.

Of 336 potsherds recovered from the Spanish-operated Western Ledge Reef wreck, sunk off Bermuda in the last quarter of the 16th-century, tin-glazed wares accounted for 6.4% of which 3.3% was Plain White Morisco and 0.44% lead-glazed wares of probable Iberian origin. Ten sherds of Cologne stoneware represented a comparatively high 2.7% of the pottery (Franklin, 1993: 73; Watts, 1993: 121-23), a pattern not replicated on the Tortugas ship.

The large assemblages of tablewares required for the Spanish Armada vessels of 1588, recovered from various wrecks off Ireland and Scotland, reveal key similarities and divergences to the Tortugas wreck. Plain White Morisco dominated at the majority of sites. The exception is the *Santa María de la Rosa*, a merchant vessel impounded for Armada service and taken straight to Lisbon: notably its wreck contained no Plain White plates, seemingly because the ship did not sail to Seville but, by contrast, was stocked as an alternative with local Portuguese glazed redwares (Martin, 1995a: 353).

Orange-red Merida-type wares of apparent manufacture near Lisbon are conspicuous on the *Trinidad Valencera*,

Santa Maria de la Rosa (Co. Kerry) and the *Girona* (Co. Antrim), but were far less common on the Tortugas wreck. Four green-glazed red clay jugs with a pinched spout and bottles from the *Trinidad Valencera*, and a fifth jug from the *Santa Maria*, are replicated on the Tortugas wreck in the Type 20 half-dipped lead-glazed jug. The anatomy of Tortugas Type 16 unglazed coarseware Bizcocho saucer is duplicated on the *Trinidad Valencera*. A Venetian maiolica platter and three sherds, plus an intact Ming porcelain bowl, are unique to the *Trinidad Valencera*. Three sherds from the *Girona* and *Trinidad Valencera*, one being salt-glazed stoneware, seem to be Rhenish (Martin, 1979: 284-7, 289-94, 297-98; 1995a: 355, 356, fig. 29.4).

A more exotic assemblage recovered from a wreck near Kinlochbervie, Scotland, derived from a merchant vessel that purportedly commenced its voyage in Seville during the 1590s or soon after 1600 and is identified as domestic assemblage rather than cargo. Italian products dominate the tablewares in the form of 35 sherds from a maximum of 28 vessels of Montelupo maiolica and 17 sherds from a maximum of 15 vessels of Grotesque maiolica from Tuscan workshops based in Pisa or Montelupo. Five sherds of Deruta (Umbria) maiolica, four sherds of Ligurian maiolica, three sherds of North Italian earthenware, two sherds of Faenza and nine sherds from other Italian maiolica were represented. Two French Beauvais stoneware sherds were recovered (Brown and Curnow, 2004: 30-39, 40, 42, 45; Robertson, 2004). The assemblage is far more cosmopolitan than the Tortugas ship's ceramic profile and, once again, is suggestive of the wide ceramic commodities available to Spanish merchants and fleets should they have wished to use them (unless the ship's final voyage actually commenced in Italy).

The wreck of the *Atocha* located off the Florida Keys provides a crucial counterpoint to the Tortugas tablewares because both sailed in the homeward-bound 1622 Tierra Firme fleet. Far larger than the *Buen Jesús*, a royal treasure ship and the *flota almirante*, the high status of the *Atocha* makes comparisons between the two vessels' ceramic records highly informative. Although the larger ship has formed as a scattered wreck site, whose total original tableware record is not attested archaeologically, while the Tortugas pottery vessels comprise a ship's comprehensive assemblage, the detailed publication of a large selection of *Atocha* ceramics facilitates inter-site comparisons (Marken, 1994 and as publicly available in Mel Fisher's Artifact Research Database).

Both classes and forms of decoration are so similar that both ships were undoubtedly stocked with tablewares from identical workshops (Table 8). On both sites Seville Blue on Blue wares dominate the tin-glazed assemblages. Tortugas

Rim Style A, Rim Style Bi, Rim Style Bii, Rim Style G, Rim Style H, Base Style F and Base Style J are all attested on plates and bowls from the *Atocha* (Figs. 43-47). Combined Rim Style Bi/Bii seems most popular amongst the *Atocha*'s Seville Blue on Blue wares (Marken, 1994: 218, 219, 222, 227, 229, figs. 6.28, 6.31, 6.32), which mirrors its conspicuous presence on the Tortugas ship.

Plain White Morisco wares are equally highly represented on both the *Atocha* and Tortugas wreck. However, the former assemblage is more expansive: its range includes vessels with handles, a mortar, chamber pot and spout, and a porringer (Marken, 1994: 155, 160-2). A pitcher plus additional bases from the *Atocha* are identical in shape to Tortugas Type 7 Decorated Blue Morisco ware TOR-90-00068-CS. A Merida-type jug base from the *Atocha* is paralleled in Tortugas Type 14 unglazed coarseware TOR-90-00072-CS. A Bizcocho ware saucer on both sites (Marken, 1994: 190, 207, 227, fig. 6.8) may have been used to serve olives and small tapas-like foodstuffs at table, although a function as open saltcellars has been proposed for the Baños de la Reina Mora material (McEwan, 1988: 177).

Non-Spanish products registered on the *Atocha* include two examples of Feldspar Inlaid ware produced in a Merida-type micaceous orange fabric and Panama Plain and Panama Blue on White wares (Marken, 1994: 204, 231-32). The five fragments of Chinese kraak porcelain dishes and cups associated with the wreck of the *Santa Margarita* from the same 1622 Tierra Firme fleet are unattested on both the *Buen Jesús* and *Atocha* (Malcom, 1996b).

A couple of decades after the Tierra Firme fleet tragedy of 1622, the Spanish galleon *Nuestra Señora de la Concepción* sank off Hispaniola in 1641. Its wreck reflects different cultural tastes through the presence of Mexican tin-glazed plates and bowls intermixed with Chinese porcelain. Two-handled glazed jugs, by contrast, were Spanish (Borrell, 1983: 86, 101, 104; Marken, 1994: 233-34).

The Stonewall wreck lost off western Bermuda c. 1650 contained probable Mexican San Juan Polychrome, ten sherds of San Luis Blue on White produced in Puebla and Mexico, and six white tin-glazed sherds from the same source (Dethlefsen *et al.*, 1977: 326-7). These ceramic origins are explained by the ship's apparent New World origin: the Stonewall ship was never part of the long-distance Americas fleet culturally tied to Andalusia. However, the tablewares from the Spain-bound *Nuestra Señora de la Concepción* from the Nueva España fleet are closer to the ceramic character of this site than the other wrecks discussed above.

Colonial Andalusia's highly structured dietary provisioning customs have been termed "veritable economic lunacy" (Chaunu and Chaunu, 1974: 120). To what degree

Site/Location	Date	Pottery Forms	Reference
<i>Espiritu Santo</i> , Padre Island, Texas	1554	Spanish: Plain White Morisco, El Morro	Skowronek, 1987: 104
<i>San Estaban</i> , Padre Island, Texas	1554	Spanish: Plain White Morisco, El Morro, Linear Blue, Decorated Blue, Green & White, UID Whiteware Non-Spanish: Montelupo Blue on White, Montelupo Polychrome, Cologne Stoneware	Skowronek, 1987: 104
Emanuel Point I, Pensacola Bay, Florida	1559	Spanish: Plain White Morisco, Seville Blue on White, Blue & Purple, Linear Blue Morisco, El Morro, Melado Non-Spanish: Aztec ware	Smith <i>et al.</i> , 1995: 101-106; Wells, 1995: 57; Mullins, 1998: 136-37; Williams, 1998: 141-43
St John's, Bahamas	c. 1554 to 1575	Spanish: largely Plain White Morisco; Whiteware (Seville?), Green on White, Melado Non-Spanish: Italian Faenza, Caparra Blue <i>albarello</i>	Malcom, 1996a
<i>Trinidad Valencera</i> , Co. Donegal, Ireland	1588	Spanish: Plain White Morisco plates, bowls, <i>albarelli</i> , glazed red earthenware Non-Spanish: Portuguese Merida, Venetian tin-glazed platter, salt-glazed Raeren stoneware, Ming porcelain	Martin, 1979: 284-94, 296-97; 1995a: 355, 356, fig. 29.4
<i>Santa Maria de la Rosa</i> , Co. Kerry, Ireland	1588	Spanish: glazed red earthenware, 'Santa Maria' glazed earthenware Non-Spanish: Portuguese Merida-type	Martin, 1979: 289-90, 292, 294, 295-6
<i>Girona</i> , Co. Antrim, Ireland	1588	Spanish: glazed red earthenware Non-Spanish: Portuguese Merida-type, Rhenish?	Martin, 1979: 288-89, 293-4, 297-98
<i>San Juan de Sicilia</i> , Tobermory Bay, Scotland	1588	Spanish: tin-glazed <i>albarello</i>	Martin, 1979: 295-96
<i>San Pedro</i> , Bermuda	1595	Iberian: Portuguese green-glazed pitchers Non-Spanish: Chinese porcelain plate, Ligurian Blue on Blue, Saintonge inkwell	Hoyt, 1988: 62 Marken, 1994: 217
Western Ledge, Bermuda	Late 16 th century	Spanish: Plain White Morisco, Green Lebrillo, El Morro Non-Spanish: Cologne ware	Franklin, 1993: 73-75; Watts, 1993: 121-22
<i>San Antonio</i> , Bermuda	1621	Spanish: Plain White Morisco, Decorated Blue Morisco pitcher, Talavera-style saltcellar, Feldspar Inlaid jar (from Guadix, Andalusia?)	Marken, 1994: 152, 206, 224, 229
<i>Atocha</i> , Florida Keys	1622	Spanish: Seville Blue on Blue, Plain White, Seville Polychrome, Decorated Blue Morisco, Talavera-style saltcellar, Merida, Bizcocho, Feldspar Inlaid Non-Spanish: Panama Plain, Panama Blue on White	Marken, 1994: 191-92, 205-209, 225, 231-32, 233
<i>Nuestra Señora de la Concepción</i> , Hispaniola	1641	Spanish: two-handle glazed jugs Non-Spanish: San Juan Polychrome Mexican tin-glazed plates, cups, bowls, Mexican San Luis Blue on White, Chinese porcelain	Borrell, 1983: 86, 101, 104; Marken, 1994: 233-34
Stonewall wreck, western Bermuda	c. 1650	Mexican: San Juan Polychrome, San Luis Blue on White, white tin-glazed	Dethlefsen <i>et al.</i> , 1977: 326-27

Table 7. Wreck evidence for local and foreign tablewares used on Spanish or Spanish-operated ships between 1554 and c. 1650.

Tortugas Shipwreck (1622)	Atocha Shipwreck (1622)
Seville Blue on Blue Type 1, Rim Style A plate	Plates: MFARD A82-7709 & M80-1581 *
Seville Blue on Blue Type 1, Rim Style Bi plate	Plate: MFARD A-8167-73
Seville Blue on Blue Type 1, Rim Style Bi & Base Style G plate	Plate: MFARD A/M-82
Seville Blue on Blue Type 1, Rim Style Bi & Bii plate	Plate: MFARD M85-7707
Seville Blue on Blue Type 1, Rim Style Bi & Bii plate	Plate: MFARD A-770
Seville Blue on Blue Type 1, Rim Style Bii plate	Plate: MFARD A-7705
Seville Blue on Blue Type 1, Rim Style G bowl & Base Style F plate	Plate: Marken, 1994: 219, fig. 6.28
Seville Blue on Blue Type 1, Rim Style G bowl & Base Style F plate	Bowl & plate: Marken, 1994: 219, 222, figs. 6.28, 6.32
Seville Blue on Blue Type 1, Rim Style H plate	Bowl: MFARD 97a
Seville Blue on Blue Type 1, Base Style J plate	Plate: Marken, 1994: 222, fig. 6.31
Plain White Type 3B plates	Plates: Marken, 1994: 154-57.
Plain White Type 3D bowls	Bowls: Marken, 1994: 154
Seville Polychrome Type 5A Small Jug	Sherd: MFARD A-7710a
Decorated Blue Morisco Ware Type 7 pitcher	Pitchers: Marken, 1994: 227-28
Merida Type 14 jug base	Jug base: Marken, 1994: 190, fig. 6.8.
Bizcocho Type 16 saucer	Saucer & pitcher: Marken, 1994: 207-208, fig. 6.20

* MFARD = Mel Fisher's Artifact Research Database

Table 8. Comparison of tablewares between the Tortugas and Atocha shipwrecks from the 1622 Tierra Firme fleet.

can the ardent reliance on Seville ceramics on the Tortugas ship be construed as resolute cultural conservatism or just practical economics? A first observation is a greater focus on the Tortugas wreck of homeport pottery than was exploited on the vessels of contemporary nations between the early 17th and early 18th centuries.

Whereas plain pottery produced in western England predominated on the English merchant vessel the *Sea Venture*, sunk off Bermuda in 1609, as well as jars from north Devon, jugs from Surrey, an apothecary's jar from a possible London kiln and probable English delftware, its crew did not shy away from enjoying a small selection of foreign exotica. These included two Rhenish salt-glazed stoneware Bartmann jugs, a Chinese bowl and Spanish olive jars. The *Sea Venture* served as the flagship for the transport from Devon, southern England, of 600 colonists in seven ships and two *pinnaces* to Jamestown, Virginia (Wingood, 1982: 341; 1986: 150). This pattern of consumption is more liberal than the Tortugas ship's ceramic profile.

Stoneware Bartmann jugs, in particular, produced in the Rhineland, Germany, were a long-lived calling card of European sailors that transcended nationalism to secure a global market. Around 320,000 quart-sized Rhenish salt-glazed stoneware vessels were landed in London in 1615, and examples have been recovered from shipwrecks in the North and South Atlantic, North Sea, Baltic, Caribbean, South China Sea and Western Australia (Gaimster, 1997:

121). An early example is associated with a mid-16th century Portuguese *nau* in the Seychelles (Blake and Green, 1986: 15-16, fig. 13), and multiple examples, as well as a blue and white Westerwald stoneware jug, were used on the Swedish warship *Kronan* lost off the Baltic island of Öland in 1676 (Einarsson, 1990: 296).

An elaborate Westerwald jug is also associated with the Swedish warship the *Vasa*, sunk in 1628 just outside Stockholm harbor (Hocker, 2011: 117). Another Bartmann jug graced the decks of the Cromwellian period *pinnace* the *Swan*, lost off Duart Point, Scotland, in 1653 (Martin, 1995b: 21-2). The Dutch East Indiaman *Mauritius*, lost in the Gulf of Guinea in 1609, used the same stoneware vessels (L'Hour *et al.*, 1989: 177), while three examples went down on the *Kennemerland*, another Dutch East Indiaman outward bound for Batavia and wrecked on the Out Skerries, Shetland Islands, in December 1664 (Forster and Higgs, 1973: 297).

Eight Bartmann jugs were excavated from an armed Dutch *tjalk* lost in the Zuiderzee in 1673 (Vlierman, 1997: 163). The Danish merchant vessel *Dorothea*, lost in Villefranche harbor, France, in 1693 possessed a Bartmann jug and a glazed bottle from Provence, a small pot from the Savona region of Liguria and a white plate seemingly also of Ligurian origin (L'Hour, 1993: 310, 314-7).

The taste for small numbers of Rhenish tablewares for shipboard use continued *c.* 1700, when a local Swedish

merchant vessel operating in the Baltic sank with a more cosmopolitan mix of a Bartmann jug, a Westerwald tankard, Spanish olive jars, tripod pipkins similar to Dutch forms, and plates, jars and a jug of tin-glazed Dutch delftware (Ingelman-Sundberg, 1976: 60, 62, 69). The prevalence of Rhenish tablewares extended to English warships, such as the *Hazardous*, which sank in 1706 with a salt-glazed jug and small Bartmann bottle (Owen, 1988: 289).

The available archaeological evidence indicates that at no time did Spanish sailors and merchants share this cultural affection for German pottery. The odd vessel, such as Cologne ware from the *San Estaban* (Texas, 1554), salt-glazed Rhenish wares from the *Trinidad Valencera* (Ireland, 1588) and Cologne ware from the Western Ledge wreck (Bermuda, late 16th century), are far less visible than the widespread acceptance of foreign products on European vessels. The Tortugas ship reflects a particularly extremist domestic consumption perspective.

Greater Iberian flexibility in cultural tastes and attitudes away from the Seville-Americas sealanes is a second tentative pattern emerging from the shipwreck data. For instance, the Portuguese frigate *Santo Antonio da Tanna*, lost off Fort Jesus, Mombasa, in Kenya in 1697, relied primarily on Portuguese faience for table use – a colorful imitation of Chinese porcelain, but comparatively simply decorated. The frigate was also stocked with a Chinese glazed storage jar, a Chinese Ki'ang Hsi porcelain plate, Arabic *qulal* water jars and Martaban stoneware storage jars (Piercy, 1977: 335, 343-4, 346; 1978: 303-304; 1979: 304, 305, 307). Formerly operating in Goa, the frigate's ceramic tablewares are surprising cosmopolitan and were seemingly bought on an ad hoc basis when needed during her voyages from Vigo and Lisbon to Mozambique, Goa, Mombasa and Zanzibar during the three years before her loss (Sassoon, 1991: 24).

A comparable pattern defines the wreck of the *San Diego*, a Spanish *nao* built in the southern Philippines, where it sank off Fortune Island in 1600 during a battle against the Dutch. This merchant vessel exploited local Manila coarsewares characteristically decorated with small chips of Chinese blue and white porcelain embedded in their body walls, which were used for cooking pots and their lids, stoves, oil lamps and cups. The ship also contained a one-handle pitcher with plant decoration probably made in central Mexico (Dupoizat, 1997: 254; Veyrat, 1997: 166, 170-71, 173). The *San Diego*'s local ceramic tradition seems to have imitated the better-known colonial Spanish Feldspar-Inlaid Redware (cf. Ewen, 1991: 74).

A final third pattern, not replicated on the Tortugas ship, is the increased demand for Chinese ceramics as higher status tablewares as the 17th century progressed. Caution

must be exercised when considering Chinese ceramics associated with wrecks lost on the Indies route because cargo products can be mistaken for domestic assemblages. For instance, the limited Ming porcelain (seven plates stacked with straw in between, two platters, one bowl/vase base and single vase neck) associated with the Portuguese East India-man *Nossa Senhora dos Mártires*, sunk in 1606 in the Tagus River at Lisbon (Brigadier, 2002: 69; Castro, 2003: 10), almost certainly originated from a once far larger cargo.

The two sherds of Chinese porcelain from the Spanish armada vessel *Trinidad Valencera*, lost off Co. Donegal, Ireland, in 1588 are particularly early examples of high-status use by high-ranking officers (Martin, 1979: 297, 301). The wreck of the *Santa Margarita* from the same 1622 Tierra Firme fleet as the *Buen Jesús* contained five fragments from blue on white Chinese kraak porcelain dishes and cups (Malcom, 1996b). Kraak porcelain abandoned at the campsite of survivors from the wreck of the *São Gonçalo*, sank in 1630 off Plettenberg Bay, South Africa (Smith, 1986: 57), may point towards a similar shipboard desirability for Oriental tablewares.

A more extensive set of Chinese porcelain cups and dishes was recovered from the Spanish galleon *Nuestra Señora de la Concepción*, sunk off Hispaniola in 1641 (Borrell, 1983: 103). Two examples of Chinese porcelain wares, alongside a predominance of Portuguese faience, were excavated from the Portuguese warship the *Sacramento*, sunk off the Bay of All Saints, Brazil, in 1668 (Pernambuco de Mello, 1979: 222-23). Similar intact cups have been recovered from a vessel in the Havana-bound Spanish fleet sunk off Pedro Bank, Jamaica, in 1691 (Hoyt, 1984: 102, 109) and from the 1715 Spanish fleet off Florida (Burgess and Clausen, 1982: pl. 29). The Tortugas ship displayed no comparable tendency towards Oriental exotica, whose presence and comparative product value may be interpreted as an expression of lower status.

