

HMQS *Mosquito*: the rediscovery and identification of Queensland's first warship

James William Hunter, III

Maritime Archaeology Program, Department of Archaeology, Flinders University, Adelaide, South Australia 5001

In 2009, the remnants of Her Majesty's Queensland Ship *Mosquito*, a 2nd-class torpedo-boat built in 1883, were relocated. Purchased by the colonial government of Australia in response to heightened tensions between Great Britain and Imperial Russia, *Mosquito* was assigned to Queensland's capital, Brisbane, where it had a largely uneventful career. Following removal from active duty it was stripped and abandoned on the foreshore of a tributary of the Brisbane River. This paper discusses *Mosquito*'s historical background, and chronicles the rediscovery of the vessel, and the archaeological investigation and identification of its remains.

© 2010 The Author

Key words: torpedo-boat, Australia, 'Russian Scare', 19th century, vessel abandonment, Flinders University.

In October 2009 researchers affiliated with Flinders University and the Queensland Maritime Museum relocated remnants of Her Majesty's Queensland Ship (HMQS) *Mosquito* within a mangrove swamp near the Australian city of Brisbane. *Mosquito* was a 2nd-class torpedo-boat constructed in 1883 by J. I. Thornycroft & Co. of Chiswick, London and delivered to the Anglo-Australian colony of Queensland the following year. The vessel was one of several purchased by the colonial governments of Australia and New Zealand in response to heightened tensions between Great Britain and Imperial Russia, and subsequent fears of assault and invasion of Australasian ports by the Russian Navy. *Mosquito* was assigned to Brisbane, where it spent a largely uneventful service career. Following deletion from the active duty roster in 1913, it was stripped and abandoned on the foreshore of Boggy Creek, a wetland tributary of the Brisbane River. The site appears to have remained largely undisturbed until 1966, when it was photographed and portions of its hull removed. Fortunately the photographs and recovered hull components were later donated to both the Queensland Maritime Museum and Queensland Museum, where they were integrated into the respective collections of each institution, and consequently made available for examination by the author.

The recent effort to relocate and document *Mosquito*'s remains was spurred by research that seeks to identify cultural factors which influenced the deployment and subsequent discard of boats and other military materiel associated with colonial Australasia's torpedo-boat squadrons. A key component of the project has been to positively identify individual

torpedo-boat abandonment sites, and to establish their location relative to property historically owned and/or controlled by the military within their respective colonies. Of particular interest is whether these vessels were discarded on, or in close proximity to, the torpedo-boat station(s) to which they were formerly assigned. With this overall goal in mind, the immediate purposes of the 2009 survey were to pinpoint the location of the abandoned-boat site photographed in 1966, and either to confirm or refute its identity by comparing recovered archaeological data with existing archival descriptions of *Mosquito*.

Australia's 'Russian Scare'

In 1869 Great Britain announced the near-complete withdrawal of Imperial troops from its colonies in Australia, the result of a refusal by the continent's colonial governments to continue to maintain the presence of British soldiers on their soil at public expense (Nicholls, 1988: 55). By August the following year the last remnants of the British Army embarked for home, forcing many Australians to consider matters of colonial defence, particularly as they applied to attack from the sea by foreign powers. Australia's vulnerability to naval assault had already been demonstrated by several unannounced visits to its waters by Russian warships in the 1860s, the most notable of which was the arrival of the flagship of the Russian Fleet, *Bogatyr*, at Sydney and Melbourne in 1863 (Nicholls, 1988: 38, 60–61, 94; Cooke, 2000: 36–8). Frequent rumours of a Russian naval squadron operating 'somewhere in the Pacific Ocean' served further to fuel

speculation about, and to a certain degree fear of, perceived Russian designs on the Australian colonies (Colwell, 1973: 72; Wimmer, 2008: 13).

