IMAGE: Favignana Museum. EISP

Battle *of the* Egadi Islands

Where the First Punic War was won

Professors **Jeff Royal** and **Sebastiano Tusa** reveal evidence of the sea battle that changed the course of history, paving the way for 700 years of Roman domination.

In 241 BC, the Roman and Carthaginian fleets squared up to one another within sight of the Sicilian shore, and battle commenced. By the time the fighting was over, the tide of war had turned, and 24 years of conflict were brought to an end in a dramatic finale to the First Punic War. Rome, the victor, had seen off her Carthaginian foe, who fled home to the north coast of Africa. But, once the victor and the vanquished had departed, all evidence of battle was lost beneath the waves.

Historians long suspected that this momentous battle had taken place in the waters around the Egadi islands, visible from Trapani on the north-west coast of Sicily. But there was no archaeological proof. Evidence of sea battles is notoriously difficult to find: in fact, no battlefields at sea have ever been confirmed. But, in 2002, the local Carabinieri raided a private collection and recovered a bronze warship-ram which, it was claimed, was found by fishermen near Levanzo, smallest of the three Egadi islands. The ram (Egadi 1) was handed to the Soprintendenza del Mare of Sicily, Sebastiano Tusa. Two years later, a fisherman snagged a bronze helmet in his nets in the same spot.

Tusa decided the area was worth a closer look. That is where Jeff Royal and the RPM Nautical Foundation came in. Together, Tusa and Royal formed the Egadi Island Survey Project (EISP) as a co-operative joint endeavour to locate the landscape of the battlefield, and to recover any surviving remains.

The EISP has now completed seven seasons of fieldwork, on board the

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LEFT The First Punic War ends at sea.
RIGHT The emblem for 'Victoria' on the cowl of the Egadi 6 bronze ram.

RPMNF's research ship, the *Hercules*, which is kitted out with multi-beam echosounder mapping equipment, a Remotely Operated Vehicle (ROV), and an Autonomous Underwater Vehicle (AUV) that can enter the water to verify any anomalies. So far, they have mapped more than 270km² of seafloor, and the search area has been extended to include the western side of Favignana Island.

Finding the battlefield

The Egadi islands lie on what was a well-travelled route between Italy and North Africa throughout Antiquity. In 241 BC, Hamilcar Barca – father of Hannibal, who famously took his elephants across the Alps during the Second Punic War a generation later – was the commander in charge of the Carthaginian fleet. His base on Sicily was at Mt Eryx, just inland from Bonagia Bay on the north of the island. It was there that he was heading, from his anchorage on Marettimo Island, on the fateful day. Tusa and Royal reasoned that his fleet would have had to sail past Levanzo Island. Moreover, Punic finds had already been recovered around the area of Bonagia Bay, as well as several anchors off the north-east coast of Levanzo. These clues, then, all pointed to this being a probable location for the warships to clash, and so it was here that they concentrated their search.

In 2008, the archaeologists recovered a second bronze ram, Egadi 2, along with several Greco-Italic *amphora* fragments from the seabed just north-west of Levanzo Island. Though found in the same location, it was not immediately clear whether the *amphora* sherds were associated with either the ram or the battle landscape. Examination of marine growth on the artefacts as well as evidence of damage on the seabed caused by trawler fishing, suggested that the remains had been dragged north by fishing nets, and, therefore, that this was a secondary location. The primary location had to be further to the south, so the search for the elusive battlefield continued.

In 2010, the team finally came across a Punic *amphora*, lying on its side on the seafloor, exactly as it had come to rest in 241 BC. The site, just west of Levanzo Island's northern tip, lies about 6km south-east of the location where the Egadi 2 ram had been found two years earlier. The team soon began identifying several more examples of mostly Greco-Italic *amphorae* scattered to the north and east. Then, on the final day of the season, a sweep of the area with the ROV's sonar yielded a nearby target: the crew had found their third ram. Egadi 3 lay on its port (left) side, clearly exposed on the surface of the seabed. Though frustrating for the archaeologists, there was nothing more they could do until the following season, so Egadi 3 was left *in situ* until they could return the next year to begin a thorough search of the area.