The wide range of the Tortugas tablewares from a single dated context makes the almost exclusive reliance on Seville ceramics particularly notable. All of the tin-glazed products originate in and around Seville, with the solitary exception of the Type 3C Plain White Morisco flanged plate (Fig. 87) that is an unidentified chemical outlier seemingly not from Seville, Mexico or Lisbon (Hughes, 2014). Merida-type wares originating in Lisbon and east into Spain are represented by one Type 12 jug (Fig. 110) and the Type 19B green-glazed costrel (Fig. 116). A Type 14 unglazed coarseware jug may also be a Merida product. Because Portugal was under Spanish suzerainty in 1622, and the two regions enjoyed intimate commercial relations, only the Type 3C Plain White Morisco plate emerges as a truly distinct potential cultural anomaly. Since the



Fig. 122. Engraving of Seville by Matteo Florimi c. 1580, with the potters' quarter of Triana on the west side of the Guadalquivir River (foreground).

majority of Plain White Morisco products seem to have originated in Seville, this inconsistency conceivably could be explained by the need of a crewmember or merchant on the *Buen Jesús* to replace a plate that broke during the outward voyage. The conspicuous consumption of homeport products on the Tortugas shipwreck is embedded within the boomtown economy of Seville's waning Golden Age.

10. Boom & Bust Economics in Seville

The repertoire of ceramic tablewares exploited on the Tortugas ship occupies an intriguing position in the colonial history of Spain. Coinciding with the well-chronicled contraction of the Spanish economy, to what degree do they possibly also reflect a diminished industrial realpolitik within Seville? Secondly, how is the dominance of local ceramics on the ship best interpreted: was this State manipulation over the Americas trade in political motion, cultural nationalism or nothing more obvious than urban pride in and familiar comfort with local craftsmanship?

Andalusia's highly lucrative agricultural fertility and industrial power base was exploited since the Punic and Roman periods, yielding abundant surpluses of fish, wheat, olive oil, lead and silver (Haley, 2003; Neville, 2007). Combined with excellent riverine access from its agricultural plains to the Mediterranean Sea via the Guadalquivir River,

Seville was blessed with optimum connectivity between the Spanish heartland and the wider world. Seville was the jewel of Andalusia: the closest outward point of the maritime Atlantic route leading towards the Canaries, Lesser Antilles and the Americas.

Ever since King Alfonso X (r. 1252-84) chose Seville to serve as the base for the galleys protecting the Straits of Gibraltar, the city had developed into the economic heart of the Guadalquivir valley. Genoese bankers based in Seville since the medieval period helped develop Seville into Spain's undisputed trade metropolis (Pérez-Mallaína, 1998: 2-4). The appetite for a new range of ceramics was enhanced by a fundamental shift from medieval communal eating out of a single pot to a 16th-century preference for individual personal dishes and bowls. The small dish (*plato*) and small carinated bowl (*escudilla*) became the routine place setting for sailors and soldiers home and abroad (Hurst, 1995: 48).

The Tortugas ship's tablewares are a microcosm of Seville's profound transformation into the gargantuan redistribution center of Spain's colonial trade. The city, its merchants and ships benefited from an iron-fist monopoly in the transport of the king's treasure from the Indies and simultaneously in the expansive trade in everyday commodities along the same sealanes.

Permits for the Americas trade were tightly controlled. The penalty for crossing without a license was a



Fig. 123. Engraving of Seville by Francesco Ambrosi c. 1780. Triana is visible on the west side of the Guadalquivir River (foreground), with the Castillo San Jorge, seat of the Spanish Inquisition, at far left next to the bridge.

100,000-*maravedis* fine and ten years banishment if the offender was of 'gentle blood' and 100 lashes in lieu of a fine for the lower classes (Haring, 1918: 1003). Penalties became increasingly more severe over time, a certain indication of system tension and failure, a reality renowned through the infamously labyrinthine trade in contraband, which steadily choked the official fleet system (Studnicki-Gizbert, 2005: 170; Kingsley, 2013: 145-46).

In 1560 penalties for illegal transport to the Americas included forfeiture of any property obtained in the Indies. By a decree of 1607 captains, pilots and boatswains were threatened with the death penalty for fraudulent transport, while in 1622 the penalty was changed to eight years in the galleys (Haring, 1918: 103). Captains and fleet commanders were prohibited from entering any port other than Seville without sufficient cause: after the *capitana* flagship and other vessels from the Mexican fleet docked at Cadiz in 1623, the captain general and every owner of the *flota's* merchant vessels received a 2,000-ducats fine (Peterson, 1975: 55-6). Since merchants could make 100% profit on the value of merchandise arriving from Americas, the incentive to beat the system was incessant (Defourneaux, 1970: 85).

The direct stimulus underlying Seville's great fortune was the establishment in 1503 of the Casa de Contratación, the House of Trade. Within a century the city's population soared to 150,000, almost exclusively due to economic

structures required to host Spain's transatlantic fleet. As the fleet's official port of departure, Seville was transformed into one of the world's great metropolitan centers, where the provisioning of ships with food to last large parts of voyages was organized (Egerton *et al.*, 2007: 219). As stated above, Seville's virtual trade monopoly that operated under State control and rigorous bureaucratic supervision, based on huge convoys shipping to Spanish settlers wheat, wine and olive oil to keep up long-established eating habits, has been termed "veritable economic lunacy" (Chaunu and Chaunu, 1974: 120).

Seville's population began to boom in the 1540s and peaked by 1571-88 at 150,000 inhabitants (Pike, 2000: 1), one-third larger than Madrid (Defourneaux, 1970: 82). Traditionally left to outsiders and foreigners, the changing nature of trade and the wealth it generated created a socio-economic revolution amongst Seville's nobility. "The discovery of the Indies has presented such wonderful opportunities to acquire great wealth", wrote Padre Tomás de Mercado in *Summa de Tratos y Contratos* in 1571, that "the nobility of Seville has been lured into trade when they saw what great profits could be made".

The great lords owned ships involved in the *Carrera de Indias*, sought to monopolize Sevillian shipping and transatlantic commerce to the New World and invested in the wholesale trade of merchandise and slaves. The lower nobility was more physically involved in everything from



Fig. 124. View of the Guadalquivir River, Seville, with the former potters' district of Triana on the west bank (right). Photo: S.A. Kingsley.



Fig. 125. Traditional pottery workshops still operate today in Triana, Seville. Photo: S.A. Kingsley.

financing maritime loans to sailing to the America to sell goods through factories they maintained. Whilst abroad they would invest in New World enterprises such as cattle raising, sugar production and pearl fishing. Most of these commercial *hidalgo* families were nouveau riche and often of *converso* descent, who concealed the stigma of their birth beneath faked genealogical tables. As Padre Tomás de Mercado again observed, the “power of gold made nobles out of commoners” (Pike, 1972: 21, 31-4).

Across the river Triana emerged as the center of Seville's pottery industry (Figs. 122-124). The suburb's population rose from 704 people in 1534-61 to 2,411 in 1534-88 and, according to Alonso de Morgado, a long-term resident of Triana, the quarter possessed around 4,000 houses by 1587. By 1609, 7,503 Moriscos lived and worked as cheap labor in Seville, mainly in Triana (Pike, 1972: 2, 14, 112, 161).

Triana was only Seville's seventeenth largest district at the end of the 14th century, but became one of the city's three most populated parishes in the 16th century. By 1588 the quarter possessed more residents than inhabited the choicest district surrounding Seville's largest church (Pérez-Mallaína, 1998: 2). Triana was situated *extra muros* on the west bank of the Guadalquivir – the nerve center of the metropolis – whose inhabitants' actions were watched over by the Castillo San Jorge, the headquarters of the Spanish Inquisition (Fig. 123). The wooden pontoon bridge leading to and from town, 240 *varas* long, 12 *varas* wide (201 x 10m), and constructed over 17 barges, was the river port's most famous spectacle (Pike, 1966: 22).



Fig. 126. Tiles depicting children throwing pots on the façade of a traditional potter's workshop in modern Triana, Seville. Photo: S.A. Kingsley.

This district was also the favored residential area of the seafaring population involved in the *Carrera de Indias* trade. In the census of 1561, 31 of 34 mariners listed as resident in Seville resided in Triana. Its highest status houses extended along La Calle Largam, while more humble sailors dwelt along the Peral, Confesos, Sumidero, Victoria, Sol or De la Cava streets. As well as a center of Seville's pottery workshops, Triana specialized in soap and gunpowder production. No stone or wooden riverside piers facilitated the loading and unloading of cargo, so Triana's buildings extended right up to water's edge (Pérez-Mallaína, 1998: 4, 15-16). On the opposite side of the river, facing the bustling industrial quarter, the fine people of Seville chartered along the Arenal public promenade (Pike, 2000: 2).

Triana was linked with ceramics production from the earliest phase of Spain's exploration of the New World, developing a tradition that dates back in the post-classical world to the 12th-13th centuries (Vera Reina and Torres, 2009: 429), and possibly far earlier. According to legend, the patron saints of Seville, Justa and Rufina, were potters by trade before being martyred in the city in the 3rd century AD (Calvert, 1907: 139). Rodrigo de Triana, the son of a noble Morisco and potter, was born in Seville in 1469 and found fame as the first European sailor to sight America on 11 October 1492, according to the diary of Christopher Columbus. The district's status was enhanced in the late 15th century by Italian migrant potters, most notably Niculoso Francisco – often referred to as 'Pisano' – who produced a series of remarkable large-scale tile pictures in the potter's district in 1498 and introduced the Italian maiolica palette to Seville (Wilson, 2007: 11).

The significant shift in tin-glazed manufacture that evolved as commercial traffic with the Americas increased has been credited to the large group of Genoese and Ligurian artisans living in Seville, notably Tomás Pésaro, Virgilio Cortivas, Bernardo Cerrudo and the Sambarino brothers, who produced vast quantities of tin-glazed pottery (Pleguezuelo, 2003b: 30). The Spanish Crown granted tax exemptions to Italian and Flemish artisans relocating to Spain, whose Renaissance tastes replaced Islam's worn out themes (Lister and Lister, 1982: 13). By 1569 potters from Albisola had introduced their customary methods and styles to Triana (Lister and Lister, 1974: 23).

Frans Andries, the son of Guido Andries of Castel Durante, arrived in Seville in 1561 and signed a contract to teach Roque Hernández the art of making pottery in the 'Pisa style', in other words using the tin-glazed Italian maiolica palette. On 28 May 1573 Tomás Pesaro leased a pottery near the Puerta de Goles to Virgilio Cortivas. The Genoese potters Bernardo Cerrudo and the brothers Bartolomé and Antonio Sambarino from Albisola also



Fig. 127. Traditional pottery workshop in Triana, Seville. Photo: S.A. Kingsley.



Fig. 128. Tin-glazed albarella above a tiled wall in a modern pharmacy in Triana, Seville. Photo: S.A. Kingsley.



Fig. 129. Diego Velázquez's Christ in the House of Martha and Mary, 1618, depicts a Tortugas Type 20 half-dipped lead-glazed jug at right. Photo: National Gallery, London.



Fig. 130. Diego Velázquez's Kitchen Maid of c. 1617-18 depicts two Tortugas Type 3B Plain White Morisco plates and one Tortugas Type 3D bowl stacked upside down alongside a Tortugas Type 7 Decorated Blue Morisco pitcher. Photo: National Gallery of Ireland.

operated out of Seville at the same time. In his marriage contract of 1570, Antonio described himself as a 'master in the making of Venetian pottery' (Ray, 2000: 157).

By the end of the 15th century the re-conquest of Granada, the discovery of the Americas and the establishment of the Casa de Contratación laid the foundations for Triana's conversion into a commercial pottery production center serving both regional demands and Spain's sprawling colonial export market. The district's output was characterized by "Semi-industrial production, little quality control, a specialisation in lower quality tablewares, either plain or decorated in a spontaneous and rapid style, [that] allowed Triana to gain a foothold in the domestic and foreign market" (Pleguezuelo and Pilar Lafuente, 1995: 218). This unflattering definition seems largely accurate for the styles and decorations encountered on the Tortugas shipwreck.

Best known for its tin-glazed pottery, Seville also produced vast quantities of coarse earthenware. Taxes paid by Sevillians in 1554 for unglazed earthenwares were nearly 19 times greater than those obtained from glazed vessels. That same year pottery production ranked eighth in importance amongst a list of 53 local occupations. An estimated 5,000 people worked in Seville's pottery industry in the late 16th century (Lister and Lister, 1987: 130-1, 287), including within 50 establishments clustered in Triana (Pike, 1966: 22).

The industry was never hugely lucrative, but the need for tablewares guaranteed regular income for a large sector of craftsmen. Pottery workshops were at heart a family affair that combined the skills of a man, his sons and sons-in-law and perhaps a parent. The industry was heavily taxed from the purchase of resources to igniting kilns, and selling and shipping wares. The rise of the Americas trade attracted investment in Triana, such as the Carthusian Order located in the principal potters' riverside quarter, which was the largest landlord of the *casas de ollería*. Many artisans owned small salesrooms in the *alcaicería de la loza* on Salvador Street in the main city. Other potters acquired undeveloped land in Triana's meadows, which reported a profit in 1555 of 24,000 *maravedies* compared to the owner's grape harvest from three vineyards (Lister and Lister: 279-80, 282).

The success of Ligurian ceramics on Spanish dining tables far and wide – Ligurian Blue on Blue was the third most strongly represented Spanish and Italian tin-glazed class from Sagrario, Mexico City, c. 1570-1600+ (Lister and Lister, 1982: 11) – spawned a host of imitations. Aragon, Andalusia and Catalonia turned out localized interpretations of Italic styles. Italian ceramists also settled in different parts of Aragon as well as Seville, a phenomenon repeated in France and Holland, where the emergence of Dutch tin-glazed products was again the result of late 16th-century Italian influences. As in Seville, the potters of Barcelona produced ceramics in the Ligurian style (Beltrán de Heredia Bercero and Miró i Alaix, 2007: 13, 27-8). These influences dominate the decorative schemes of the Tortugas ship's Type 1A tin-glazed wares.

By the close of the 16th century it has been argued that Seville had started to move away from Italian stimuli towards styles favored by Talaveran potters and imitated in the Andalusian capital. Records dated to 1587 refer to "Luis García, a Moorish maker of Talavera glazed ware" living in Triana. In 1597 the pottery of the Pesaro in the Casa de Colón near the Puerta de Goles was a *tienda de Talavera* specializing in producing Talavera-style wares under the supervision of Tomás Pesaro's son, Jusepe, who was still recorded as making dishes and bowls in 1615

(Ray, 2000: 180). This shift in style is reflected in the strong presence of Type 2 Blue on White and Type 5 Polychrome tin-glazed products on the Tortugas shipwreck.

Triana may have adopted the Talaveran tradition as its own, but it was swamped by the home-developed product line: by 1627 government documents indicated that whereas Seville only produced three basic Talavera styles, its potters turned out 32 forms typical of Seville (Lister and Lister, 1987: 151). The distinctive three-color family painted in a basic palette of blue, orange and manganese was a huge success inspired by faenza motifs and wares (only visible on the Tortugas wreck perhaps in the Type 5 Seville Polychrome jugs and bowl: Figs. 94-96). This Italian style is believed to have been introduced into Spain via Talavera post-1580 and was subsequently imitated in Seville, Aragón, Toledo and Valladolid (Ray, 2000: 173).

The *Tasa de Precios* price regulations inscribed at Seville on 12 October 1627 indicated that Portuguese pottery was not readily available, while Talavera, Puente and Seville styles predominated. Talavera forms included the *de ramillete* style (possibly three-colored ware), *vivriado contrahecho de la China* (imitations of Chinese porcelain), and *vivriado blanco de Pisa* (white 'Italian' ware). Under the heading of Seville were listed plain white *platos de Talavera contrahechos en Sevilla* (plates of Talavera imitated in Seville) and *platos pintados contrahechos de Talavera* (painted plates of Talavera in imitation of Talavera) (Ray, 2000: 180).

The same potteries simultaneously threw a wider range of bowls, jugs, cups, holy water stoups, flowerpot stands, cruet bottles, flower holders, salts, urns, wine cups in boat form, and *platos azules* (blue dishes). The supplementary *Loza de Sevilla Contrahecha de la de Talavera* published on 13 October 1627 added to the list of Seville products ink stands, candlesticks, salts, jardinières, pierced baskets, barber's basins, cruet stands, water pots, wine jars, cups of various size, basil pots, bottles, mortars, preserve pots, drug jars, urns, tiles and toys, such as an owl with a detachable head, and candlesticks imitating silver originals (Ray, 2000: 180).

In summary, Seville specialized in three dominant classes of table pottery: plain white wares, three-color wares and a style imitating Chinese originals. Many contemporary products generally called Talavera style clearly derived from Seville. The city's craftsmen are presumed to have followed the traditional formula for tin glaze, which probably included barilla, soda ash prepared from *salsola* (saltwort), which grew naturally in the Seville region. The use of barilla may explain the presence of crazing often found on pieces of the three-color family (Ray, 2000: 180).

Prices for ceramics sold in Seville in 1627 ranged from 10 *maravedies* for Talavera small plain bowls to 24



Fig. 131. Diego Velázquez's *The Farmers' Lunch* (1618) with a Type 3B Plain White Morisco plate at center. Photo: Szépművészeti Múzeum, Budapest.



Fig. 132. *Two Young Men at a Table*, attributed to Diego Velázquez, 1623-24, depicts two Tortugas Type 3B Plain White Morisco plates and one Tortugas Type 3D bowl stacked upside down alongside a Tortugas Type 20 half-dipped lead-glazed jug. Photo: the Wellington Museum, Apsley House, London.

maravedies for Talavera small decorated bowls, 40 *maravedies* for Talavera medium decorated bowls and Talavera undecorated large jars, while Seville Talavera copies of small plain bowls cost 10 *maravedies* and Seville Talavera copies of small decorated bowls 14 *maravedies*. Seville hollow wares, as predominated on the Tortugas shipwreck, sold for lower prices than all other products (Lister and Lister, 1987: 284). Pottery was largely very cheap: by comparison, a pair of leather shoes supplied for the Spanish Armada of 1588 cost 102 *maravedies* (Martin, 1995a: 355), while in 1622 a female cook earned 11 *maravedies* a day and a master carpenter could make 238 *maravedies* daily (Hamilton, 1934: 401).

In the absence of comparative ceramics published from excavations across Seville, fieldwork across southern North



Fig. 133. Old Woman Frying Eggs, c. 1618, by Diego Velázquez depicts a Type 3B Plain White Morisco plate, Type 20 half-dipped jug and Type 7 Decorated Blue Morisco jug. Photo: National Gallery of Scotland, Edinburgh.



Fig. 134. Detail of the bottom left corner of Saints Justa and Rufina (martyred in Seville in the 3rd century AD) by Bartolomé Esteban Murillo, 1666. Two Tortugas Type 3D Plain White Morisco bowls sit on top of two Tortugas Type 3B Plain White Morisco plates. Photo: Museo de Bellas Artes de Sevilla.

America and the circum-Caribbean region as far east as Venezuela, shipwreck evidence and secure contexts examined in western Europe, coupled increasingly with chemical studies of clay fabrics, have revealed the repertoire of wares generally attributable to Seville. Part of just one early 16th-century kiln and ceramic workshop has been excavated in Pureza Street in Triana and was associated with Morisco wares (Gerrard *et al.*, 1995: 284; Hurst, 1995: 48). The district's pottery tradition lives on today in several workshops (Figs. 125-127).

Moriscos are typically credited as serving as the cheap labor underlying Triana's successful pottery industry. Their existence in the district's slums is well attested. In 1539, for example, the Belgium humanist Nicolas Clènard sought out a recently converted Morisco physician who worked as a part-time potter in Triana to help with his Arabic grammar, and wrote that "Since my arrival in Seville I had been combing the potteries and I eventually found the old potter at work, his arms covered in clay. But he refused to teach me, with the excuse that he was old, that he had too many duties already – he also practiced as a physician in Triana" (Fernández Chaves and Pérez García, 2012: 86).