Threat of direct confrontation between Great Britain and Russia—the first since the Crimean War—appeared imminent in 1876, when British Prime Minister Benjamin Disraeli sided with the Ottoman Empire against Russia over the latter's alleged atrocities against Muslims in the Balkans during the Bulgarian April Uprising (Nicholls, 1988: 72; McCarthy, 2000: 44; Hupchick, 2004: 264). In response, each Australian colony created committees and commissions tasked with examining its defensive capabilities. This differed very little from the collective Australian reaction to previous war scares, with one critical exception: a unanimous appeal to the British government for a respected military planner to advise the colonies on developing their own defensive networks. The Colonial Office in London responded by appointing Sir William Jervois of the Royal Engineers to serve as Defence Advisor to the Australian Colonies. Lieutenant-Colonel Peter Scratchley, also of the Royal Engineers, was sent to assist Jervois. The two men commenced a ten-month review of Australian colonial defences in May 1877.

In the assessments that resulted from these inspections, Jervois and Scratchley argued against the probability of full-scale foreign invasion of Australia, due to its great distance from potential aggressors (the nearest Russian naval base, cited as one example, was located at the Siberian port of Vladivostok). However, they also noted that the colonies were susceptible to seaborne raids on their principal ports by small naval flotillas. The worst that any colonial Australian port could expect to endure would be the capture of merchant ships for the purpose of extortion, or bombardment of towns and cities within range of the aggressor's shipboard artillery. Landing of enemy troops, while always a possibility, would occur in limited numbers and with a practically nonexistent supply-line, meaning that any occupation of Australian cities or towns would be temporary in the most dire of circumstances. Consequently, both men advocated sea-power as each colony's first line of defence (Nicholls, 1988: 72–4, 78–84).

Jervois and Scratchley's plan for Australia's defence was published in November 1879, but it would take another unannounced visit to the continent by the Russian navy before it was seriously acted upon (Jones, 1995: 182). In 1881 the warships *Afrika*, *Vyestnik* and *Plastun* paid a visit to Sydney and Melbourne, as well as Hobart and Glenelg (near Adelaide). These vessels comprised the vanguard of a permanent Pacific-based Russian naval squadron headquartered at the Japanese port of Nagasaki. Shortly after their departure from Australian waters, Melbourne newspaper *The Age* ran a series of articles which questioned the Russians' motives and roundly criticised local defences. Foremost among the stories published in this and other Australian news-

papers was a report that the flotilla's commanding officer, Rear-Admiral A. B. Aslanbegov, had transmitted details of Melbourne's defensive capabilities and weaknesses to his superiors back home via telegraph (Fitzhardinge, 1966; Nicholls, 1988: 94; Massov, 2008: 3). While this was later proved to have been a hoax, the Russian navy's unannounced arrival, and the realisation that its ships were within easy striking distance of Australia's wealthiest port cities, almost certainly influenced parliamentary decisions later the same year in South Australia, Victoria and Queensland to purchase naval craft for their maritime protection (Nicholls, 1988: 94–5; Jones, 1995: 182).

HMQS *Mosquito* and Queensland's defences

Queensland, which includes Australia's vast expanse of north-eastern coastline (Fig. 1), was relatively undeveloped in the late-19th century. Collectively, the colony's small population, capital city, and revenue were considered to 'not present so tempting an object of attack as either [the colonies of New South Wales and Victoria]' (Nicholls, 1988: 81). Nevertheless, Jervois suggested that the colony should purchase a 'good, swift vessel' for the purpose of protecting the coast from enemy gunboats and privateers, and should complement it with torpedo defences in Moreton Bay (at the mouth of the Brisbane River). The latter would include ground torpedoes (stationary mines) moored in three lines across the bay to protect the river-mouth, as well as a small vessel fitted with spar-torpedoes which could be used to attack enemy warships (Nicholls, 1988: 82).