The 2011 season proved to be a particularly successful and rewarding time: three further bronze rams were located – Egadi 4, 5, and 6 – as well as several bronze helmets, hundreds of Greco-Italic ›

ABOVE Sebastiano Tusa (left) and Jeff Royal (right) examine one of the bronze helmets found on the only known sea battlefield yet discovered, the scene of the momentous Battle of the Egadi Islands off the coast of Sicily.
ABOVE RIGHT On board the *Hercules,* using equipment to monitor the sea floor.
RIGHT The research ship *Hercules.*

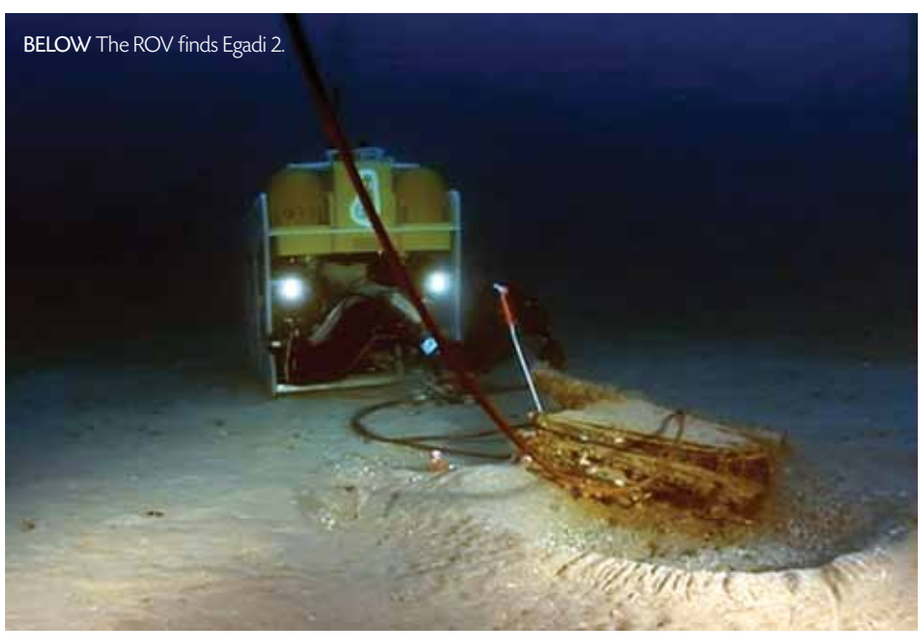
amphorae, and a smaller number of Punic *amphorae*. The same year, another ram, Egadi 7, was handed over to the team by fishermen. The decoration and epigraphy on Egadi 7 matched the style of those recovered by the EISP team and, according to the fishermen, was found in the area in which the team was now working.

In the last two seasons – in 2012 and 2013 – four further rams were located: Egadi 8 and 11 have been recovered; Egadi 9 and 10 are due to be raised this year. So far, the team has mapped the locations of all the rams found *in situ*, along with 12 helmets, more than 350 *amphorae*, and a possible stone anchor. As a result, the EISP team are now able to confirm the location of at least one conflict site from the Battle of the Egadi Islands.

The battle landscape lies about 7km west of Levanzo Island, and just over 6km south-south-east of the findspot for the Egadi 2 ram – and the location given by the fishermen who found Egadi 7 – and stretches from the edge of the open, sandy sector scarred by dragging nets to the rocky area further west. Unlike battles on land, battles at sea take place over a wide area, and in more than one place at a time. This battle landscape, called PW-A, covers more than 4km^2 thus far: with further study, it could extend from Marettimo Island through the other two Egadi islands, along the west coast of Sicily from Marsala (Lilybaeum), around Trapani (Drapanum), to Bonagia Bay and Erice (Mt Eryx). The EISP team believes the site where the warships clashed, area PW-A, continues still further west: snagged and damaged fishing nets found in the rocky area to the west suggest it is not safe for fishing activity, so was avoided by fishermen and thus left undisturbed. As a result, any deposits here from the battle event remain *in situ*. It is a different story further east, sadly, where no artefacts have survived the effects of drag-net fishing.