Since a specific genre of Seville pottery has been defined as Morisco ware (cf. Hurst, 1995: 48), this material and its implications warrant explanation. By 1589, Seville's 6,406 Moriscos, who were the remainder of vanquished Moors forcibly converted to Christianity, accounted for 5.5% of total urban population (Vilar, 1974: 102; Fernández Chaves and Pérez García, 2012: 89). They typically lived in crowded tenement housing with an average of 15-20 people per dwelling. This largely poor element of society worked in the orchards, baking establishments, gardening, as stevedores, occasional farm laborers and other forms of unskilled labor. Small-scale Morisco tradesmen peddled foodstuffs, such as bread, oil, fruits and vegetables, and manned temporary stands in the marketplace. Morisco women sold buttercakes, roasted chestnuts and sweets (Pike, 1972: 158, 160-61).

By 1609 7,503 Moriscos lived and worked in Seville, mostly in Triana. They were first struck by the plague of 1599-1601 that preyed on the district's crowded and unsanitary living conditions. Burdensome restrictions, heavy taxes and widespread prejudice had also made the Moriscos defiant, rebellious and consequently constantly under attack. The Crown's deep-seated suspicions of heresy and subversion eventually led to the decision to exile the Moriscos (Lister and Lister, 1987: 124). Ever the scapegoat of society, in January 1610 all Moriscos except slaves were given 20 days to settle their affairs and leave Spain, abandoning en masse the land of their forced conversion and mostly relocating to North Africa and Marseille (Pike, 1972: 163, 168).

The loss of this cheap workforce is often decried as a significant reason for the decline in Seville's industry, but as the Tortugas shipwreck demonstrates business continued as usual, at least to all outward appearances, in the city's potteries. An obvious conclusion following the 1610 expulsion, however, is that Moriscos no longer resided in Triana to make its famous ceramics. While they undoubtedly served as major players in the potteries pre-1610 as many scholars have proposed, technically no tablewares

from the Tortugas shipwreck can be termed Morisco ware other than in terms of inspiration of the tradition.

Many types of Seville ceramics present on the Tortugas shipwreck are renowned from contemporary still life masterpieces painted by the city's famous artists, most notably Diego Velázquez during his Seville period. A half-dipped green-glazed one-handled jug identical to the Tortugas wreck's Type 20 appears to the left of a maid preparing food in Velázquez's *Christ in the House of Martha and Mary* painted in Seville in 1618 (Fig. 129). The same jug form is depicted in Velázquez's *Two Young Men at a Table* of 1623-24 alongside what resemble two plates and a bowl of Type 3B Plain White Morisco stacked upside down (Fig. 132).

Half of an orange and a cut fish rest inside a Type 3B Plain White Morisco plate in Velázquez's *The Farmers' Lunch* of 1618 (Fig. 131), while the same painter set on a table in front of an African slave two more Plain White Morisco plates and a Type 3D bowl stacked upside down, alongside a Type 7 Decorated Blue Morisco ware pitcher, in his *Kitchen Maid* of c. 1618-22 (Fig. 130). Velázquez's *Old Woman Frying Eggs* of c. 1618 depicts a Type 3B Plain White Morisco plate, a Type 7 Decorated Blue Morisco ware pitcher and a Type 20 half-dipped lead-glazed jug (Fig. 133).

Finally, two Type 3B Plain White Morisco plates and two Type 3D bowls are stacked in the bottom left corner of Bartolomé Esteban Murillo's *Saints Justa and Rufina* (martyred in Seville in the 3rd century AD), which he painted in 1666 (Fig. 134). The juxtaposition of these ceramic forms with the patron saints of Seville, traditionally considered to have been potters, is a strong indication that this form of robust tin-glazed pottery was considered the calling card of Seville potters par excellence. Overall, the ceramic repertoire depicted in contemporary paintings within a Seville context of the first half of the 17th century matches examples present on the Tortugas site, but in restricted form. The Seville Blue on Blue wares that dominate the wreck assemblage, for instance, are conspicuously absent in Seville's still life painting repertoire.

11. Conclusion

The 2,031 rims, bases, handles and sherds from 21 types of tableware represented on the Tortugas shipwreck were recovered predominantly (83%) from the stern end of the site. Of these 1,477 are tin-glazed products, which account for 78.2% of the tablewares based on counts of largely intact or unique vessels.

The tableware's typological profile is neither consistent with the closest dated Spanish shipwrecks, nor with trade goods excavated from colonial Spanish sites across the Americas. The eight types of tin-glazed wares on the Tortugas wreck are dominated by Seville Blue on Blue

(Type 1, 28.2%), Seville Blue on White (Type 2, 12.8%) and Plain White Morisco (Type 3, 12.8%): 53.8% by count of largely intact or unique vessels.

The supremacy of Seville Blue on Blue is unexpected. Across the Americas the type is far less conspicuous, accounting for just 0.5% of the tin-glazed wares from the Sagrario excavations at Mexico City (Lister and Lister, 1982: 11), and 0.3% from Puerto Real in Hispaniola (Deagan, 1995: 441). Within Seville, Tortugas Type 1 was extremely popular within the Augustinian convent of Baños de la Reina Mora site at 27.5% of the total tin-glazed products, but still lagging behind Plain White Morisco ware's 32% dominance (McEwan, 1992: 93-4).

The Tortugas Type 2 Seville Blue on White products are poorly represented across the Americas, although the 39 sherds (2.9% of tin-glazed wares) from the Sagrario excavations in Mexico City presumably incorporate this class (Lister and Lister, 1982: 11). The same is possibly true for the 238 sherds of Unclassified Blue on White (9.1% of tin-glazed wares) from Baños de la Reina Mora, Seville (McEwan, 1992: 94).

Currently the 1588 Armada wrecks of Ireland and Scotland and the Augustinian convent site of Baños de la Reina Mora in Seville are the closest geographic and chronological touchstones with which to compare patterns of ceramic consumption on the Tortugas ship. Plain White Morisco tin-glazed and Portuguese Merida-type tablewares dominate the assemblages from the *Trinidad Valencera*, *Santa Maria de la Rosa*, *Girona* and *San Juan de Sicilia*. Small numbers of Italian, German and Chinese imports graced their dining tables. The dominance restricted to just two product lines seems to reflect the reality of a stock policy imposed by Armada administrators and is a far cry from the more liberal use of eight tin-glazed types on the Tortugas ship.

By contrast, the far less regimented Tortugas assemblage variety finds close parallels across the board at Baños de la Reina Mora in Seville (sample size 2,618 sherds), whose principal tin-glazed wares are presented below by volume in descending order:

- Plain White: 847 sherds (32.3%)
- Seville Blue on Blue: 721 sherds (27.5%)
- Linear Blue Morisco: 242 sherds (9.2%)
- Unclassified Blue on White: 238 sherds (9.1%)
- Decorated Blue Morisco: 84 sherds (3.2%)
- Mottled Blue Morisco: 54 sherds (2.1%)
- Seville Polychrome A/B: 34 sherds (1.3%)

As would be expected for a longer-lived settlement, the convent drew on a wider range of Spanish tin-glazed wares, including Andalusian Plain (114 sherds), green tin-glazed

Tortugas Type	Inv. No.	ICPS Sample Nos.	Source
Type 1A, Seville Blue on Blue Plate	TOR-90-00041-CS	09-0911-43; VB12	Seville
Type 1A, Seville Blue on Blue Plate	TOR-90-00044-CS	09-0911-19; VB13	Seville
Type 1A, Seville Blue on Blue Plate	TOR-90-00081-CS	09-0911-30; VB14	Seville
Type 1A, Seville Blue on Blue Plate	TOR-90-00054-CS	09-0911-32; VB15	Seville
Type 1A, Seville Blue on Blue Plate	TOR-90-00084-CS	09-0911-56; VB16	Seville
Type 1A, Seville Blue on Blue Plate	TOR-90-00085-CS	09-0911-54; VB17	Seville
Type 1A, Seville Blue on Blue Plate	TOR-90-00052-CS	09-0911-36; VB18	Seville
Type 1A, Seville Blue on Blue Plate	TOR-90-00045-CS	09-0911-57; VB19	Seville
Type 1A, Seville Blue on Blue Plate	TOR-90-00061-CS	09-0911-49; VB 21	Seville
Type 1A, Seville Blue on Blue Plate	TOR-90-00053-CS	09-0911-17; VB22	Seville
Type 1A, Seville Blue on Blue Plate	TOR-90-00086-CS	09-0911-48; VB23	Seville
Type 1A, Seville Blue on Blue Plate	TOR-90-00058-CS	09-0911-38; VB24	Seville
Type 1A, Seville Blue on Blue Plate	TOR-90-00088-CS	09-0911-11; VB25	Seville
Type 1A, Seville Blue on Blue Plate	TOR-90-00046-CS	09-0911-10; VB26	Seville
Type 1C, Seville Blue on Blue Bowl	TOR-90-00049-CS	09-0911-26; VB27	Seville
Type 1C, Seville Blue on Blue Bowl	TOR-90-00051-CS	09-0911-53; VB28	Seville
Type 1C, Seville Blue on Blue Bowl	TOR-90-00048-CS	09-0911-41; VB29	Seville
Type 1C, Seville Blue on Blue Bowl	TOR-90-00056-CS	09-0911-14; VB30	Seville
Type 1D, Seville Blue on Blue Jug	TOR-90-00035-CS	09-0911-13; VB42	Seville
Type 2A, Seville Blue on White Plate	TOR-90-00015-CS	09-0911-09; VB31	Seville
Type 2A, Seville Blue on White Plate	TOR-90-00017-CS	09-0911-23; VB32	Seville
Type 2A, Seville Blue on White Plate	TOR-90-00057-CS	09-0911-29; VB33	Seville
Type 2A, Seville Blue on White Plate	TOR-90-00090-CS	09-0911-39; VB34	Seville
Type 3B, Plain White Morisco Plate	TOR-90-00013-CS	09-0911-51; VB35	Seville
Type 3B, Plain White Morisco Plate	TOR-90-00030-CS	09-0911-31; VB36	HMG: 18-24km west of Seville *
Type 3C, Plain White Morisco Plate	TOR-90-00047-CS	09-0911-21; VB37	High Potassium Outlier **
Type 3D, Plain White Morisco Bowl	TOR-90-00073-CS	09-0911-18; VB38	HMG: 18-24km west of Seville
Type 4B, Seville White Bowl	TOR-90-00036-CS	09-0911-27; VB39	Seville
Type 4C, Seville White Cup	TOR-90-00065-CS	09-0911-15; VB41	Seville
Type 5A, Seville Polychrome Jug	TOR-90-00032-CS	09-0911-22; VB43	Seville
Type 5A, Seville Polychrome Jug	TOR-90-00070-CS	09-0911-08; VB44	Seville
Type 6A, Linear Blue Morisco Jar	TOR-90-00069-CS	09-0911-05; VB45	Seville
Type 6C, Linear Blue Morisco Bowl	TOR-90-00009-CS	09-0911-03; VB49	Seville
Type 6D, Linear Blue Morisco Jug	TOR-90-00023-CS	09-0911-02; VB50	HMG: 18-24km west of Seville *
Type 7, Decorated Blue Morisco Pitcher	TOR-90-00019-CS	09-0911-20; VB46	Seville
Type 7, Decorated Blue Morisco Pitcher	TOR-90-00068-CS	09-0911-04; VB47	HMG: 18-24km west of Seville *
Type 8A, Mottled Blue Morisco Cup	TOR-90-00038-CS	09-0911-06; VB48	HMG: 18-24km west of Seville *
Type 12, Merida-type Jug	TOR-90-00031-CS	09-0911-07; VB53	Portugal
Type 19B, Green-glazed Costrel	TOR-90-00071-CS	09-0911-28; VB54	Portugal
Type 20, Green-glazed Jug	TOR-90-00016-CS	09-0911-12; VB55	HMG: 18-24km west of Seville *
Type 21, Lead-glazed Jug	TOR-90-00040-CS	09-0911-24; VB56	Seville

* HMG = High magnesium chemical group: rural production near the Rio Guadamar, Benacazón and Aznalcázar, about 18-24km west of Seville.

** Seemingly not Seville, Mexico or Lisbon.

Table 9. Summary of Tortugas shipwreck tablewares' origins based on Inductively-Coupled Plasma Spectrometry (ICPS) analysis (Hughes, 2014).

(89 sherds), green and white tin-glazed (100 sherds) and Blue and Purple Morisco ware (12 sherds) (McEwan, 1992: 94).

The ceramic profile of the *Atocha* contains the closest parallel to the Tortugas ship. These are the only two archaeological contexts of the period where Seville Blue on Blue is the dominant tin-glazed tableware. Both sites also possessed comparable Plain White Morisco plates and bowls, Seville Polychrome small jugs, Decorated Blue Morisco pitchers, Merida-type ware jugs and Bizcocho plates (Table 8). The Tortugas ship seems to have been more expansively stocked, however, with Seville Blue on White, Seville White and Linear and Mottled Blue Morisco wares.

Of these, the absence of Seville Blue on White Type 2 plates is most anomalous. These may be interpreted as the most prestigious and expensive wares represented on the Tortugas ship, a presumption supported by their choice as the medium for plates bearing papal crests (Fig. 78). Since gold, silver and pewter tablewares were not exploited on the Tortugas ship, but were present in small numbers on the more grandiose *Atocha* (Mathewson, 1986: C-9 to C-C-12, C-30 to C-32; Malcom, 1998), it may be suggested that the Type 2 products were the highest status alternatives used on the Tortugas ship, perhaps accompanied by the Type 4 Seville White and Type 5 Seville Polychrome products.

Pewter was common on Spanish long-distance trading vessels, such as the 1554 *flota* wrecks (Padre Island, Texas; Skowronek, 1987: 103, 105), 32 examples from Spanish Armada sites of 1588 off Ireland (Weinstein, 2011: 23, 86), and the *Concepción* (Hispaniola, 1641; Borrell, 1983: 64, 121). A Spanish wreck recently salvaged off Punta Cana in the Dominican Republic, which was transporting a cargo of hundreds of pieces of pewter saucers, plates, dishes and porringers, together with a lidded salt and an inkwell holder, all of apparent London or Low Countries manufacture (Roberts, 2012), reflects the popularity of pewter alongside pottery on colonial Spain's dining tables. The Type 1 Seville Blue on Blue products perhaps occupied a second hierarchical tier, followed lastly by Plain White Morisco, whose uneven Type 3B plate bases would not have affected the crews' tendency to eat off their laps on deck, rather than at table (cf. Gerth and Kingsley, 2014).

Reconstructed vessel counts suggest the presence of at least 60 tin-glazed tableware vessels (34 plates, 11 bowls, four cups, five pitchers and six small jugs), ten unglazed coarsewares (five jugs, two jars, one dish, one costrel, one bowl) and seven lead-glazed wares (four small jugs, two jugs, one costrel) used onboard the Tortugas ship. While excavation of the upper 30cm stratum, where all the ceramic vessels were deposited, suggests that little of the wreck's tablewares were not recovered, it is impossible to

determine whether additional pots were snagged by the mass of shrimp trawlers operating out of Key West. Certainly, olive jars and structural remains from this wreck are recorded as having been caught in fishermen's nets. The ceramic's distribution, largely positioned around the site and not overlying the ballast heap, also points towards significant post-depositional disturbance and artifact dragging (Stemm *et al.*, 2013a: 27, 30).

The manifests for the Tortugas ship, the *Buen Jesús y Nuestra Señora del Rosario* (AGI *Contratación* 18; AGI *Contratación* 1172, N.2, R.1), specify that Manuel Diaz was the ship's master, while the vessel was crewed by ten sailors and a licensed pilot, supported by eight cabin boys and three pageboys. Registered passengers (at least outward-bound) were Francisco Afelio de Gandía, Francisco de la Torre y Ayala, the merchant Juan de Céspedes and Cristóbal de Biedma. The minimum of 11 crewmembers (assuming the pilot overlapped with sailing duties), and perhaps a total of around 26 crew and passengers following the above pattern, could have been comfortably catered for using the 34 plates identified amongst the tin-glazed products. In turn, this suggests that wooden mess plates and bowls were not used on the Tortugas ship.

The inspiration behind the shapes and decoration encountered amongst the Tortugas tin-glazed wares is complex and far-reaching. Deagan's observation (1987: 26) that by the end of the 16th century much of the Spanish ceramics exported to the Americas was "the result of a diffusion of styles and elements" holds true for the wreck data. The origins, transmission of styles and inter-mixing of traditions to create new forms are labyrinthine and cannot be traced seamlessly.

The decorative schemes encountered on the Seville Blue on Blue derived heavily from Ligurian influences (Tortugas Type 1, Rim Styles A, Bi/Bii, D, G, and Base Styles B, C, D, G, plus a Montelupo inspiration behind Rim Style G). The radiating floral and sun motifs characterizing Type 1, Base Styles G-K is also known from Pisa (Berti, 1997: 381). Type 1, Base Style G was replicated at Toledo (Villalba and Ray, 2005: 46, pl. X, no. 12). The floral Base Style G form, as well as birds, pomegranate-like fruit and sun motifs, are known from an 18th-century panel of 110 blue on white tiles from the Colección Carranza in Triana.³ Tortugas Type 2 was inspired from ceramic traditions originally combining Chinese and more immediately Italian influences, and perhaps partly developed in Talavera.

In regard to vessel shapes, the Tortugas Type 4B bowl shape is known from the ceramic repertoire of Talavera, where the general Type 7 pitcher form was also produced (Ray, 2002: 264, 268). The Type 1D Seville Blue on Blue and 5A Seville Polychrome one-handle small jug tradition

perhaps replicates known Ligurian forms as well (Varaldo, 1997: 317, fig. 3).

Looking back further in time and space beyond Italy, the shapes (Type 1-2 flanged plates and Type 4 bowl and cup) and decorative schemes adorning the Tortugas ship's wares find obvious prototypes amongst the repertoire of early 17th-century blue on white Chinese kraak porcelain, epitomized by cargos excavated from the *San Diego*, which sank in 1600 (Desroches, 1997), the Dutch East Indiaman *Witte Leeuw* cargo lost in 1613 off St. Helena (van der Pijl-Ketel, 1982) and the Wanli shipwreck sunk off Terengganu on the east coast of Malaysia c. 1625 with an estimated 37,300 pieces of porcelain (Sjostrand and Idrus, 2007).

Tortugas Type 1 Seville Blue on Blue Rim Style A may have originated pre-Liguria as the prunus, which was indigenous to southern China, the national flower and became an emblem of longevity, beauty and purity (van der Pijl-Ketel, 1982: 279). Type 1 Seville Blue on Blue Rim Styles Bi-C derive from the image of the lotus flower, which was sacred to Buddhists as a symbol of purity and as one of the Eight Buddhist Symbols of Happy Augury. The lotus flower was similarly sacred to Daoists as the attribute of He Xian Gu, one of the Eight Immortals, and was an emblem of summer, fertility, steadfastness and prosperity (van der Pijl-Ketel, 1982: 270).

The motif on Type 1 Seville Blue on Blue Base Style B most closely resembles a pomegranate, a fruit introduced into China in 126 BC that represented the Buddhist emblem of good luck and, being multi-seeded, symbolized numerous progeny and long life (van der Pijl-Ketel, 1982: 270, 279). However, Style B also displays a stylistic closeness to the peach, a symbol of marriage, immortality and springtime (van der Pijl-Ketel, 1982: 175, 278). Given the peach's centrality to the decorative scheme of the Wanli shipwreck's kraak porcelain (Sjostrand and Idrus, 2007), perhaps this genus was the intended fruit for the Tortugas plate.

Seville Blue on Blue Type 1 Base Style E resembles three-branched Arrow Head vegetation, often seen in marshy landscapes, while Type 1 Base Styles F-K probably originated in China as the wheel of law (also known as the wheel of life), the Buddhist symbol of happy augury, sovereign rule and authority springtime (van der Pijl-Ketel, 1982: 270, 283).