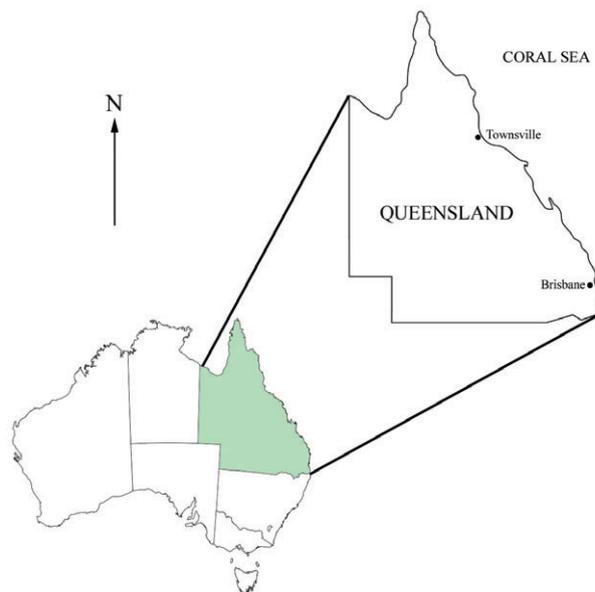


Figure 1. Map of Australia, with Queensland indicated in green. Inset shows the locations of colonial Queensland's two largest settlements, Brisbane and Townsville. (author)