Going down fighting

It is possible that the Carthaginian ships were more susceptible to sinking than their Roman counterparts because they would have been overloaded with relief supplies; finds of tiles suggest the possible presence of hearths on board, which also would have contributed to their load. The dispersal pattern of *amphorae* and the angle at which they are found on the sea floor suggest they fell from the water's surface. When a cargo ship sinks, the contents tend to be contained within the hold, so that the



BELOW The ROV finds Egadi 2.

LEFT One of the crew cleans and labels an *amphora* that has been retrieved from the seabed.
ABOVE Marine growth on the *amphora* provides the archaeologists with clues about primary and secondary locations of finds. Most of the *amphorae* recovered were intact, though their stoppers had been lost.

gradual degradation of the wooden hull leaves behind it a fairly neat mound of *amphorae*.

Here, however, even in the most concentrated part of the 4km^2 battle landscape, the *amphorae* are scattered in a random pattern consistent with the contents spilling out and drifting from the hold of a capsized vessel: there are no clusters of *amphorae* lying on top of each other, or even touching one another.

Most were recovered intact. A few years after settling on the sea floor, their stoppers would have fallen out, and over the centuries these open vessels have made ideal shelters for octopus squatters. Octopuses pull in any objects they can find around their homes to create a protective barrier from predators. Jeff Royal told *CWA*, 'The octopuses are, in effect, the first archaeologists on the site: we find numerous small finds that they have collected in their *amphora*-homes, including bronze helmet cheek-pieces, tableware, tile fragments, ships' nails, ballast stones, and pieces of bronze.'

The wood of the warships has long since been eaten by toredo worms, leaving only the bronze rams. The archaeologists believe these rams were still attached to their ships when they sank, as previous studies have shown that it is improbable any force generated in Antiquity could rip the bow off a warship. Moreover, at Egadi, the remains of structural attachments and wood, as well as marine growth-patterns and nail concretions, all show that the rams were fixed to their respective warships when they went down. Certainly, analysis of the Egadi 3 ram shows the cavity was filled with wood for some time after it sank to the seabed, and there are wood remains within each of the rams recovered *in situ*.

All the Egadi rams have the same basic features: a driving centre comprised of two wale sockets, with three horizontal fins running from the head to the trough, a bottom plate, and a cowl. The bottom plate on the underside of the ram housed and protected the keel, while the cowl on the upper section slopes upward from the head to its maximum height at the trough. They were manufactured using the lost-wax method, whereby a wax model of the ram is encased by a mould. The wax is rendered out by heat, and bronze is poured into the cavity left behind.

BELOW Egadi 3 ram, lying on its port side at the bottom of the sea.
RIGHT Egadi 3 ram is raised to the surface.
FAR RIGHT Looking at the Egadi 3 ram, now cleaned, head on, it is easy to imagine the damage these beasts could inflict.

LEFT Jeff Royal examines the Egadi 4 ram on the deck of the research ship *Hercules*.
ABOVE A bronze helmet lies on the seabed.

Battle scars

All the rams, except Egadi 1, show evidence to varying degrees of battle damage incurred at the head of the rams. Marine growth-patterns, X-ray fluorescence (XRF) spectrometer analysis, as well as the pattern of indentions and cleaving – forces necessary to damage bronze – indicate this damage happened at the time the ships went down. Some of these indentations bear dramatic testimony to the frightening ferocity of war at sea, with opposing sides clashing head-on in ram-to-ram collisions.

At least two of the Egadi rams have hull timbers from enemy warships trapped between their fins at the head: the length of these shards of wood show that the rams were deliberately targeted at the hulls of opposing warships, ripping great holes into their sides. The noise of battle as the rams tore into the wooden hulls must have been tremendous, and the terrifying nature of the fighting is easy to imagine when looking at these great chunks of bronze that are capable of such catastrophic destruction: for once a hull was breached, it lost its structural integrity – especially devastating for long, narrow warships – and the ship would be split in two.