Tortugas Talavera-style Type 2's Base Style A replicates popular kraak porcelain roundel scenes depicting a cormorant water bird sitting on a rock in a marshy landscape. The Type 2 Rim Style B-C vegetation imitates aquatic grass, again common to marshy landscapes. Type 2 Base Style C draws on kraak porcelain plates with a goat or fox abounding in an open landscape (van der Pijl-Ketel, 1982: 270, 273; Sjostrand and Idrus, 2007: 182, nos. 2447, 4540).

Irrespective of the rich symbolism and diffusionary paths inspiring the Tortugas tin-glazed pottery's shapes and decorative schemes, the Inductively-Coupled Plasma Spectrometry (ICPS) conducted on the tablewares determined that they were virtually all produced in and around Seville (Hughes, 2014). The sample examined comprised the following 36 vessels: 19 Type 1A, 1C and 1D Seville Blue on Blue plates, bowls and a jug; four Type 2A Seville Blue on White plates; four Type 3B and 3C Plain White Morisco plates and cups; two Type 4B and 4C Seville White bowls and cups; two Type 5A Seville Polychrome jugs; three Type 6A, 6C and 6D Linear Blue Morisco jars, bowls and jugs; two Type 7 Decorated Blue Morisco pitchers; and one Type 8A Mottled Blue Morisco cup. All were sourced to different or comparable workshops within or in the vicinity of Seville (Table 9).

All of the Type 1 Blue on Blue, Type 2 Blue on White, Type 4 Seville White and Type 5 Seville Polychrome proved to be of Seville manufacture. A second group represented by five Tortugas types derived from a high magnesium group of clays that seem to have been manufactured 18-24km west of Seville, close to the Rio Guadiamar, Benacazón and Aznalcázar (Hughes, 2014): Type 3B Plain White Morisco plate (TOR-90-00030-CS; Fig. 82), Type 3D Plain White Morisco bowl (TOR-90-00073-CS; Fig. 89), Type 6D Linear Blue Morisco jug (TOR-90-00023-CS; Fig. 100), Type 7 Decorated Blue Morisco pitcher (TOR-90-00068-CS; Fig. 102) and Type 8A Mottled Blue Morisco cup (TOR-90-00038-CS; Fig. 105). To this rural location west of Seville list may be added the Type 20 half-dipped green-glazed jug (TOR-90-00016-CS; Fig. 117).

The production of tin-glazed pottery in Seville has been confirmed scientifically by a workshop and kiln excavated at Pureza Street in Triana, which is associated with sherds of Plain White Morisco, Decorated Blue Morisco, Mottled Blue Morisco, Linear Blue Morisco and Unclassified Blue on White. The workshop was in use between c. 1500 and 1600 (Myers *et al.*, 1992: 136). The ICPS data for the Tortugas shipwreck's tin-glazed tablewares add new complexity to the production pattern for the Seville region.

The sole exception to the Seville environs identification of the Tortugas ship's tin-glazed wares is a Type 3C Plain White Morisco flanged plate (TOR-90-00047-CS; Fig. 87), which proved to be an outlier. Hughes (2014) ascertained that this product contained high levels of potassium, rare earths (lanthanum and cerium) and low levels of magnesium, chromium and zirconium that are inconsistent with the pottery of Seville, Mexico and probably not Lisbon. Its origin remains undetermined.

A resultant observation of the ICPS analysis is that multiple origins exist for the wreck's Type 3B Plain White

Morisco plates, Type 7 Decorated Blue Morisco pitchers and the Type 6 Linear Blue Morisco products. External to the tin-glazed assemblage, since the Tortugas Type 12 jug is stylistically a renowned Merida-type product (TOR-90-00031-CS; Fig. 110) manufactured around Portugal, the Type 19B green-glazed costrel is also identifiable as Merida ware because it shares the same ICPS chemistry (TOR-90-00071-CS; Figs. 115-116). The Tortugas Type 19A unglazed costrel (TOR-90-1A002960; Fig. 121A) and Type 14 unglazed coarseware jug (TOR-90-00072-CS; Fig. 112) base are further probable Merida-type products.

To reiterate, in terms of largely intact or unique tin-glazed ware 98.4% of the Tortugas assemblage (60 of 61 vessels) derived from in and around Seville. Just one vessel is identifiable as a potential outlier. The exact provenance of the shipwreck's Merida-type wares – Portugal or Spain – has not been confirmed.

Archaeological evidence indicates that the majority of Spanish ships operating between *c.* 1550 and 1650 similarly relied on home crafted pottery, but which was complemented by a very small number of foreign wares (Table 7). A list of Spanish goods carried by the Tierra Firme *flota* of 1579 defines the relative composition of pottery for that crossing: loza de Triana 43, loza de Talavera 182, loza de Pisa 260, and loza de Seville, de la Puerta de Goles que es como la de Pisa 260 (Goggin, 1968: 212). Out of a total number of 745 earthenware vessels, a surprisingly low 65% of wares came from Spain (Triana and Seville: 41%, Talavera 24%), while 35% originated in Italy (*pissaro* simply meaning from Italy, rather than the specific city of Pisa). This interpretation assumes a literal reading of the 1579 list, rather than assuming the entries are abbreviations of Spanish imitations.

This apparent high percentage of non-Spanish pottery was not duplicated on Spanish settlements in the Indies. Out of 10,333 tin-glazed sherds excavated at Puerta Real in Haiti, Plain White Morisco dominated the tablewares at 83%, whereas the most conspicuous non-Spanish ware represented were 67 sherds of Ligurian Blue on Blue (0.6% of the tin-glazed sample). Of 213 sherds of Euro/Asian tablewares excavated, very small amounts of Ming porcelain (57 sherds), Cologne stoneware (46 sherds), Faience (34 sherds) and Delftware (14 sherds) were present (Deagan, 1995: 441). Puerto Real was founded on Haiti in 1503 as a base for exploring the interior for minerals, and was populated by 30 Spanish citizens and 839 Indians. The colonial Spanish phase of occupation ended in 1605 (Ewan, 1991: 1, 27, 30).

Closer to home, the excavation of the Augustinian convent of Baños de la Reina Mora, established in Seville in 1550, uncovered 2,618 sherds of Spanish tin-glazed compared to just 32 non-Spanish tablewares: 15 Ligurian Blue

on Blue, 13 Pisan slipware, three Ming porcelain and one Blue on White Delft (McEwan, 1992: 94). This 98.8% statistic for local ceramics exceeds the 97.3% figure of tablewares originated in or close to Seville (by unique vessel count) from the Tortugas shipwreck. The two sites, however, display a comparable ceramic consumption pattern.

The stocking of colonial outposts with familiar Spanish products involved colossal logistics and willpower, which the above distributions demonstrate was in no way based on a blanket anti-cultural phobia against all foreign commodities. Spanish merchants may have focused on familiar domestic trade products to sustain Seville's maritime monopoly, but they had little hesitation shipping the goods of foreign powers for profit. Spanish ships' manifests of 1534-86 clarify that the variety of foreign goods traded included combs from Paris and Italy, writing tables and desks from Germany and Brussels, Flemish cases and chests, paper from Venice and France, chessmen from Paris, mirrors and glassware from Venice, dolls from Flanders, clocks from Germany, knives from Flanders, Holland, Bohemia and Germany, and harquebuses from Holland (Torre Revello, 1943: 774, 776).

Under Habsburg rule, up to five-sixths of cargos leaving Seville were of foreign origin (Deagan, 1987: 19). The high-status ivory sundial manufactured in Nuremberg, Germany, and carried by a wealthy merchant or perhaps the captain on the Tortugas ship, is a timely reminder that foreign goods were far from taboo. The wreck's Venetian, French and Indian glass and mineral trade beads provide similar insights (Stemm *et al.*, 2013b: 80-84, 100-103).

The tablewares from the Tortugas shipwreck do not adhere to the recognizable pattern prevailing on land and at sea of relying on familiar wares largely produced in Seville and supplemented by a low volume of imports. Seville wares all but dominate the tableware collection.

The Tortugas assemblage's significance lies in its relative state of fine preservation and unified depositional origin compared to terrestrial sites and the majority of Spanish shipwrecks examined to date. The level of preservation is comparable to the pottery from the *Atocha*. Even though both collections derive from the Tierra Firme fleet of 1622 and were lost in the same general location, the two wrecks lie in dissimilar environments. Deep sandbanks protected the *Atocha* in shallow waters, while at a depth of 400m the Tortugas wreck lay in shallow mud beyond the impacts of man, until the abrupt rise of the shrimp industry in Key West in 1949 (Van Dresser, 1950).

The Tortugas site fascinates due to its politically sensitive date at the end of the Golden Age of Spain. By the 1620s the country's commercial foundations had started to crumble. Between 1601 and 1625 prices for raw

materials and finished goods rocketed to three times greater than in the previous century (Lister and Lister, 1987: 285). Taxes notoriously became increasingly onerous (Defournieux, 1970: 98). The trade with the Americas became far more dangerous following the end of the truce with Holland that compelled Spain to join the Thirty Years' War in 1618, while the Spanish were hit by a crippling series of Dutch naval victories in the Caribbean and Europe. The revival in Dutch corsair attacks exposed the vulnerability of all Spain's possessions by 1621. Access to sealanes and markets became more hostile following the establishment of the Dutch West India Company in 1621 (Andrews, 1978: 236, 239; Walton, 1994: 117, 120).

Imperial power rested on the financial capacities of the State and, ultimately, on the affluence of the commercial sector and the transatlantic trade's capability to furnish the Crown with silver to fund its European and overseas campaigns. In the 1590s the silver boom faltered and heavy fluctuations in returns led to a decisive decline. In the early 17th century, Spain's domestic economy was in sharp decline as the mercantilist system broke down, reducing its capability to export goods to colonial markets.

The economies of northern France, the Low Countries and eventually England began to supplant Spain, as the colonial economies of New Spain, Peru and Brazil embarked on a trend of self-sustaining growth. The Spanish Crown's poverty was such that in 1596 and 1607 it had to suspend payment of its debts and compel creditors to accept State bonds instead (Andrews, 1978: 199, 200; Studnicki-Gizbert, 2005: 152, 169).

How do the ceramic tablewares from the Tortugas shipwreck fit into this historical pattern of doom and gloom, a catastrophic demise that sources portray as an economic end of days for Madrid? The archaeological evidence is not in line with the historical sources. The well-stocked character of the *Buen Jesús* and variety of products show no hint of decline. The old kilns of Triana were clearly continuing to produce the familiar repertoire of Seville wares as in the second half of the 16th century, typified by the centrality of Plain White Morisco wares, presumably for crew use. The ship owner, master and merchants had access to a variety of other tin-glazed plates, bowls, pitchers and cups decorated with a plethora of motifs.

Rather than a matter of cultural taste, conservatism or xenophobia, the reliance on Seville tablewares on both the Tortugas ship and the *Atocha* may have been little more than good business designed to maintain the city's wealth. The mercantile mentality may have mirrored Barcelona, where in 1614 an initiative of the Potters Guild was upheld by the Council of One Hundred, whereby "no earthenware work not manufactured in this city can be sold and even

if it is done outside the walls", a policy that included "not to let in any work from Pisa" (Beltrán de Heredia Bercero and Miró i Alaix, 2007: 13). Just as Barcelona's orders were based on limiting commercial competition, the dominance of Seville pottery on Seville ships was nothing more than commercial protectionism.

Quite simply there was no need to desire or rely on foreign imported pottery. From the ceramic perspective, which reflects low-level economic trends, there is no reason to perceive desperation along the pottery workshops of Seville induced by the collapse of the wider economy. In this regard the Tortugas shipwreck symbolizes a final flourish of Spain's Golden Age that resolutely adhered to time-honored cultural traditions. Seville may no longer have been a boomtown, but the maritime economy was not quite bust.

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Notes

1. This final report supplements and supplants the preliminary Tortugas tableware report (Kingsley *et al.*, 2012). The quantification and typology provided in this report should be used as the definitive version.
2. In this report MFARD is used as an abbreviation of the Mel Fisher Artifact Research Database: www.historicshipwrecks.com.
3. See, *Cerámicas de Triana. Colección Carranza* (Seville, 1996: pl. 97).

Bibliography

- Alvarez, R.P. and Arrazcaeta, R., 'Classification of Majolica Pottery from Colonial Havana on the Basis of INAA'. In *Nuclear Analytical Techniques in Archaeological Investigations* (International Atomic Energy Agency, Technical Reports Series No. 416, 2003), 135-46.
- Álvaro Zamora, M.I., *Cerámica Aragonesa. Volumen III. La Obra Cerámica: la Cerámica Aragonesa desde 1610 a la Extinción de los Alfares (Siglos XIX-XX)* (Zaragoza, 2002).
- Alves, F., Rodrigues, P., Aleluia, M., Rodrigo, R., Garcia, C., Rieth, E. and Riccardi, E., 'Ria de Aveiro A: a Shipwreck from Portugal Dating to the mid-15th Century; a Preliminary Report', *International Journal of Nautical Archaeology* 30.1 (2001), 12-36.
- Andrews, K.R., *The Spanish Caribbean. Trade and Plunder 1530-1630* (New Haven, 1978).
- Barile, C., *Antiche Ceramiche Liguri. Maioliche Di Albisola* (Milan, 1965).
- Barnette, M.C., *Shipwrecks of the Sunken State. Florida's Submerged History* (Association of Underwater Explorers, 2003).
- Beltrán de Heredia Bercero, J. and Miró i Alaix, N., *The Ceramics Trade in Barcelona in the 16th-17th Centuries: Italy, France, Portugal, the Workshops of the Rhine and China* (Diputación Provincial de Lugo, 2007).
- Berardi, P., *L'Antica Maiolica di Pesaro dal XIV al XVII Secolo* (Florence, 1984).
- Berti, G., 'Ingobbiate e Graffite di Area Pisana Fine XVI-XVII Secolo'. In *La Ceramica Postmedievale in Italia. Il Contributo dell'Archaeologia (Atti XXVII Convegno Internazionale della Ceramica, Albisola, 27-29 Maggio 1994)* (Albisola, 1997), 355-92.
- Bettencourt, J., Carvalho, P. and Pinto, I., *Relatório dos Trabalhos de Escavação Efectuados em 2004 no Âmbito do Projecto Ria de Aveiro A 2000 (FTC), Volume II* (Trabalhos do CNANS 30, 2005, Instituto Portugues de Arqueologia).
- Blake, H., 'Pottery Exported from Northwest Italy Between 1450 and 1830: Savona, Albisola, Genoa, Pisa, and Montelupo'. In G. Barker and R. Hodges (eds.), *Archaeology and Italian Society. Prehistoric, Roman and Medieval Studies* (BAR Int. S102, 1981), 99-124.
- Blake, W. and Green, J., 'A Mid-XVI Century Portuguese Wreck in the Seychelles', *International Journal of Nautical Archaeology* 15.1 (1986), 1-23.
- Bofill, F. De P., *Cerámica Española* (Barcelona, 1942).
- Boone, J.L., 'Majolica Escudillas of the 15th and 16th Centuries: A Typological Analysis of 55 Examples from Qsar es-Seghir', *Historical Archaeology* 18.1 (1984), 76-86.
- Borrell, P.J., *Historia y Rescate del Galeon Nuestra Señora de la Concepcion* (Museo de las Casas Reales, Santo Domingo, 1983).
- Brigadier, S.R., *The Artifact Assemblage from the Pepper Wreck: an Early Seventeenth Century Portuguese East-Indiaman that Wrecked in the Tagus River* (MA Thesis, Texas A&M University, 2002).
- Brown, D.H. and Curnow, C., 'A Ceramic Assemblage from the Seabed near Kinlochbervie, Scotland, UK', *International Journal of Nautical Archaeology* 33.1 (2004), 29-53.
- Burgess, R.F. and Clausen, C.J., *Florida's Golden Galleons. The Search for the 1715 Spanish Treasure Fleet* (Port Salerno, FL, 1982).
- Calvert, A.F., *Moorish Remains in Spain. Being a Brief Record of the Arabian Conquest of the Peninsula; with a Particular Account of the Mohammedan Architecture and Decoration in Cordova, Seville & Toledo* (London, 1906).
- Calvert, A.F., *Seville; an Historical and Descriptive Account of "the Pearl of Andalusia"* (London, 1907).
- Casimiro, T.M., *Portuguese Faience in England and Ireland* (BAR Int. Series 2301, Oxford, 2011).

- Castro, P., 'The Pepper Wreck, an Early 17th-century Portuguese Indiaman at the Mouth of the Tagus River, Portugal', *International Journal of Nautical Archaeology* 32.1 (2003), 6-23.
- Castro Lorenzo, M.L. 'La Vajilla de Lujo en Santiago de Compostela en los Siglos XVI y XVII: Aportaciones de la Arqueología', *Pontevedra. Revista de Estudios Provinciais* 22 (2009), 123-158.
- Caviro, B.M., *Catalogo de Ceramica Española* (Madrid, 1968).
- Caviro, B.M., *Cerámica de Talavera* (Madrid, 1969).
- Caviro, B.M., *Cerámica de Triana* (Granada, 1985).
- Caviro, B.M., *Cerámicas de Triana. Colección Carranza* (Seville, 1996).
- Chaunu, P. and Chaunu, H., 'The Atlantic Economy and the World Economy'. In P. Earle (ed.), *Essays in European Economic History 1500-1800* (Oxford, 1974), 113-26.
- Chilosi, C., *Ceramiche della Tradizione Ligure* (Milan, 2011).
- Clausen, C.J., *A 1715 Spanish Treasure Ship* (Gainesville, 1965).
- Cohen-Williams, A.G., 'Common Maiolica Types of Northern New Spain', *Historical Archaeology* 26.1 (1992), 119-30.
- Connors McQuade, M.E., 'The Emergence of a Mexican Tile Tradition'. In R.F. Gavin, D. Pierce and A. Pleguezuelo (eds.), *Cerámica y Cultura. The Story of Spanish and Mexican Mayólica* (Singapore, 2003), 204-25.
- Cruxent, J.M. and Vaz, J.E., 'Provenience Studies of Majolica Pottery: Type Ichtucknee Blue on Blue'. In R.C. Dunnell and E.S. Hall (eds.), *Archaeological Essays in Honor of Irving B. Rouse* (the Hague, 1978), 343-74.
- Deagan, K., *Artifacts of the Spanish Colonies of Florida and the Caribbean, 1500-1800. Volume 1: Ceramics, Glassware and Beads* (Washington, 1987).
- Deagan, K., 'After Columbus: The Sixteenth-Century Spanish-Caribbean Frontier'. In Deagan, K., *The Archaeology of a Sixteenth-Century Spanish Town in Hispaniola* (University Press of Florida, 1995), 419-56.
- Deagan, K.A. and Cruxent, J.M., *Archaeology at La Isabela. America's First European Town* (Yale University Press, 2002).
- Dectot, X., *Céramiques Hispaniques (XIIe-XVIIIe Siècle)* (Paris, 2007).
- Defourneaux, M., *Daily Life in Spain in the Golden Age* (New York, 1970).
- Desroches, J.-P., 'China Tableware. Porcelains'. In J.-P. Desroches, G. Casal and F. Goddio (eds.), *Treasures of the San Diego* (National Museum of the Philippines, 1997), 300-60.
- Dethlefsen, E.S., Davison, E. and Lynn Buchman, D., 'The Stonewall Wreck. Interim Report on a 17th Century Spanish Vessel wrecked off Bermuda', *International Journal of Nautical Archaeology* 6.4 (1977), 315-29.
- Dupoizat, M.-F., 'Asian Stoneware Jars'. In J.-P. Desroches, G. Casal and F. Goddio (eds.), *Treasures of the San Diego* (National Museum of the Philippines, 1997), 222-55.
- Egerton, D.R., Games, A., Landers, J.G., Lane, K. and Wright, D.R., *The Atlantic World: a History, 1400-1888* (Wheeling, Illinois, 2007).
- Einarsson, L., 'Kronan - Underwater Archaeological Investigations of a 17th-century Man-of-War. The Nature, Aims and Development of a Maritime Cultural Project', *International Journal of Nautical Archaeology* 19.4 (1990), 279-97.
- Ernst, M., *Talking Sherds. Spanish Ceramics in Caribbean Context* (BA Thesis, Leiden University, 2011).
- Ewen, C.R., *From Spaniard to Creole. The Archaeology of Cultural Formation at Puerto Real, Haiti* (University of Alabama Press, 1991).
- Fairbanks, C.H., 'The Cultural Significance of Spanish Ceramics'. In I. Quimby (ed.), *Ceramics in America* (University of Virginia Press, 1972), 141-74.
- Fernández Chaves, M.F. and Pérez García, R.M., 'The Morisco Problem and Seville (1480-1610)'. In K. Ingram (ed.), *The Conversos and Moriscos in Late Medieval Spain and Beyond* (Leiden, 2012), 75-102.
- Forster, W.A. and Higgs, K.B., 'The Kennemerland, 1971. An Interim Report', *International Journal of Nautical Archaeology* 2.2 (1973), 291-300.
- Franklin, M., 'Description of Artifact Assemblage Archaeologically Recovered from Western Ledge Reef Wreck, Bermuda', *Bermuda Journal of Archaeology and Maritime History* 5 (1993), 70-83.
- Frothingham, A.W., *Talavera Pottery. With a Catalogue of the Collection of the Hispanic Society of America* (New York, 1944).
- Gaimster, D.R.M., 'Rhenish Stonewares from Shipwrecks: the Study of Ceramic Function and Lifespan'. In M. Redknap (ed.), *Artefacts from Wrecks. Dated Assemblages from the Late Middle Ages to the Industrial Revolution* (Oxford, 1997), 121-28.
- Galbreathe, D.L., *A Treatise on Ecclesiastical Heraldry Part I. Papal Heraldry* (Cambridge, 1930).
- Gerrard, C.M., Gutiérrez, A. and Vince, A.G. (eds.), *Spanish Medieval Ceramics in Spain and the British Isles* (BAR Int. S610, Oxford, 1995).
- Gerrard, C.M., Gutiérrez, A., Hurst, J.C. and Vince, A.G., 'A Guide to Spanish Medieval Pottery'. In C.M. Gerrard, A. Gutiérrez and A.G. Vince (eds.), *Spanish Medieval Ceramics in Spain and the British Isles* (BAR Int. S610, Oxford, 1995), 281-95.

- Gerth, E. and Kingsley, S., *The Deep-Sea Tortugas Shipwreck, Florida: Afro-Caribbean Colonoware & Maritime Slavery* (OME Papers 39, Tampa, 2014).
- Goggin, J., *Spanish Majolica in the New World* (Yale University Press, 1968).
- Guérout, M., Rieth, E., Gassend, J.-M. and Liou, B., 'Le navire Génois de Villefranche, un naufrage de 1516 ?', *Archaeonautica* 9 (1989), 5-171.
- Gutiérrez, A., *Mediterranean Pottery in Wessex Households (13th to 17th Centuries)* (BAR British S306, Oxford, 2000).
- Gutiérrez, A., 'Portuguese Coarsewares in Early Modern England: Reflections on an Exceptional Pottery Assemblage from Southampton', *Post-Medieval Archaeology* 41.1 (2007), 64-79.
- Haley, E.W., *Baetica Felix. People and Prosperity in Southern Spain from Caesar to Septimius Severus* (University of Texas Press, 2003).
- Hamilton, E.J., *American Treasure and the Price Revolution in Spain, 1501-1650* (Harvard University Press, 1934).
- Haring, C.H., *Trade and Navigation between Spain and the Indies in the Times of the Hapsburgs* (Harvard University Press, 1918).
- Hocker, F., *Vasa. A Swedish Warship* (Mölnlycke, 2011).
- Hoffman, K., 'The Archaeology of the Convento de San Francisco', *The Florida Anthropologist* 44.2-4 (1991), 139-53.
- Houkjaer, U., *Tin-Glazed Earthenware 1300-1750. Spain – Italy – France* (Danish Museum of Art & Design, 2005).
- Hoyt, C.A., 'Bermuda in the Age of Exploration: the Reexamination of *San Pedro*'. In J.P. Delgado (ed.), *Underwater Archaeology Proceedings from the Society for Historical Archaeology Conference* (Reno, Nevada, 1988), 60-64.
- Hoyt, S.D., 'The Archaeological Survey of Pedro Bank, Jamaica 1981-1983', *International Journal of Nautical Archaeology* 13.2 (1984), 99-111.
- Hughes, M.J., *The Chemical Analysis by Plasma Spectrometry (ICPS) of Pottery from the Tortugas Shipwreck (Florida Keys, 1622)* (OME Papers, Tampa, 2014).
- Hurst, J.G., 'Spanish Pottery Imported into Medieval Britain', *Medieval Archaeology* 21 (1977), 68-105.
- Hurst, J.G., 'Italian Pottery Imported into Britain and Ireland. In T. Wilson (ed.), *Italian Renaissance Pottery* (London, 1991), 212-19.
- Hurst, J.G., 'Post-Medieval Pottery from Seville Imported into North-West Europe'. In D.R. Hook and D.R.M. Gaimster (eds.), *Trade and Discovery. The Scientific Study of Artefacts from Post-Medieval Europe and Beyond* (British Museum Occasional Paper 109, London, 1995), 45-54.
- Íñáñez, J.G., Buxeda i Garrigós, J., Speakman, R.J., Glascock, M.D. and Sosa Suárez, E., 'Characterization of 15th-16th Century Majolica Pottery Found on the Canary Islands', *American Chemical Society* (2007), 376-98.
- Ingelman-Sundberg, C., 'Preliminary Report on Finds from the Jutholmen Wreck', *International Journal of Nautical Archaeology* 5.1 (1976), 57-71.
- Jarett, C., 'The Post-Medieval Waterfront Development at Adlards Wharf, Bermondsey, London. The Pottery', *Post-Medieval Archaeology* 36 (2002), 102-108.
- Jaspers, N.L., 'Bont en Blauw van de Straet'. In C. Schrickx and T. van de Walle-van der Woude (eds.), *Hoogtepunten uit de Hoornse Bodem* (Archeologie in Noord-Holland 1, 2007), 103-108.
- Jaspers, N.L., 'Ligurian Maiolica from Dutch Soil (1550-1700). An Archaeological Contribution to the Typology of Decoration and Morphology of Ligurian Export Wares'. In *Atti XLIV Convegno Internazionale della Ceramica. La Ceramica Post-Medievale nel Mediterraneo. Gli Indicatori Cronologici: Secoli XVI-XVIII* (2012), 11-26.
- Jordan, W.B., *Spanish Still Life in the Golden Age, 1600-1650* (Kimbell Art Museum, Fort Worth, 1985).
- Jordan, W.B. and Cherry, P., *Spanish Still Life from Velázquez to Goya* (London, 1995).
- King, J., 'Ceramic Variability in 17th Century St. Augustine, Florida', *Historical Archaeology* 18.2 (1984), 75-82.
- Kingsley, S., 'The Identity and Maritime History of the Deep-Sea Tortugas Shipwreck'. In G. Stemm and S. Kingsley (eds.), *Oceans Odyssey 3. The Deep-Sea Tortugas Shipwreck, Straits of Florida: A Merchant Vessel from Spain's 1622 Tierra Firme Fleet* (Oxford, 2013), 123-50.
- Kingsley, S., *Papal Plates & Propaganda on the Deep-Sea Tortugas Shipwreck, Florida (1622)* (OME Papers 37, Tampa, 2014).
- Kingsley, S., Gerth, E. and Hughes, M., 'Ceramics from the Tortugas Shipwreck. A Spanish-Operated Navio of the 1622 Tierra Firme Fleet', *Ceramics In America* (Chipstone Foundation, 2012).
- Knight, V.J., 'La Loma Del Convento: Its Centrality to Current Issues in Cuban Archaeology'. In S. Kepecs, L.A. Curet and G. La Rosa Corzo (eds.), *Beyond the Blockade. New Currents in Cuban Archaeology* (University of Alabama Press, 2010), 26-46.
- Kulstad, P.M., *Concepción de la Vega 1495-1564: a Preliminary Look at Lifeways in the Americas' First Boom Town* (MA Thesis, University of Florida, 2008).
- L'Hour, M., 'The Wreck of a Danish Merchant Ship, the *Sainte Dorothea* (1693)', *International Journal of Nautical Archaeology* 22.4 (1993), 305-22.
- L'Hour, M., Long, L. and Rieth, E., *Le Mauritius. La Mémoire Engloutie* (Grenoble, 1989).

- Lister, F.C. and Lister, R.H., 'Maiolica in Colonial Spanish America', *Historical Archaeology* 8 (1974), 17-52.
- Lister, F.C. and Lister, R.H., 'Italian Presence in Tin Glazed Ceramics of Spanish America', *Historical Archaeology* 10 (1976), 28-41.
- Lister, F.C. and Lister, R.H., 'The First Mexican Majolicas: Imported and Locally Produced', *Historical Archaeology* 12 (1978), 1-24.
- Lister, F.C. and Lister, R.H., *Sixteenth Century Maiolica Pottery in the Valley of Mexico* (University of Arizona Press, 1982).
- Lister, F.C. and Lister, R.H., *Andalusian Ceramics in Spain and New Spain: a Cultural Register from the Third Century BC to 1700* (University of Arizona Press, Tucson, 1987).
- Malcom, C., *St. John's Bahamas Shipwreck Project. Interim Report I: the Excavation and Artifacts 1991-1995* (Key West, 1996a).
- Malcom, C., 'Porcelain from the Santa Margarita', *Mel Fisher Maritime Heritage Society* (1996b).
- Malcom, C., 'Pewter from the Nuestra Señora de Atocha', *The Navigator: Newsletter of the Mel Fisher Maritime Heritage Society* 13.11-12 (1998).
- Marken, M.W., *Pottery from Spanish Shipwrecks 1500-1800* (University Press of Florida, 1994).
- Martin, C.J.M., 'Spanish Armada Pottery', *International Journal of Nautical Archaeology* 8.4 (1979), 279-302.
- Martin, C.J.M., 'Spanish Armada Ceramics'. In C.M. Gerard, A. Gutiérrez and A.G. Vince (eds.), *Spanish Medieval Ceramics in Spain and the British Isles* (BAR Int S610, Oxford, 1995a), 353-57.
- Martin, C., 'The Cromwellian Shipwreck off Duart Point, Mull: an Interim Report', *International Journal of Nautical Archaeology* 24.1 (1995b), 15-32.
- Mathewson, D., *Treasure of the Atocha* (Houston, 1986).
- McEwan, B.G., *An Archaeological Perspective of Sixteenth Century Spanish Life in the Old World and the Americas* (Ph.D. Thesis, University of Florida, Gainesville, 1988).
- McEwan, B.G., 'The Role of Ceramics in Spain and Spanish America during the 16th Century', *Historical Archaeology* 25 (1992), 92-108.
- Mendoza, B.M.R., *Standardization of Spanish Shipbuilding: Ordenanzas para la Fábrica de Navíos de Guerra y Mercante - 1607, 1613, 1618* (MA Thesis, Texas A&M University, 2008).
- Mullins, D., 'More than Just El Morro'. In R.C. Smith, J.R. Bratten, J. Cozzi, and K. Plaskett, *The Emanuel Point Ship Archaeological Investigations 1997-1998* (Report of Investigations No. 68 Archaeology Institute University of West Florida, 1998), 135-39.
- Myers, J.E., De Amores Carredano, F., Olin, J.S. and Pleguezuelo Hernández, A., 'Compositional Identification of Seville Majolica at Overseas Sites', *Historical Archaeology* 26.1 (1992), 131-47.
- Newstead, S., *Merida No More: Portuguese Redware in Newfoundland* (MA Thesis, University of Newfoundland, 2008).
- Neville, A., *Mountains of Silver and Rivers of Gold. The Phoenicians in Iberia* (Oxford, 2007).
- Olin, J.S. and Sayre, E.V., *Identification of the Provenience of Majolica from Sites in the Caribbean Using Neutron Activation Analysis* (Conference on Applications of Physical Sciences to Medieval Archaeology, Berkeley, 1975).
- Orton, C. and Hughes, M., *Pottery in Archaeology* (Cambridge University Press, 2013).
- Owen, N.C., 'HMS Hazardous Wrecked 1706. Pre-disturbance Survey Report 1987', *International Journal of Nautical Archaeology* 17.4 (1988), 285-93.
- Palka, J.W., 'Historical Archaeology of Indigenous Culture Change in Mesoamerica', *Journal of Archaeological Research* 17 (2009), 297-346.
- Pérez-Mallaína, P.E. (Rahn Phillips, C., tr.), *Spain's Men of the Sea. Daily Life on the Indies Fleets in the Sixteenth Century* (John Hopkins University Press, 1998).
- Pérez-Malumbres Landa, A. and González-Hernández, S., *La Primera Fábrica de Tabaco de Málaga. El Palacete de Calle Salinas No. 6 (y III)* (Jábega, Diputación Provincial de Málaga, 1991).
- Pernambucano de Mello, U., 'The Shipwreck of the Galeon Sacramento-1668 off Brazil', *International Journal of Nautical Archaeology* 8.3 (1979), 211-23.
- Peterson, M., *The Funnel of Gold* (Boston, 1975).
- Piercy, R.C.M., 'Mombasa Wreck Excavation. Preliminary Report, 1977', *International Journal of Nautical Archaeology* 6.4 (1977), 331-47.
- Piercy, R.C.M., 'Mombasa Wreck Excavation. Second Preliminary Report, 1978', *International Journal of Nautical Archaeology* 7.4 (1978), 301-19.
- Piercy, R.C.M., 'Mombasa Wreck Excavation. Third Preliminary Report, 1979', *International Journal of Nautical Archaeology* 8.4 (1979), 303-309.
- Pike, R., *Enterprise and Adventure. The Genoese in Seville and the Opening of the New World* (Cornell University Press, 1966).
- Pike, R., *Aristocrats and Traders. Sevillian Society in the Sixteenth Century* (Cornell University Press, Ithica, 1972).
- Pike, R., *Linajudos and Conversos in Seville. Greed and Prejudice in Sixteenth-and Seventeenth-Century Spain* (New York, 2000).
- Pleguezuelo, A., 'Cerámica de Sevilla (1248-1841)'. In *Cerámica Española* (Summa Artis. Historia General del Arte Vol. XLII, Madrid, 1999), 345-86.

- Pleguezuelo, A. (ed.), *Lozas y Azulejos de la Colección Carranza, Volume I* (Castilla-La Mancha, 2002).
- Pleguezuelo, A., 'Ceramics, Business, and Economy'. In R.F. Gavin and A. Pleguezuelo (eds.), *Cerámica y Cultura. The Story of Spanish and Mexican Mayólica* (University of Mexico Press, Albuquerque, 2003a), 103-21.
- Pleguezuelo, A., 'Centers of Traditional Spanish Mayólica'. In R.F. Gavin and A. Pleguezuelo (eds.), *Cerámica y Cultura. The Story of Spanish and Mexican Mayólica* (University of Mexico Press, Albuquerque, 2003b), 25-47.
- Pleguezuelo, A. and Pilar Lafuente, M., 'Cerámicas de Andalucía Occidental (1200-1600)'. In C.M. Gerrard, A. Gutiérrez and A.G. Vince (eds.), *Spanish Medieval Ceramics in Spain and the British Isles* (BAR Int. S610, Oxford, 1995), 217-244.
- Ray, A., *Spanish Pottery 1248-1898* (London, 2000).
- Ray, A., 'Lozas y Azulejos de Toledo'. In A. Pleguezuelo A. (ed.), *Lozas y Azulejos de la Colección Carranza. Volumen II* (Castilla-La-Mancha, 2002), 9-92.
- Riaño, J.F., *The Industrial Arts in Spain* (London, 1890).
- Roberts, M., 'The Punta Cana Pewter Wreck. A First Look at a Mid 16th Century Cargo from the Caribbean', *Journal of the Pewter Society* (2012), 3-15.
- Robertson, P., 'A Shipwreck near Kinlochbervie, Sutherland, Scotland, UK', *International Journal of Nautical Archaeology* 33.1 (2004), 14-28.
- Rouse, I. and Cruxent, J.M., *Venezuelan Archaeology* (Yale University Press, 1963).
- Sassoon, H., 'The Portuguese Faience [San Antonio de Tanna]', *INA Quarterly* 18.2 (1991), 22-24.
- Sjostrand, S. and Idrus, S., *The Wanli Shipwreck and its Ceramic Cargo* (Department of Museums Malaysia, 2007).
- Skowronek, R.K., 'Ceramics and Commerce: the 1554 *flota* Revisited', *Historical Archaeology* 21.2 (1987), 101-11.
- Skowronek, R.K., Johnson, R. and South, S., 'The Sixteenth Century Spanish Imported Ceramics at Santa Elena: a Formal Analysis'. In S. South, R.K. Skowronek, and R.E. Johnson, *Spanish Artifacts from Santa Elena* (Anthropological Studies 7, Institute of Archaeology and Anthropology, South Carolina, 1988), 205-90.
- Smith, R.C., Spirek, J., Bratten, J. and Scott-Ireton, D., *The Emanuel Point Ship: Archaeological Investigations, 1992-1995, Preliminary Report* (Bureau of Archaeological Research, Division of Historical Resources, Florida Department of State, 1995).
- Smith, A.B., 'Excavations at Plettenberg Bay, South Africa of the Camp-site of the Survivors of the Wreck of the *São Gonçalo*, 1630', *International Journal of Nautical Archaeology* 15.1 (1986), 53-9.
- South, S., *Revealing Santa Elena 1982* (Institute of Archaeology and Anthropology, South Carolina, 1983).
- Stemm, G., Gerth, E., Flow, J., Guerra-Librero, C.L. and Kingsley, S., 'The Deep-Sea Tortugas Shipwreck, Florida: A Spanish-Operated *Navio* of the 1622 Tierra Firme Fleet. Part 1: the Site'. In G. Stemm and S. Kingsley (eds.), *Oceans Odyssey 3. The Deep-Sea Tortugas Shipwreck, Straits of Florida: A Merchant Vessel from Spain's 1622 Tierra Firme Fleet* (Oxford, 2013b), 17-54.
- Stemm, G., Gerth, E., Flow, J., Guerra-Librero, C.L. and Kingsley, S., 'The Deep-Sea Tortugas Shipwreck, Florida: A Spanish-Operated *Navio* of the 1622 Tierra Firme Fleet. Part 2: the Artifacts'. In G. Stemm and S. Kingsley (eds.), *Oceans Odyssey 3. The Deep-Sea Tortugas Shipwreck, Straits of Florida: A Merchant Vessel from Spain's 1622 Tierra Firme Fleet* (Oxford, 2013b), 55-122.
- Studnicki-Gizbert, D., 'Revisiting 1640; or, How the Party of Commercial Expansion Lost to the Party of Political Conservation in Spain's Atlantic Empire, 1620-1650'. In P.A. Coclanis, (ed.), *The Atlantic Economy during the Seventeenth and Eighteenth Centuries* (University of South Carolina Press, 2005), 152-85.
- Torre Revello, J., 'Merchandise Brought to America by the Spaniards, 1534-1586', *Hispanic American Historical Review* 23.4 (1943), 773-81.
- Valcárcel Rojas, R., Martín-Torres, M., Cooper, J. and Rehren T., 'Turey Treasure in the Caribbean. Brass and Indo-Hispanic Contact at El Chorro de Maíta, Cuba'. In S. Kepecs, L.A. Curet and G. La Rosa Corzo (eds.), *Beyond the Blockade. New Currents in Cuban Archaeology* (University of Alabama Press, 2010), 106-25.
- Van der Pijl-Ketel, C.L., *The Ceramic Load of the 'Witte Leeuw' 1613* (Rijksmuseum, Amsterdam, 1982).
- Van Dresser, E., 'Pink Gold Strike in the Gulf', *Popular Mechanics* (July 1950), 124-26, 130.
- Varaldo, C., 'Maiolica Ligure: Contributo della Rocerca Archeologica alla Conoscenza delle Tipologie Decorative del Vasellame'. In *La Ceramica Postmedievale in Italia. Il Contributo dell'Archaeologia (Atti XXVII Convegno Internazionale della Ceramica, Albisola, 27-29 Maggio 1994)* (Albisola, 1997), 309-23.
- Vaz, J.E. and Cruxent, J.M., 'Determination of the Provenience of Majolica Pottery Found in the Caribbean Area Using its Gamma-Ray Induced Thermoluminescence', *American Antiquity* 40.1 (1975), 71-82.
- Vera Reina, M. and López Torres, *Le Céramica Medieval Sevillana (Siglos XII al XIV). La Producción Trianera* (BAR Int. S1403, 2005).
- Vera Reina, M. and Torres, P.L., 'La producción trianera (Sevilla) de época almohade'. In J. Zozaya, M. Rentería, M. Ángel Hervás and A. de Juan (eds.), *Actas del VIII Congreso Internacional de Cerámica Medieval en el Mediterráneo. Tomo I* (Asociación Española de