Detailed 3-D models of these rams and warships are being coordinated by Jeff Royal, with team-member Peter Campbell, a PhD student at the University of Southampton, directing the ram-modelling. From reconstructions, it is possible to see that the 3rd-century BC warships were smaller than had been previously thought. Calculations based on the timber dimensions that fit the Egadi rams suggest these ships were actually only 25-28m long. Yet the Greek historian Polybius, writing about the First Punic War, states that the ships used were *quinqueremes*, or 'fives', generally believed to be about 45m long; while reconstructions, based on iconography, of the smaller *triremes*, or 'threes', suggest they were about 40m in length. This discrepancy is puzzling: Prof. William Murray, team-member and ancient historian at the University of South Florida, suggests it could be simply that Polybius deliberately omitted to mention the smaller warships such as threes, which were plentiful in ancient fleets, for some agenda of his own. But the archaeological evidence is unequivocal: 'These rams provide the first and only direct archaeological evidence for warship dimensions from this war. Either the warships were fives and were much smaller than traditionally postulated – an unlikely scenario – or Polybius was incorrect,' explains Royal.

ABOVE Egadi 8 ram sits upright on the sea floor.
RIGHT Egadi 11 ram is raised.

Six of the eight rams with intact cowls examined so far have decorative features: rams Egadi 4, 6, and 11 each has a female depiction of victory (Victoria) on the upper cowl face; on Egadi 7, 8, and 10, the figure of Victoria is replaced by a helmet with three feathers on its crest. These six rams also have Latin inscriptions running along the length of the cowl, which match the decorative features: on Egadi 4, 6, and 11 rams, the letters list two *quaestors*; whereas on Egadi 7, 8, and 10, with a helmet and feathers, only one *quaestor* is mentioned. This single *quaestor* has the same surname as one of the two on the Victoria rams, but as yet there is no historical evidence to suggest they are the same person, or even related.

More confusingly, recent research has shown that no *quaestors* were actually in charge of the Roman navy, so the significance of these names is yet to be

WINNING THE WAR

By 241 BC, Rome and Carthage had entered the 24th year of conflict in what is now known as the First Punic War. A year earlier, Rome had embarked on what was hoped would be a decisive effort at sea to end the conflict. Now the fleet was complete, crews trained, and a trap set within the Egadi islands. The Romans had intelligence on the enemy fleet: under Admiral Hanno, the Carthaginians planned a supply mission for their forces under General Hamilcar Barca, who was besieged on the west of Mt Eryx. The Romans planned an ambush, as the Greek historian Polybius relates in *The Histories* (1.60.3-61.2):

Hanno set sail and reached the so-called Holy Isle from whence he designed to cross as soon as possible to Eryx, unobserved by the enemy... Lutatius, learning of Hanno's arrival and divining his intention... sailed to the island of Aegusa which lies off Lilybaeum... In the morning, he therefore decided not to let the opportunity slip. When he saw the Carthaginian ships under full sail, he at once got under way... he soon brought his fleet into a single line with their prows to the enemy. The Carthaginians, seeing that the Romans were intercepting their crossing, lowered their masts and... closed with the enemy...

Laden with supplies destined for the beleaguered land forces, and caught off guard, the Carthaginians were easily out-manoeuvred by the speedier and less encumbered Roman ships, resulting in disaster not only for the fleet, but also for Hamilcar and his besieged troops, who were denied their vital supplies.

determined. But the difference between the two inscriptions does indicate that the ship-building programmes took place at different times.

Egadi 1 is the only ram found so far that has a design featuring two moulded rosettes on both the port and starboard fin plates. It is also unique in that it is the only ram to have an official stamp on the underside, which attests to the bronze having been cast by the *sex viro* (board of six men).

Close scrutiny of the undecorated cowl of Egadi 3 revealed a Punic inscription, apparently incised with a stylus directly into the original wax model. The letters seem to refer to Baal, though the inscription is currently under analysis. This ram also appears less polished than most of the others: like the Egadi 2 and 5 rams, marks made during construction have been left unsmoothed.

Friend or foe

So, who was aboard these ships when they went down? All six rams with Latin inscriptions are of Roman manufacture, but, significantly, they are from two different building programmes. And although we know that ships with these rams were the work of Roman shipwrights, it does not necessarily follow they were all manned by Roman crew in 241 BC.