- Arqueología Medieval, 2009), 429-41.
- Veyrat, E., 'Chronicle of a Forgotten Way of Life'. In J.-P. Desroches, G. Casal and F. Goddio (eds.), *Treasures of the San Diego* (National Museum of the Philippines, 1997), 160-83.
- Vilar, P., 'The Age of Don Quixote'. In P. Earle (ed.), *Essays in European Economic History 1500-1800* (Oxford, 1974), 100-12.
- Villalba, J.A. and Ray, A., *Las Talaveras de Toledo* (Toledo, 2005).
- Vlierman, K., 'The Galley, Galley Utensils and Cooking, Eating and Drinking Vessels from an Armed 'Tjalck' Wrecked on the Zuiderzee in 1673: a Preliminary Report'. In M. Redknap (ed.), *Artefacts from Wrecks. Dated Assemblages from the Late Middle Ages to the Industrial Revolution* (Oxford, 1997), 157-66.
- Walton, T.R., *The Spanish Treasure Fleets* (Sarasota, 1994).
- Watts, G.P., 'The Western Ledge Reef Wreck: a Preliminary Report on Investigation of the Remains of a 16th-century Shipwreck in Bermuda', *International Journal of Nautical Archaeology* 22.2 (1993), 103-24.
- Weinstein, R., *The Archaeology of Pewter Vessels in England 1200-1700: A Study of Form and Usage* (Doctor of Philosophy Thesis, University of Durham, 2011).
- Weisman, B.R., *Excavations on the Franciscan Frontier Archaeology at the Fig Springs Mission* (University Press of Florida, 1992).
- Wells, D.J., 'Examples of Ceramics from the Emanuel Point Shipwreck'. In P.F. Johnston (ed.), *Underwater Archaeology Proceedings from the Society for Historical Archaeology Conference* (Washington, 1995), 55-59.
- Whishaw, B. and Whishaw, E.M., *Illustrated Descriptive Account of the Museum of Andalusian Pottery and Lace at Seville* (London, 1913).
- Williams, C., 'Analysis of Tin-glazed Ceramics from the Emanuel Point Ship Second Campaign'. In R.C. Smith, J.R. Bratten, J. Cozzi, and K. Plaskett, *The Emanuel Point Ship Archaeological Investigations 1997-1998* (Report of Investigations No. 68 Archaeology Institute University of West Florida, 1998), 140-45.
- Williams, L., *The Arts and Crafts of Older Spain* (1907).
- Willis, R.F., *The Archeology of 16th Century Nueva Cadiz* (Master of Arts Thesis, University of Florida, 1976).
- Wingood, A.J., 'Sea Venture. An Interim Report on an early 17th Century Shipwreck lost in 1609', *International Journal of Nautical Archaeology* 11.4 (1982), 333-47.
- Wingood, A.J., 'Sea Venture Second Interim Report – Part 2: the Artefacts', *International Journal of Nautical Archaeology* 15.2 (1986), 149-59.
- Wilson, T., 'Le Maioliche'. In F. Franceschi, R.A. Goldthwaite, and R.C. Mueller (eds.), *Il Rinascimento Italiano e l'Europa IV, Commercio e Cultura Mercantile* (Treviso, 2007), 227-45.

Appendix 1. Tableware Catalogue

Seville Blue on Blue Tin-Glazed Ware (Type 1) (Ichtucknee Blue on Blue)

Tortugas Type 1A (Fig. 48)

Seville Blue on Blue Flanged Plate, Rim Style A/Base Style G (TOR-90-00061-CS)

Six fragments from the rim, body and base of a shallow flanged plate. The Rim Style A decoration consists of horizontal vegetation oriented anti-clockwise, creeping around the rim perimeter with sets of two buds on stalks and occasional central flowering bud. Framed within a 2.7cm-wide band bordered on the outer edge by two concentric lines (0.25cm wide total) and three below transitioning to the upper body (0.55cm wide total). The interior roundel contains a Base Style G characteristically floral motif with petals radiating outwards from two hollow circles at center, and stems with buds on the ends set between. Well levigated pale yellow fabric (2.5Y 8/3). H. 3.9cm, rim W. 3.4cm, rim Th. 0.51cm, maximum body Th. 0.92cm (rim/body juncture), base H. 0.26cm, base Th. 0.61cm, 159 grams.

Tortugas Type 1A (Fig. 49)

Seville Blue on Blue Plate, Rim Style Bi/Bii and Base Style E? (TOR-90-1A-002146)

Rim to base fragment of a shallow flanged plate. Decorated with Rim Style Bi/Bii motifs comprising alternating outward oriented schematized swirling floral motifs (Bi) next to a second style of floral motif composed of two v-shaped elements (presumably of the Bii form with two circular dots at center); thick double concentric lines at the rim exterior and interior. Roundel form unclear, but possibly Base Style E: dual oblique lines divide what seems to be a palm-like motif, framed by

a triple concentric line at the roundel outer edge. Diam. 13.7 cm, H. 2.8 cm, rim W. 4.0 cm, rim Th. 0.6 cm, maximum body Th. 0.9 cm, base H. 0.3 cm, base Th. 0.9 cm, 93.80 grams. The Mel Fisher Maritime Museum collection.

Tortugas Type 1A (Fig. 50)

Seville Blue on Blue Plate, Rim Style Bi/Bii (TOR-90-00054-CS)

Rim fragment from a shallow flanged plate of Style Bi/Bii decoration. Outward oriented schematized floral motifs composed of two separated v-shaped elements (Bii) alternating with outward-oriented schematized swirling floral motifs (Bi). Bounded by a thick single line on the outer edge (0.6cm wide) and a double concentric line on the inner edge (0.6cm wide), with a total band width of 3.0cm. Surface crazing on the interior body and lower exterior rim. Well levitated pale yellow fabric (2.5Y 8/3). Fragment L. 9.1cm, rim W. 3.2cm, rim Th. 0.45cm, body Th. 0.75cm (rim/body juncture), lower body Th. 0.59cm, 31 grams.

Tortugas Type 1A (Figs. 3D, 51)

Seville Blue on Blue Plate, Rim Style D/Base Style L (TOR-90-00041-CS, grid no. 84.54/23.76)

A shallow flanged plate with a gentle flattened rim (set 13° off horizontal) gently descending to a flat base with a mildly raised footring. The Rim Style D decoration consists of a 2.8cm-wide band containing horizontal sets of four concave lines facing outwards and widening consecutively as they descend, partitioned by v-shaped floral motifs oriented inwards, bordered by dual concentric lines on the outer and inner rim edge. Within the plate roundel (Diam. 12.0cm), framed by three concentric lines of 0.2cm maximum width, the Base Style L concept comprises sets of three outward oriented concave swirls, replicating the rim decorative scheme, surrounding a five-pronged stylized star at center. Well levigated fine white clay. H. 3.2cm, Diam. 21.3cm, rim W. 2.9cm, rim Th. 0.5cm, body Th. 0.65cm, base H. 0.35cm, base Diam. 10.4cm, base Th. 0.64cm, 192 grams.

Tortugas Type 1A (Fig. 52)

Seville Blue on Blue Plate, Rim Style Bi/C (TOR-90-00081-CS)

A rim fragment of a Style Bi/C shallow flanged plate. Outward oriented strongly schematized floral motifs composed of three v-shaped discontinuous lines (Style C), alternating with curving floral branched motifs (Style Bi), bounded by a double line on both the outer (0.45cm wide) and inner edges (0.55cm wide), with a total band width of 2.7cm. Well levitated pale yellow fabric (2.5Y 8/3). Fragment L. 9.4cm, rim W. 3.2cm, rim Th. 0.49cm, body Th. 0.83cm (rim/body juncture), lower body Th. 0.43cm, 27 grams.

Tortugas Type 1A (Fig. 53)

Seville Blue on Blue Plate, Rim Style F/Base Style G (TOR-90-00046-CS, grid no. 77.25/27.81)

A shallow flanged plate with a horizontal flat rim, gently rounded at an angle of about 40° above a flat base with a low foot ring. The Rim Style F decoration consists of thick curved ellipoids with sub-oblong circles above, set alternatively facing outwards and inwards, separated by a shallow wavy line; bordered by dual concentric lines on both the outer and inner edge/body wall (total band W. 3.0cm). The center of the plate's interior roundel is bounded by three concentric lines of 0.15cm width and 0.8cm wide total. The decorative scheme inside the roundel adheres to Base Style G: a central floral motif with petals radiating outwards, between which are thinner stems surmounted by buds. Well levigated fine white clay. H. 3.4cm, rim W. 3.3cm, Th. 0.53cm, body Th. 0.9cm max (rim/body juncture), base H. 0.22cm, base Th. 0.81cm, 74 grams.

Tortugas Type 1A (Figs. 3E, 20, 54)

Seville Blue on Blue Plate, Rim Style H/Base Style A (TOR-90-00085-CS)

A complete section of rim (about 20%) to base of a shallow flanged plate (rim set 11° off horizontal). The Rim Style H concept comprises sets of dual gently diagonal straight lines bordered at the rim edge by a band of three concentric lines. The Base Style A decorative scheme consists of either a pear or apple adjacent to a wing-like motif to each side, and short dual diagonal lines on the roundel edge mirroring the rim style. No central roundel border. Well levitated pale yellow fabric (2.5Y 8/3). H. 3.1cm, Diam. 20.9cm, rim W. 3.2cm, rim Th. 0.49cm, base Diam. 10.1cm, body Th. 0.86cm (rim/body juncture), base H. 0.45cm, base Th. 1.2cm, 294 grams.

Tortugas Type 1A (Fig. 55)

Seville Blue on Blue Plate, Base Style A (TOR-90-00052-CS)

Intact base of a shallow flanged plate. The decorative scheme within the central interior roundel (Diam. 13.2cm), bordered by a band of three consecutive lines (each 0.15cm-wide and 0.7cm wide total), consists of an apple or pear adjacent to a wing-like motif to each side, and short dual diagonal lines. Well levigated pale yellow fabric (2.5Y 8/3). Fragment L. 14.3cm, base Diam. 10.4cm, body Th. 0.38cm, base H. 0.55cm, base Th. 1.1cm, 137 grams.

Tortugas Type 1A (Figs. 3B, 56)

Seville Blue on Blue Plate, Rim Style Bi & C/Base Style B (TOR-90-00084-CS)

An intact section of the rim, body and base of a shallow flanged plate, the rim badly chipped and eroded on all edges (set 28° off horizontal). Mild encrustation over part of the exposed clay rim fabric. Minor remains of a Rim Style Bi branched vegetation motif alternating with Rim Style C (its floral branches more elongated than in TOR-90-00081-CS), bounded at the inner edge by a band of double concentric lines (0.25cm-wide total); any outer band border is not preserved. Within the Base Style B central interior roundel (Diam. 12.1cm), bordered by a band of three consecutive lines (each 0.20cm-wide and 0.8cm wide total), is a pomegranate or peach motif. Well levigated pale yellow fabric (2.5Y 8/3). H. 3.4cm, fragment Diam. 18.1cm, preserved rim W. 2.4cm, rim Th. 0.5cm, body Th. 0.81cm (rim/body juncture), base Diam. 10.5cm, base H. 0.45cm, base Th. 1.1cm, 259 grams.

Tortugas Type 1A (Fig. 57)

Seville Blue on Blue Plate, Base Style C (TOR-90-00088-CS)

Fragment of the base of a shallow flanged plate. The tin-glaze is conspicuously lighter blue than on the other plates in the Tortugas Type 1A series, and the painted internal decoration more darkly blue. Surface crazing on both the interior and exterior surfaces. The Base Style C decorative scheme, bordered by a wide band of three concentric lines (each 0.15cm-wide and 0.95cm wide total), comprises a floral motif with petals emanating from a curving stalk. Well levigated pale yellow fabric (2.5Y 8/3). Fragment W. 11.6cm, body Th. 0.34cm, base H. 0.3cm, base Th. 0.8cm, 62 grams.

Tortugas Type 1A (Fig. 58)

Seville Blue on Blue Plate, Base Style C (TOR-90-00055-CS)

Fragment of a flanged plate with surface crazing on the exterior and interior surfaces. In the Base Style C decoration, two flower petals and foliage are visible, bordered by a band of three concentric lines 0.7cm wide. Fragment L. 8.1cm, body Th. 0.6cm, base H. 0.28cm, base Th. 1.1cm, 41 grams.

Tortugas Type 1A (Fig. 59)

Seville Blue on Blue Plate, Rim Style Bi/Base Style E (TOR-90-00044-CS)

Rim, body and base fragment of a shallow flanged plate. Rim Style Bi swirling schematized floral motifs are bounded at the inner edge by a double concentric line, 0.55cm wide. A Base Style E three-petalled flower with further foliage below and short dual diagonal lines on all sides, bordered by three thick concentric lines, each 0.3-0.5cm wide and 1.1cm wide in total. Well levigated pale yellow fabric (2.5Y 8/3). Fragment L. 14.5cm, H. 3.1cm, preserved rim W. 2.8cm, rim Th. 0.65cm, body Th. 0.78cm, base H. 0.25cm, base Diam. 10.3cm, base Th. 0.68cm, 166 grams.

Tortugas Type 1A (Fig. 60)

Seville Blue on Blue Plate, Base Style F (TOR-90-00053-CS)

Fragment of the base of a shallow flanged plate. The Base Style F decorative scheme within the central interior roundel (Diam. 11.2cm), bordered by a band of three consecutive lines (each 0.15cm wide and 0.9cm wide total), consists of a schematized floral motif with six elliptical petals radiating from two central hollow circles at center; double v-shaped motifs between, the inner one long, the outer one short. Well levigated pale yellow fabric (2.5Y 8/3). Fragment L. 11.7cm, base Diam. 8.8cm, body Th. 0.55cm, base H. 0.45cm, base Th. 1.1cm, 89 grams.

Tortugas Type 1A (Fig. 61)***Seville Blue on Blue Plate, Rim Style I/Base Style I (TOR-90-00058-CS)***

Eight fragments from the section of the rim, body and base of a shallow flanged plate. Unlike the rest of the Tortugas Type 1A plates, the tin-glaze is a far lighter blue. A thick globule of tin-glaze on the interior rim edge. The Rim Style I scheme exhibits lines of uneven length and thickness dripping inwards towards the interior roundel; bordered at the outer edge by dual concentric lines (total W. 1.9cm) and by a wavy line merging between the inner edge and upper body wall. In the center of the roundel, a Base Style I floral motif with two central hollow circles and curved petals radiating outwards anti-clockwise. Well levigated pale yellow fabric (2.5Y 8/3). H. 3.1cm, Diam. 20.9cm, rim W. 3.5cm, rim Th. 0.49cm, base Diam. 10.1cm, body Th. 0.86cm (rim/body juncture), base H. 0.45cm, base Th. 1.2cm, 268 grams.

Tortugas Type 1A (Fig. 62)***Seville Blue on Blue Plate, Base Style J (TOR-90-00045-CS)***

Intact base roundel of a shallow flanged plate. The Base Style J decorative scheme within the central interior roundel (Diam. over 12.8cm), the border section no longer intact, consists of a degraded floral motif schematized to a sun-like symbol, with 22 curved anti-clockwise petals radiating from two thick hollow central circles. Well levigated pale yellow fabric (2.5Y 8/3). Fragment L. 14.5cm, base Diam. 9.6cm, body Th. 0.42cm, base H. 0.3cm, base Th. 1.1cm, 181 grams.

Tortugas Type 1A (Fig. 63)***Seville Blue on Blue Plate, Base Style K (TOR-90-00050-CS)***

Base fragment of a shallow flanged plate, just part of the central internal roundel preserved. Base Style K with a heavily schematized sun-like floral motif consisting of eight concentric circles (preserved total Diam. 6.8cm) and remains of two petals radiating outwards. Well levigated pale yellow fabric (2.5Y 8/3). Fragment L. 7.3cm, base Th. 0.97cm, 19 grams.

Tortugas Type 1B (Figs. 19, 64)***Seville Blue on Blue Plate, Rim Style E/Base Style D (TOR-90-00086-CS)***

A largely intact shallow plate in four fragments. On the exterior surface, wide overlapping swirls oriented upwards cover the entire body. The Type 1B rim is narrower with a slightly down-curved lip than in the Type 1A series. The Rim Style E decoration consists of hollow oblong geometric motifs separated by a wavy line frame alternately rising and falling to the inner and outer rim edges. Bordered at both the outer (line W. 0.3cm) and mid-body (line W. 0.55cm) by dual concentric lines, creating a total band W. of 2.4cm. Because the rim is so narrow, the decoration extends down to the middle of the body. The Base Style D decorative scheme in the central interior roundel (Diam. 14.5cm) assumes the form of an elaborate large flower with a hollow circle at center, from which radiate outwards around 14 overlapping petals, flanked by two concentric lines (each 0.1-0.2cm-wide and 0.45cm wide total). Well levigated pale yellow fabric (2.5Y 8/3). H. 4.2cm, Diam. 21.2cm, rim W. 1.6cm, rim Th. 0.54cm, body Th. 0.63cm, base Diam. 11.9cm, base H. 0.4cm, base Th. 0.89cm, 406 grams.

Tortugas Type 1C (Fig. 65)***Seville Blue on Blue Bowl, Rim Style G/Base Style M (TOR-90-00048-CS)***

Fragment of the base and side of a small bowl (*taza*), seemingly vertically walled. Schematic interior Rim Style G decoration from the rim to mid-body composed of thick v-shaped motifs alternately facing outwards and rotated 180° inwards, inter-connected by thin diagonal lines undulating to the rim outer edge and downwards to mid-body; set within thin dual-lined concentric borders on the exterior edge. Delineated from the lower body by two sets of concentric circles (1.2cm wide). The debased floral motif of Base Style M resembles a star with four surviving v-shaped petals. Well levigated pale yellow fabric (2.5Y 8/3). Fragment H. 4.5cm, fragment Diam. 7.3cm, body Th. 0.5cm, base Diam. 5.0cm, base H. 0.32cm, base Th. 1.0cm, 51 grams.

Tortugas Type 1C (Fig. 68)***Seville Blue on Blue Bowl, Rim Style Bi & Bii/Base Style G (TOR-90-00049-CS)***

Fragment of the base and side of a small bowl (*taza*), its sides angled 60° off horizontal. Two blue horizontal lines are located on the lower exterior body, 0.2-0.5cm wide and 0.95cm apart, set 0.8cm above the base. The interior is lavishly and continuously decorated over all surfaces in two bands. Outward oriented Rim Style Bi schematized swirling floral motifs

composed of continuous curved lines alternate alongside outward oriented Rim Style Bii sets of two v-shaped schematized floral elements set sideways with two solid circles at center. The Base Style G concept displays schematized floral motifs with eight petals, curving anti-clockwise and thickening towards the outer base, radiating outwards from two central hollow circles. In between, thick buds linked by thin rounded lines attached to the central stem. The upper body and base are separated by a 1.5cm-wide band composed of four concentric circles. Well levigated pale yellow fabric (2.5Y 8/3). Fragment H. 4.1cm, fragment Diam. 8.7cm, body Th. 0.41cm, base Diam. 5.3cm, base H. 0.58cm, base Th. 1.17cm, 68 grams.

Tortugas Type 1C (Fig. 66)

Seville Blue on Blue Bowl, Base Style G (TOR-90-00056-CS)

Fragment of the base and side of a small bowl (*taza*). The tin-glaze is almost completely worn away on the exterior surfaces. At the center of the roundel is Base Style G decoration of eight-petalled schematized floral motifs curving anti-clockwise and thickening towards the outer base, which radiate outwards from two central hollow circles (total Diam. 2.5cm). In between, thin stems end at thick buds at the base exterior edge. Framed mid-body by a band of two sets of concentric circles (total W. 1.6cm). Well levigated pale yellow fabric (2.5Y 8/3). Fragment H. 3.3cm, fragment Diam. 6.6cm, body Th. 0.52cm, base Diam. 4.9cm, base H. 0.57cm, base Th. 1.1cm, 41 grams.

Tortugas Type 1C (Fig. 67)

Seville Blue on Blue Bowl, Base Style H (TOR-90-00051-CS)

Fragment of the base and lower body of a small bowl (*taza*). The interior is decorated with a schematized floral motif of Base Style H form with alternating long and short petals oriented anti-clockwise, radiating outwards from two central hollow circles (4.4cm wide total). Well levigated pale yellow fabric (2.5Y 8/3). Fragment H. 3.4cm, fragment Diam. 8.0cm, body Th. 0.43cm, base Diam. 5.3cm, base H. 0.3cm, base Th. 0.77cm.

Tortugas Type 1D (Figs. 22, 35E-F, 69)

Seville Blue on Blue Jug (TOR-90-00035-CS, grid no. 81.42/24.46)

Neck, body and base section of a one-handle small jug with a strongly everted neck/rim, broad rounded body and low, flattened footring. The stump of a lower handle lug is evident where the body begins to rise towards the neck. The anatomy is identical to the Tortugas Type 5A Seville Polychrome jugs, and stylistically both may have been produced in the same workshop/s. The entire interior and exterior are coated with a continuous thin, dark blue tin-glaze. The outer body features a crudely rendered fruit motif resembling either an apple or pear identical to Tortugas Type 1A Base Style A. These are bordered by a lightly incised line infilled with brown-red paint. The decorative scheme is not defined by any bands. Finely levigated pale yellow clay (2.5Y 8/3). Fragment H. 9.6cm (to mid-neck), body Diam. 10.0cm, neck Th. 0.37cm, handle lug W. 1.2cm, body Th. 0.51-0.57cm, base H. 0.55cm, base Diam. 5.8cm, 163 grams.

Seville Blue on White Tin-Glazed Ware (Type 2)
(Talavera-Style Blue on White, Ichtucknee Blue on White)

Tortugas Type 2A (Figs. 3C, 74)

Seville Blue on White Plate, Rim Style A/Base Style A (TOR-90-00015-CS, grid no. 83.37/22.32)

Section of a rim, body and base of a small flanged plate of white tin-glaze and blue motifs painted over both the exterior and interior. Light surface crazing on all surfaces. The base is intact, as largely are the sides, but the rim is badly chipped and broken (set 24° off horizontal). On the exterior six sets of two elongated v-shaped lines widening downwards from the rim towards the lower body. The interior is densely decorated with Oriental-themed motifs, including Rim Style A naturalistic foliate vegetation ending with berries, divided by vertical double-lined, concave-edged panels in-filled with narrow horizontal lines. An effective Base Style A naturalistic scene covers the entire interior roundel, with a bird at center surrounded by dense foliate vegetation, leaves and seemingly fruit at top left and bottom. The chest of a second bird seems to be present at top right. The base composition is set within a 12.8cm-wide roundel bordered by a band of dual concentric lines (0.2cm wide). The pale yellow clay fabric (2.5Y 8/3) is fine, but less well levigated than in the Type 1 Seville Blue on Blue series. H. 3.4cm, Diam. 19.9cm, preserved rim W. 3.1cm, rim Th. 0.4cm, body Th. 0.43cm, base Diam. 11.5cm, base H. 0.15cm, 240 grams.

Tortugas Type 2A (Figs. 35H-I, 75)***Seville Blue on White Plate, Rim Style B/Base Style B (TOR-90-00057-CS, grid 82.88/26.03)***

Seven fragments of a rim, body and intact base of a small flanged plate of white tin-glaze and blue painted motifs on both the exterior and interior. Strongly upward angled rim. Very light crazing on all surfaces. The exterior is decorated with four (and originally probably five) sets of diagonal palm-like branches between the rim edge and base. On the interior, one extensive band of decoration runs from the outer rim edge down to the base edge, consisting of Rim Style B naturalistic foliate vegetation, debased and schematized, divided by single thick-lined vertical concave-edged panels. The scheme is flanked by dual concentric circles at both the rim's outer edge (0.5cm-wide) and inner edge/upper body (0.4cm-wide) forming a total decorative band width of 4.6cm. A small roundel (Diam. 7.4cm) occupying half of the base's diameter, surrounded by two concentric lines (0.4cm-wide total), depicts a dense Base Style B naturalistic landscape with foliate vegetation and perhaps a rock, heavily schematized. The pale yellow clay fabric (2.5Y 8/3) is fine. H. 3.5cm, Diam. 18.2cm, rim W. 3.2cm, rim Th. 0.26cm, body Th. 0.44cm (rim/body juncture), base Diam. 12.0cm, base H. 0.31cm, base Th. 0.83cm, 210 grams.

Tortugas Type 2A (Fig. 76)***Seville Blue on White Plate, Rim Style E/Base Style D (TOR-90-00017-CS, grid no. 83.43/28.59)***

Section of a rim, body and intact base of a small flanged plate of white tin-glaze and blue painted motifs on both the exterior and interior. Light crazing on all surfaces. The exterior is decorated with six sets of elongated v-shaped lines widening downwards towards the base. The interior is symmetrically decorated with greater artistic proficiency than in any other Tortugas Type 1 or Type 2 products amongst the tin-glazed wares. The surviving Rim Style E decoration is elaborate, with thin blue-framed circles containing palm-like leaves alternatively pointing upwards and downwards; above and below each round frame are three blue circles in-filled with golden yellow paint. Double concentric lines border the concept on both the upper and lower rim edges (each 0.25cm wide in total). At the center is a 12.6cm-wide roundel flanked by 0.4cm-wide double circular lines that frame a Base Style D complex flower motif with a cross-hatched circle at center from which 16 short petals radiate outwards, ending half-way across the roundel diameter; in between each is a longer petal extending to the roundel outer edge, which in turn is flanked by solid semi-circles with thin wavy lines beneath. Between each long petal is a solid circle. The petals are in-filled with golden yellow paint. The pale yellow clay fabric (2.5Y 8/3) is fine. Fragment H. 2.4cm, fragment Diam. 16.3cm, rim Th. 0.38cm, body Th. 0.45cm (rim/body juncture), base Diam. 12.3cm, base H. 0.36cm, base Th. 0.75cm, 164 grams.

Tortugas Type 2A (Fig. 77)***Seville Blue on White Plate, Rim Style C/Base Style E (TOR-90-00090-CS)***

Upper body and base of a flanged plate, with a relatively well executed design. Surface crazing is present. Naturalistic Rim Style C palm-like vegetation, debased and schematized, possibly divided by vertical panels with straight edges, extends from the rim to the base's outer edge; double concentric lines separate body and base. At the roundel center is a Base Style E geometric motif composed of a large central circle with a cross-hatched interior, framed by a single concentric line, around which solid blue buds are linked by a continuous wavy line. Fragment H. 2.1cm, lower body Th. 3.74cm, base Diam. 10.4cm, base H. 0.41cm, base Th. 0.28cm, 88 grams.

Tortugas Type 2A (Fig. 78)***Seville Blue on White Plate, Rim Style G/Base Style F (TOR-90-1A-000577)***

Intact rim to base section of a flanged plate with surface crazing. The Rim Style G is plain and undecorated, comprising on the exterior edge a simple double concentric line. Dominating three-quarters of the roundel is a Base Style F papal seal composed of two crossed Keys of Heaven surmounted by a triple crown, with a cross on top, tied together with a cordon rope. The clay fabric, fine and hard with no obvious inclusions, has a slight yellow cast. One of two identical plates. Neither is preserved in the Tortugas collection.

Tortugas Type 2A (Fig. 79)***Seville Blue on White Plate, Rim Style D/Base Style A (TOR-90-00090-CS)***

The rim and base of a small flanged plate. In the Rim Style D scheme, elegant blue mottled buds/berries overlying lighter blue stems are framed by a single concentric line above and by double concentric lines below. The Base Style A

fragment incorporates the head and beak of a bird with budding vegetation at left, framed by an uneven dual concentric roundel border. Rim W. 2.1cm, rim Th. 0.34cm, upper body Th. 0.34cm, base Diam. 13.0cm, base H. 0.25cm, base Th. 0.42cm, 44 grams.

Tortugas Type 2A (Fig. 121E)

Seville Blue on White Plate, Rim Style F/Base Style C (TOR-90-1A-001901)

The intact base and around 20% of the rim of a flanged plate. The Rim Style F decoration assumes the form of thick geometric v-shaped motifs alternately facing outwards and inwards, with thin lattice lines within, the whole framed by thin diagonal lines. Double concentric lines border both the rim inner and outer edges. The Base Style C roundel is entirely filled with a naturalistic debased scene of a dog running across a hilly landscape. Schematized foliate vegetation and possible fruit fill the upper frame. H. 2.3cm, Diam. 18.5cm. Not preserved in the Tortugas collection.

Plain White Morisco Ware (Type 3) (Columbia Plain)

Tortugas Type 3A (Fig. 80)

Plain White Morisco Plate (TOR-90-1A-000906)

A large basin-like plate with steep sides and characterized by a recessed channel on the upper edge of the rim. H. 6.5cm, Diam. 32.5cm. Not preserved in the Tortugas collection.

Tortugas Type 3B (Fig. 81)

Plain White Morisco Plate (TOR-90-00013-CS)

A regular sized plate found in nine fragments. The interior glaze is unworn and the base treatment more accomplished than in the rest of the Tortugas wreck's Type 3B series. The plate has a u-shaped rim, a basic continuation of the body wall, and a footless base composed of a flattened roundel with an imperceptible basal depression. The outer base edge is defined by a single low ridge, 0.1cm wide. The outer body is lightly corrugated. Three kiln divider scars lightly visible on the interior base. Pink fabric (7.5YR 7/4) with a pale yellow (2.5Y 8/2) external and internal glaze finish. H. 4.8cm, external Diam. 19.6cm, rim Th. 1.0cm, internal roundel Diam. 6.9cm, body Th. 1.1cm, base Diam. 3.5 x 3.2cm, 572 grams.

Tortugas Type 3B (Figs. 4D, 82)

Plain White Morisco Plate (TOR-90-00030-CS, grid no. 86.64/26.30)

A regular sized plate found in nine fragments. The interior gloss is unworn and shiny, suggesting the vessel has witnessed minimal use. The plate has a u-shaped rim (set 35° off horizontal), a basic continuation of the body wall, and a footless base composed of a flattened roundel with an imperceptible basal depression. Surface crazing. Three kiln divider scars on the interior base, set outside the roundel; another two, each 0.55 x 0.5cm, are also present on the base. Poorly finished with a broad strip of clay adhering to half of the outer body wall just below the rim. Pink fabric (7.5YR 7/4) with a pale yellow (2.5Y 8/2) external glaze finish. H. 5.6cm, external Diam. 19.8cm, internal roundel Diam. 6.9cm, rim Th. 1.1cm, base Diam. 3.7 x 3.7cm, 584 grams.

Tortugas Type 3B (Fig. 83)

Plain White Morisco Plate (TOR-90-00039-CS)

A regular sized plate with worn interior sides and a smooth, yellow-cream external gloss. A simple vessel with a flattened rim, gently rounded body and a small, badly formed footless base composed of a flattened roundel with an imperceptible basal concave depression. Three sub-circular firing scars (up to 1.2 x 0.8cm) set around the edges of the interior roundel. Light traces of charring on one base edge. Pink fabric (7.5YR 7/4) with a pale yellow (2.5Y 8/2) external tin-glazed finish. H. 5.2cm, external Diam. 19.7cm, rim Th. 0.94cm, internal roundel Diam. 6.1cm, base Diam. 4.4 x 3.9cm, 624 grams.

Tortugas Type 3B (Figs. 4C, 84)

Plain White Morisco Plate (TOR-90-00029-CS)

A regular sized plate found in four fragments. The interior glaze is unworn, shiny and seemingly unused, and the base competently finished. The plate has a u-shaped rim (set 35° off horizontal), a basic continuation of the body wall, and a footless base composed of a flattened roundel with an imperceptible basal depression. The outer body is lightly corrugated. Three kiln divider scars on the interior base, plus another two on the exterior base, 1.2 x 1.1cm. Pink fabric (7.5YR 7/4) with a pale yellow (2.5Y 8/2) external and internal glaze finish. H. 5.7cm, external Diam. 19.5cm, rim Th. 0.96cm, internal roundel Diam. 7.0cm, base Diam. 3.8 x 3.2cm, 546 grams.

Tortugas Type 3B (Figs. 4B, 85)

Plain White Morisco Plate (TOR-90-00028-CS)

A regular sized plate found in 10 fragments. Very heavily waterworn, the glaze almost completely eroded away other than in small patches. Otherwise well finished, with a symmetrical concave base. The plate has a u-shaped rim (set 34° off horizontal), a basic continuation of the body wall, and a footless base composed of a flattened roundel with an imperceptible basal depression. Pink fabric (7.5YR 7/4) with a pale yellow (2.5Y 8/2) glaze finish inside and out. H. 4.8cm, external Diam. 19.7cm, internal roundel Diam. 7.5cm, rim Th. 0.9cm, body Th. 0.86cm, base Diam. 3.8 x 3.7cm, base Th. 1.0cm, 413 grams.

Tortugas Type 3B (Fig. 86)

Plain White Morisco Plate (TOR-90-1A-000968)

A regular sized plate found in three fragments; one small rim section is missing. Waterworn and pitted with large patches of glaze eroded away. Otherwise well finished, with a symmetrical concave base. The plate has a u-shaped rim, a basic continuation of the body wall, and a footless base composed of a flattened roundel with an imperceptible basal depression. Pink fabric (7.5YR 7/4) with a pale yellow (2.5Y 8/2) glaze finish inside and out. H. 5.3 cm, external Diam. 19.8 cm, rim Th. 1.0 cm, internal roundel Diam. 6.7 cm, base Diam. 4.2 cm, 450 grams.

Tortugas Type 3C (Figs. 36A, 87)

Plain White Morisco Flanged Plate (TOR-90-00047-CS)

A rim to base section of a small flanged plate, with more angular sides than Tortugas Type 3B (seemingly trying to replicate Type 1A and 2A forms). Well finished with a consistent glaze thickness inside and outside, and a symmetrical concave base. No internal roundel, but a more well-defined base. Three kiln divider scars on the inside base set 5.8cm apart (each 0.3 x 0.3cm), plus two more visible on the outside base, 5.2cm apart (0.6 x 0.3cm). Pink fabric (7.5YR 7/4) with a pale yellow (2.5Y 8/2) glaze finish inside and out. H. 3.4cm, external Diam. 15.7cm, rim Th. 0.68cm, body Th. 0.56cm, base Diam. 5.4 x 5.2cm, base Th. 0.78cm, 133 grams.

Tortugas Type 3D (Figs. 5D, 88)

Plain White Morisco Bowl (TOR-90-00021-CS, grid no. 75.35/26.88)

A small bowl, intact except for chipping across the rounded lip, undecorated, with a deeply-angled upper body (72° off horizontal) divided from the lower body wall by a sharp carination, and a low footring with a convex kick. Thin, creamy yellow glaze over all surfaces. No visible impurities, but less well levigated than Type 3B-3C. Pale yellow fabric (2.5Y 8/3). H. 6.2cm, mouth Diam. 13.0cm, rim Th. 0.7cm, base H. 0.91cm, base Diam. 5.9cm, 283 grams.

Tortugas Type 3D (Figs. 5E, 89)

Plain White Morisco Bowl (TOR-90-00073-CS)

A small bowl with an intact section of rim, body and base, but a large section of one side broken. A rounded rim, deeply-angled upper body (67° off horizontal) divided from the lower body wall by a sharp carination, low footring with a convex kick. Undecorated except for three dark blue blotches on the lower exterior body. Clay accretion across part of the lip. No visible impurities. Thin creamy yellow glaze over all surfaces. Pale yellow fabric (2.5Y 8/3). H. 5.9cm, mouth external Diam. 13.0cm, rim Th. 0.65cm, body Th. 1.0cm at ridge, base H. 0.95cm, base Diam. 5.8cm, base Th. 1.4cm, 221 grams.

Seville White Tin-Glazed Ware (Type 4) ***(Sevilla White)***

Tortugas Type 4A (Figs. 3F, 90)

Seville White Plate (TOR-90-1A-001172)

A large flanged uneven plate with an unusually deeply concave rim (set 17° off horizontal) across which is painted in blue a zig-zag design composed of three inter-connected v-shaped lines. Three kiln divider scars on the interior base where the body starts to rise. The plate features a low footring. H. 4.6cm, Diam. 20.8cm, rim Th. 0.4cm, base Th. 0.8cm.

Tortugas Type 4B (Figs. 3A, 34A-F, 91)

Seville White Bowl (TOR-90-00036-CS, grid no. 74.73/27.31)

An elegant, symmetrical bowl, intact except for two missing sections of rim and upper body, with gently rounded sides, very low body corrugation, a mildly everted rim (set 67° off horizontal), rounded lip and flat base. The shape is reminiscent of classical Chinese porcelain. Vessel decoration is characterized by two sets of three short vertical dark blue lines (W. 0.45cm maximum) on opposite sides of the rim extending from the inner lip down 0.5cm of the rim. Just above the interior basal area are three kiln divider scars set 7.5cm apart (each 0.8 x 0.6cm). Light surface crazing on the lower interior body. A creamy yellow glaze covers all outer and inner surfaces. The yellowish red clay core (5YR 5/6) is relatively coarse with common gray impurities. H. 5.85cm, Diam. 14.3cm, rim Th. 0.31cm, body Th. 0.48cm, base H. 0.57cm, base Diam. 5.5cm, 231 grams.

Tortugas Type 4C (Figs. 5B, 33, 92)

Seville White Cup (TOR-90-00065-CS, grid no. 79.08/33.53)

Rim to base section of a vertical-sided drinking cup (77° off horizontal), with the rim broken away, but its lower end clearly everted in an identical style and glaze form to Type 4B above. Low-set corrugation across the upper body. Light surface crazing over all surfaces. A creamy yellow glaze covers all outer and inner surfaces. The very pale brown fabric (10YR 7/4) is relatively coarse with a low frequency of impurities. Fragment H. 7.8cm, body Diam. 10.1cm, lower rim Th. 0.28cm, body Th. 0.48cm, base H. 0.71cm, base Diam. 4.52cm, 114 grams.

Seville Polychrome Tin-Glazed Ware (Type 5) ***(Andalusia Polychrome)***

Tortugas Type 5A (Figs. 6B, 35G, 93)

Seville Polychrome Jug (TOR-90-00032-CS, grid no. 82.19/10.87)

Neck, body and base section of a two-handle small jug with a strongly everted neck/rim (82° off horizontal), broad rounded body and low, flat base with a convex center. The lower stumps of two handle lugs are evident where the body rises towards the neck; the upper lugs are not preserved, indicating that the handles originally merged high onto the upper neck. The entire interior and exterior are coated with a well-executed continuous brownish cream glaze. The outer body is decorated on both sides with a single motif comprising swirling foliage and leaves; blue paint is used to depict the in-filled areas and dark brownish orange to define their edges, while the scene is brought to life with touches of yellowish brown detail. The decorative scheme is open and is not confined within bands. Blue paint is present on both handle stumps. Finely levigated pale yellow clay (2.5Y 8/2). H. 9.6cm (to mid-neck), body Diam. 9.8cm, neck Th. 0.4cm, handle lugs W. 1.34 and 1.38cm, body Th. 0.57cm, base H. 0.58cm, base Diam. 6.4cm, 256 grams.