In 249 BC, the Roman fleet was soundly beaten at Drapanum: 100 Roman ships were captured by the Carthaginians and folded into their own fleet. The ships were not replaced until 242 BC, when a single ship-building programme was put into effect to produce a fleet in preparation for this final battle. Jeff Royal explains: 'In 241, the Carthaginians scrambled to prepare a relief fleet and undoubtedly utilised some, if not all, of these captured Roman warships. Hence, at the Battle of the Egadi Islands, Roman warships were likely attacking those built by Rome but now manned by Carthaginians.'

BELOW A fish peeks out from a 3rd-century BC *amphora* that lies undamaged on the sea floor.
BELOW LEFT The Egadi 6 bronze ram.

But where is the evidence? All sailing ships require ballast, including warships, which are sailed more often than they are rowed. Stones, probably used as ballast, have been recovered from the battle landscape area, and early analysis suggest that they come from Tunisia.

The EISP team have recovered two types of *amphora*, Punic and Greco-Italic V/VI, each in circulation during the mid 3rd century BC. We know that both styles were manufactured in Tunisia and western Sicily, and that the Greco-Italic types were also made in Campania. Though results are still awaited from petrological analysis, the Punic inscription *rosh tau* on one Greco-Italic example suggests that these *amphorae* were made either in Tunisia or western Sicily, and were carried on board the Carthaginian ships as part of the supplies destined for Hamilcar Barca.

LEFT & BELOW An exhibit to represent the placement of a bronze ram, in this case Egadi 3, on a warship.

ABOVE One of the bronze Montefortino-style helmets recovered from the battlefield at sea. CENTRE An EISP team-member cleans the bronze helmets recovered in the same area as the Egadi 6 ram. RIGHT This bronze helmet is of a type unseen before, possibly the first Carthaginian example of a 3rd century BC helmet yet found.

Hugely exciting are the ten helmets that have been recovered so far, along with the one brought up by fishermen in 2004, and two cheek-pieces – both for the left side and therefore belonging two separate helmets – as well as a connection hinge. All were found in association with the Egadi 6 ram, all were scattered across the sea floor in a pattern similar to that of the *amphorae*, and all but one are the Montefortino type.

The Celtic-style Montefortino helmets originated in Gaul, but were adopted by the Romans throughout the 4th and 3rd centuries BC, and eventually became army standard-issue under the Republic. However, we also know that the Carthaginians employed Celtic mercenaries, as well as those from southern Italy, so the helmets alone are not enough to identify the allegiance of their former owners. These are the tallest helmets yet recorded, and very different from those typically associated with Roman forces, adding weight to the possibility that they are Carthaginian. On one, a graffito on the crest boss appears to be a Celt-Iberian 'E' or a Punic 'he' (H). Only one helmet found does not conform to the Montefortino type and, says team-member and armour expert Prof. Andrew Goldman, has no known parallel: it may be the first example of Carthaginian armour yet found.

Where history was made

The corpus of ram, *amphora*, and helmet finds, their depositional characteristics, and evidence of their condition all support the theory that this is the location of the final battle of the First Punic War in 241 BC. The evidence confirms Polybius' account of Roman and Carthaginian warships meeting amid the Egadi islands, and clashing with ramming tactics; he describes Carthaginian warships laden with supplies sinking beneath the waves, and ships being lost on both sides. The Battle of the Egadi Islands was a turning-point: the long and damaging First Punic War was over, Rome was established as the dominant power in the Mediterranean, and thus began its long and successful military expansion.

The Egadi Island Survey Project is also a turning-point for the archaeologists: for the first time, a battlefield at sea has been identified and studied. Continued fieldwork and further artefact-analysis will add greatly to our knowledge and understanding of this important moment in history. Moreover, there is now direct archaeological evidence for an important area of research: ancient warship construction, tactics, and deposition. ◘

SOURCE Prof. Jeff Royal, Director of the RPM Nautical Foundation.

LEFT The Egadi 10 ram on the seabed. BELOW These bronze naval rams could rip through the wooden hulls of enemy ships, as testified by the splinters of wood caught in the fins of Egadi 8 ram, shown here.