Tortugas Type 5A (Figs. 6A, 94)

Seville Polychrome Jug (TOR-90-00070-CS, grid no. 79.08/33.53)

Body and base section of a small jug, originally with two handles, a strongly everted neck/rim, broad rounded body and low, flat base with a convex center. The lower stump of one handle lug is located where the body rises towards the neck. Very low corrugation across the lower body. The entire interior and exterior are coated with a very thin, continuous

brownish cream glaze. The outer body is decorated on both sides with a duplicated single motif comprising an exotic four-petalled flower with a central core composed of a central blue solid circle surrounded by a rough brownish orange circle and a thin blue circle outside. The petals repeat this color scheme, with one half of each petal solid blue, the other featuring brownish orange parallel lines enclosed in a blue border. The decorative scheme is open and is not confined within bands. Finely levigated pale yellow clay (2.5Y 8/3). H. 8.6cm (to bottom of neck), body Diam. 10.0cm, neck Th. 0.42cm, handle lug W. 1.4cm, handle Th. 1.0cm, body Th. 0.58cm, base H. 0.67cm, base Diam. 6.4cm, 233 grams.

Tortugas Type 5A (Fig. 95)

Seville Polychrome Jug (TOR-90-00173-CS)

Three sherds from the body of a two-handle small jug. The decorative scheme comprises leaved branches, one half dark blue framed by brown lined edges and the other horizontal reddish-brown lines. Finely levigated pale yellow clay (2.5Y 8/3). The background tin glaze is creamy gray. Th. 0.51cm, 30 grams.

Tortugas Type 5B (Figs. 4A, 96)

Seville Polychrome Bowl (TOR-90-00100-CS)

Rim to lower body fragment of a deep bowl covered all over with a gray white mottled glaze and base fragment. A simple rounded rim, decorated with a band just below the rim edge consisting of three largely straight concentric lines, the external ones blue and the middle one reddish yellow (band W. 1.3cm). The main decorative scheme consists of vertical, angular-set thick blue and reddish yellow lines framed below by a repeated band of two blue lines containing a reddish yellow one (band W. 1.1cm). Wavy blue lines merge towards the center. The same scheme covers the ringfoot base. Lightly corrugated body (set 0.95cm apart). Finely levigated pale yellow clay (2.5Y 8/3). H. 9.6cm, mouth Diam. 19.0cm, rim Th. 0.5cm, body Th. 0.57cm, base Th. 0.58cm, 88 grams.

***Linear/Decorated/Mottled Blue Morisco Ware (Types 6-8)
(Yayal Blue on White, Santo Domingo Blue on White &
Santa Elena Mottled Blue on White)***

Tortugas Type 6A (Figs. 7B, 35B, 97)

Linear Blue Morisco Jar (TOR-90-00069-CS, grid no. 84.30/22.89)

Small buff-colored jar with a flat base, sharply angled neck (71° off horizontal) and everted rim and relatively large handles from mid-neck to mid-body. A single low horizontal ridge extends across the vessel at the lower neck (middle of the upper handle lugs). The lower three-quarters of the vessel is plain, while a light gray-white glaze adheres to the upper body between the lower handle lugs and the outer rim edge, also extending across all of the handles. Six sets of two curving, diagonally set blue lines extend vertically over the glaze, ending at the outer rim edge (each set W. 1.7cm, each line Th. 0.5cm). The same double curved blue line decoration appears on the summit of each handle. Light marine concretion in the form of white calcareous shells down the vessel interior. Well crafted, smooth finish, very low ribbing on lower quarter of the body. Reddish yellow clay fabric (7.5YR 6/6), with a yellow surface (2.5Y 7/6). H. 16.2cm, maximum body W. 13.9cm, mouth external Diam. 11.4cm, mouth internal Diam. 9.5cm, rim Th. 1.0cm, handle L. 7.5cm, handle W. 2.3cm maximum, handle Th. 1.6cm, base W. 9.4cm, 847 grams.

Tortugas Type 6C (Figs. 5C, 99)

Linear Blue Morisco Bowl (TOR-90-00009-CS, grid no. 84.04/24.25)

Small bowl, intact except for chipped rim edges, with a simple rounded lip, strongly angled body (set 68° off horizontal) and short base with a convex kick. Covered inside and out with thin creamy yellow glaze over which is imposed, both on the interior and exterior surfaces, a simple blue line decorative scheme. Externally this consists of a solid blue frame line across the rim, below which are two wavy lines across the body (each 0.57cm wide, total band W. 1.9cm) flanked at the lower base by two underlying straight blue horizontal lines (each 0.42cm wide, total band W. 1.0cm). On the bowl interior, three straight concentric lines, including across the rim (each 0.64cm-wide, total band W. 2.3cm), descending to two wavy lines across the lower body (W. 0.56cm, total band W. 1.5cm) and at the bowl center two concentric circular

lines (0.6cm wide and total band W. 1.7cm). At center, three oblong kiln divider scars are visible, each set 6.1cm apart and 0.66 x 0.4cm. Cleanly levigated pale yellow clay (2.5Y 8/3), over which is light crazing on all surfaces. H. 6.1cm, mouth Diam. 13.2cm, rim Th. 0.76cm, base H. 1.0cm, base Diam. 5.4cm, 340 grams.

Tortugas Type 6D (Figs. 6C, 100)

Linear Blue Morisco Jug (TOR-90-00023-CS, grid no. 80.57/33.64)

A thin-walled small jug with a tall, vertical neck, single handle, strongly rounded body, deeply corrugated (crests set 0.85cm apart), and a low, flat base. Most of the neck and body on one side are not preserved. A thick grayish white glaze extends all over the exterior, from the top of the handle to the underside of the base. Five dark blue angular lines adorn the elegant handle and around 17 simple wavy blue lines run vertically down the jug's sides from at least the top of the neck (at which point the vessel is broken) to the base. Three more angular lines below the handle mirror those above. The vessel is heavily discolored from immersion within the marine environment; mild worm boring shell on the neck and body interior. The enamel is very pale brown (10YR 7/3). H. 13.2cm (to top of the handle), body Diam. 10.1cm, neck H. 4.8cm, neck Diam. 6.9cm, neck Th. 0.37cm, handle L. 8.5cm, handle W. 1.7cm, handle Th. 1.5cm, body Th. 0.41-0.49cm, base H. 0.9cm, base Diam. 5.9cm, 309 grams.

Tortugas Type 7 (Fig. 101)

Decorated Blue Morisco Pitcher (TOR-90-00019-CS)

A one-handle pitcher with a flat base, gently rounded body and robust handle extending from mid-body to the top of the neck with two thumb prints on either side of the lower lug. The rim and neck are not preserved. Very low corrugation over all external surfaces. Heavily eroded, the dark blue painted scheme placed over a gray-white glaze on the exterior consists of a series of inverted s-shaped swirls and floral motifs framed by a 0.9cm-wide horizontal band located at the height of the lower handle lug, where the body starts to turn towards the base. The glaze is restricted to this band and does not occur lower down the pitcher's body. Two thick sub-oblong solid dots are present on the side of the handle. Mild encrustation. The pale yellow fabric (2.5Y 8/2) is highly coarse and very soft. H. 15.4cm (to top of the handle), body Diam. 11.2cm, handle L. 8.8cm, handle W. 2.2cm, handle Th. 1.5cm, neck Th. 0.38cm, body Th. 0.6cm, base H. 1.4cm, base Diam. 8.4cm, 482 grams.

Tortugas Type 7 (Figs. 7A, 30, 102)

Decorated Blue Morisco Pitcher (TOR-90-00068-CS)

A one-handle spouted pitcher with a flat base, gently rounded body and heavy handle extending from mid-neck to mid-body. A complete section is preserved, but the body of one side and the rim are no longer present. The neck is sharply angled 78° off horizontal. Very low corrugation between the upper and mid-body. The gray-white glaze is confined to the area between the lower handle lug, where the body turns towards the base, and the lip. The rim terminates with a single blue line (0.3cm wide) and a single groove below (0.35cm wide) seemingly designed to catch dripped liquid. The painted body decoration is restricted to between the bottom of the neck and level of the lower handle lug, both framed by a single blue line (0.6cm at the top and 0.55cm at the bottom). Between is a highly schematic floral motif consisting of unsophisticated swirls. Four splashes of blue paint run down the handle edge. The core fabric is reddish yellow (5YR 7/6) with a pale yellow exterior (2.5Y 8/2), which is highly coarse and very soft. H. 17.9cm, mouth L. 9.2cm, spout L. 4.5cm, spout W. 6.6cm, spout Th. 0.54cm, rim Th. 0.54cm, body Diam. 11.8cm, handle L. 9.9cm, handle W. 2.2cm, handle Th. 1.6cm, neck Th. 0.59cm, body Th. 0.46cm, base H. 1.6cm, base Diam. 8.4cm, base Th. 0.66cm, 521 grams.

Tortugas Type 7 (Fig. 103)

Decorated Blue Morisco Pitcher (TOR-90-1A-003240)

A one-handle spouted pitcher with a flat base, gently rounded body, the neck, rim and handle no longer preserved. The glaze and decorative scheme are restricted to the upper half of the vessel, which is covered with dense, heavily schematized blue leaves, interconnected buds and other foliage, framed mid-body by a thick horizontal blue line. Light corrugation across the lower body. H. 21.0cm, Diam. 18.0cm. Not preserved in the Tortugas collection.

Tortugas Type 8A (Figs. 5A, 105)

Mottled Blue Morisco Cup (TOR-90-00038-CS, grid no. 77.94/12.56)

Small cup, intact except for a section of rim and body missing to one side, strongly angled (76° off horizontal), near-vertical body and mildly out-turned rim. The body sits on a tall pedestal with a flat base featuring a heavily concave kick. The body is deeply corrugated with four ribs set 0.74 to 0.95cm apart. Highly eroded, but traces of eight dark blue mottled motifs on the vessel exterior between the rim edge and lower body, all straight except for two wavy lines at center. Cleanly levigated light reddish brown clay (5YR 6/4), small common impurities. H. 7.3cm, mouth Diam. 10.3cm, rim Th. 0.63cm, body Th. 0.72cm, base H. 2.4cm, base Diam. 6.0cm, base Th. 1.0cm, 204 grams.

Tortugas Type 8B (Figs. 8, 35D, 106)

Mottled Blue Morisco Jug (TOR-90-1A-00052)

A small jug with a single handle set between the lower shoulder and upper neck. Mildly everted neck, the rim no longer intact, and rounded base. Broad corrugations across the lower body every 0.6cm. Strongly glazed with dark blue naturalistic mottled motifs over creamy green underglaze. Preserved H. 12.0cm, Diam. 9.6cm, handle L. 6.8cm, Th. 0.3cm. Not preserved in the Tortugas collection.

Unglazed Coarsewares (Types 11-19A)

Tortugas Type 11A (Fig. 107)

Unglazed Coarseware Jar (TOR-90-01224-CS)

Rim fragment from a short and broad jar characterized by no neck and a short rim, undercut and flattened where it meets the shoulder, with a gently rounded lip. Soft reddish yellow clay (7.5YR 8/6) with abundant gray inclusions. Mouth Diam. 12.6cm, rim H. 1.3cm, rim Th. 1.3cm, body Th. 0.3cm, 31 grams.

Tortugas Type 11A (Figs. 10A, 108)

Unglazed Coarseware Jar (TOR-90-01225-CS)

Rim fragment from a short and broad jar characterized by no neck and a short rim, undercut and flattened where it meets the shoulder, with a gently rounded lip. Soft reddish yellow clay (7.5YR 7/6) with common gray inclusions. Mouth Diam. 15.0cm, rim H. 1.3cm, rim Th. 1.4cm, body Th. 0.4cm, 41 grams.

Tortugas Type 11B (Figs. 10B, 109)

Unglazed Coarseware Bowl (TOR-90-01226-CS)

Rim fragment from a bowl typified by a flat ledge handle and an incurved body. The rim profile is rectangular. Soft yellowish red clay (5YR 5/6) with abundant gray inclusions. Mouth Diam. 23.4cm, rim H. 1.1cm, rim Th. 1.3cm, handle W. 2.4cm, body Th. 0.5cm, 44 grams.

Tortugas Type 12 (Figs. 9A, 23, 110)

Unglazed Merida-type Jug (TOR-90-00031-CS)

Highly micaceous large one-handle jug with a trefoil pouring spout and single, bifurcated strap handle with two ridges extending from mid-neck to lower body. Tall everted neck terminating with a simply rounded rim (set 77° off horizontal). A single horizontal ridge, Th. 0.15cm, extends across the upper neck, 2.2cm below the rim. Neck and body are separated by a recessed depression, 0.2cm wide, and associated ridge. From the neck downwards to the base, the entire vessel is covered with vertical lightly incised 0.15cm-wide striations. Light concretion in form of white marine boring calcareous shells on the vessel interior and across the handle tips. Large micaceous inclusions over 0.1cm wide and common gray inclusions up to 0.22cm wide. Identified through ICPS analysis as made from non-calcareous clay with very high aluminium and high potassium levels. Reddish yellow fabric (5YR 6/8) with a red external finish (2.5YR 5/8). H. 28.8cm, max body W. 16.5cm, external mouth Diam. 10.9 x 10.1cm, spout L. 4.2cm, spout W. 2.6cm, rim Th. 0.77cm and 0.68cm at spout, handle L. 13.7cm, handle W. 3.7cm max at top edge, handle Th. 1.5cm, base Diam. 7.5cm, 1,400 grams.

Tortugas Type 13 (Fig. 111)

Unglazed Coarseware Jug (TOR-90-00060-CS)

Fragment of a jug with a flat base. Reddish yellow fabric (7.5YR 6/6). Fragment H. 3.8cm, body Th. 0.41cm, base Diam. 8.4cm, base Th. 0.69cm, 55 grams.

Tortugas Type 14 (Fig. 112)

Unglazed Coarseware Jug (TOR-90-00072-CS)

Lower body and base section of an unglazed Merida-type jug with a low, flat base (set 36° off horizontal) featuring a series of lightly incised concentric circles. Charring visible across the lower body and base. Corrugation across the interior body (set 0.5cm apart). Very pale brown fabric (10YR 7/4, relatively well levigated. Fragment H. 3.1cm, fragment Diam. 8.5cm, body Th. 0.37cm, base Th. 0.9cm, base Diam. 3.6cm, 75 grams.

Tortugas Type 15 (Fig. 113)

Unglazed Coarseware Jug (TOR-90-00062-CS)

Lower body and base fragment of an undecorated coarseware jug with a flat base (its sides set 57° off horizontal). Pale yellow soft fabric (5Y 8/3), well levigated. Fragment H. 4.3cm, fragment W. 11.7cm, body Th. 0.7cm, base Diam. 7.1cm, base Th. 1.0cm, 156 grams.

Tortugas Type 16 (Fig. 114)

Unglazed Coarseware Bizcocho Ware Plate (TOR-90-00063-CS)

Unglazed coarseware small plate, two side sections broken away, with a rectangular rim profile widely overhanging a v-shaped angular body (set 23° off horizontal) and narrow, flat base. Charring across the outer and interior surfaces. Seemingly reddish yellow fabric (5YR 6/6). H. 2.2cm, Diam. 11.35cm, rim Th. 0.51cm, body Th. 0.38cm, 75 grams.

Tortugas Type 18 (Figs. 9B, 121B)

Unglazed Coarseware Jar (90-1A-002849)

A small jar with an ovoid body, tall concave neck and strongly rounded rim. A conspicuous finger-impressed design across the neck. Narrow horizontal ribbing across the body. The base is flat. H. 21.0cm, maximum body Diam. 18.0cm. Not preserved in the Tortugas collection.

Tortugas Type 19A (Fig. 121A)

Unglazed Merida-Type Costrel (90-1A-002960, grid no. 73.21/13.56)

A standing costrel with a flat base, pear-shaped body and very narrow neck, the rim no longer preserved. Distinguished by two tall strap handles, sharply bent downwards, unusually with upper lugs that do not merge directly onto the body wall but are awkwardly highly raised. Low set, wide corrugation across the body. H. 26.5cm, Diam. 17.0cm. Not preserved in the Tortugas collection.

Lead-Glazed Coarse Wares (Types 19B-22)

Tortugas Type 19B (Figs. 9C, 115-116)

Green-Glazed Merida-Type Costrel (TOR-90-00071-CS, grid no. 76.51/12.16)

Highly coarse standing costrel, with a single handle preserved, covered by a heavy dark green glaze (surviving in patches, including on the interior upper body area), with only the base and one side of the body up to the handle intact; the neck and rim missing. Originally two-handed (as Tortugas Type 19A). Remains of a 0.25cm-wide ridge depression at the lower neck/upper body transition point. The handle is broken off but was recovered. Heavily waterworn base that consists of two tiers, a lower wide base that narrows to a second level separated by depressed ridges on either side. The clay fabric is micaceous. Grouped through ICPS analysis with Tortugas Type 12 one-handle Merida-type jug made from non-calcareous clay with very high aluminium and high potassium levels. Thus, Type 19B may be defined as of similar Merida form. Red fabric (2.5YR 6/8) with dark green glaze. Surviving H. 31.9cm (to top of reconstructed handle), handle L. 13.3cm, handle W. 3.5cm, handle Th. 1.9cm, Th. at neck juncture 0.5cm, Th. at lower body 0.8cm, base Diam. 12.8cm, base H. 2.0cm, base Th. 0.8cm, 1,399 grams.

Tortugas Type 20 (Figs. 9D, 35A, 117)

Green-glazed Half-Dipped Jug (TOR-90-00016-CS, grid no. 76.32/11.73)

An elegant small jug characterized by a pinched pouring rim (set 62° off horizontal) and a single handle set between the lower shoulder and the midpoint of the neck, where the upper lug is supported by a thickened ridge. The pear-shaped body descends to a flat, gently flared base. The vessel is half-dipped. Green glaze coats the vessel between the top and bottom of the shoulder, including the handle. The body is entirely unglazed from the upper shoulder downwards, but is covered by broad ribbing (crests 0.9cm apart). A length of glaze is isolated at the lower body across half the vessel width. Grouped through ICPS analysis in the high magnesium group, which suggests an origin 18-24km west of Seville. Soft, finely levigated reddish yellow clay (5YR 7/8). H. 18.1cm, Diam. 11.9cm, mouth L. 5.1cm, mouth W. 5.1cm, rim Th. 0.65cm, handle L. 9.4cm, handle W. 2.1cm, handle Th. 1.6cm, base Diam. 8.4cm, 572 grams.

Tortugas Type 21 (Figs. 6D, 118)

Lead-Glazed Jug (TOR-90-00040-CS)

A heavy bodied bottle, no handles, complete except for the very narrow rim, with a narrow flat base and convex kick. Undecorated but covered with eight deep corrugations between the shoulder and lower body (sharp crests set 0.9cm apart). Lightly glazed with a dark brownish yellow enamel, which ends just above the base. H. 14.8cm, mouth external Diam. 3.2cm, body Diam. 11.1cm, neck Th. 0.61cm, body Th. 0.58cm, base H. 0.9cm, base Diam. 5.3cm, 490 grams.

Tortugas Type 22 (Figs. 26, 119, 120)

Lead-Glazed Jug (TOR-90-1A-001965)

A short green-glazed small jug, almost symmetrical with the diameter of the wide open mouth replicating the base width. A tall vertical neck with almost non-existent rim, very mildly everted and thickened (set 69° off horizontal), above a round body covered with horizontal ribbing, and a short base. H. 13.7 cm, mouth Diam. 7.1 cm, rim Th. 0.9 cm, maximum body Diam. 10.9 cm, base Diam. 7.5 cm, 400 grams. Mel Fisher Maritime Museum collection.