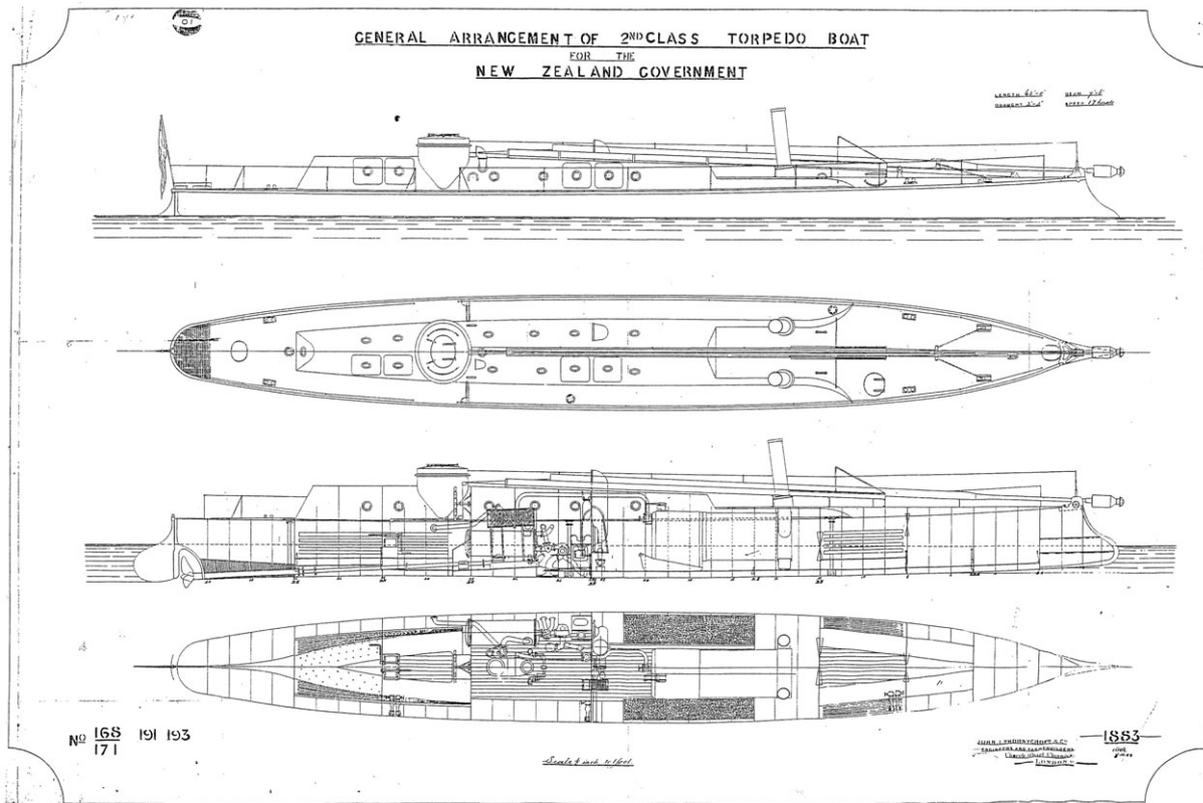


Figure 2. General schematic arrangement of Thornycroft 2nd-class torpedo-boats constructed for the colonial New Zealand government (vessel nos. 168–171). *Mosquito* (vessel no. 193) was built to an identical design. (reproduced by kind permission of the Thornycroft Torpedo-Boat Museum)

The ‘small vessel’ Jervis advocated was a torpedo-boat. These were manoeuvrable, diminutive, steam-powered craft specifically designed to harass large vessels-of-war within the confines of harbours and inland waterways. The ‘spar-torpedo’ that comprised the boat’s business end was essentially a canister containing a large quantity of black powder attached to its bow via a long pole or ‘spar’. When initiating an attack, the torpedo-boat’s crew would extend the spar forward of the bow, lower the attached explosive charge into the water, and attempt to detonate it against the hull of an enemy vessel below the waterline (Gray, 1975: 79–80; Adlam, 1981: 25; Gardiner, 1992: 135). First used in combat by Confederate forces during the latter half of the American Civil War (1861–1865), torpedo-boats had developed into a popular and widely-used form of auxiliary naval craft by the 1870s (Gray, 1975: 142–3; Gardiner, 1992: 135). The two largest manufacturers of torpedo-boats during this period, J. I. Thornycroft & Co. and A. Yarrow & Co., were based in London and boasted an impressive clientele that included the national navies of Great Britain, France, Italy and Russia (Gray, 1975: 141; Gardiner, 1992: 139–42, 325–7).

Towards the end of 1882, Queensland’s parliament approved funding for the purchase of two gunboats, *Paluma* and *Gayundah*, from the British firm of Sir W.

G. Armstrong, Mitchell & Co. In August the following year the colonial government contracted with J. I. Thornycroft & Co. for construction and delivery of a 2nd-class torpedo-boat. The vessel, designated ‘torpedo-boat no. 193’, was purchased for £3300 and constructed according to the same design parameters as four Thornycroft torpedo-boats bought by the colonial government of New Zealand in 1882, and one procured by Tasmania the same year (Fig. 2). The hulls of these vessels were constructed of 1/16-inch (1.6 mm) galvanised steel plate, exhibited an overall length of 63 ft (19.2 m), maximum beam of 7 ft 6 in (2.28 m), and displacement of 12 tonnes. Each boat’s draught measured 13 inches (33 cm) forward and 3 ft 2 in (96 cm) aft. A Thornycroft-built inverted direct-acting compound engine capable of generating 166 horsepower supplied motive power. Torpedo-boat no. 193 was launched on 11 July 1884 and underwent trials two weeks later on 25 July, during which it attained a speed of 17 knots over the measured mile (*Brisbane Courier*, 10 October 1884; Gillett, 1982: 33–5; Jones, 1995: 187–91).

On completion of its builder’s trials, torpedo-boat no. 193—rechristened *Mosquito*—was loaded aboard the British India Company steamship *Duke of Sutherland*. The steamer departed Gravesend for Australia on 13 August 1884, and arrived in Brisbane’s roadstead

almost exactly eight weeks later on 9 October. *Mosquito*'s delivery heralded the arrival of the colony's first warship, since *Paluma* and *Gayundah*, which had been ordered earlier, would not arrive in Queensland for another year. On 11 October 1884 *Mosquito* was launched from *Duke of Sutherland*'s deck and piloted to the Post Office wharves in downtown Brisbane to receive an overhaul (*Brisbane Courier*, 13 October 1884; [Hobart] *Mercury*, 18 October 1884). Surprisingly, no facilities for the torpedo-boat's storage and upkeep existed when it arrived in Brisbane, although the local press reported in late October 1884 that the government had moved to 'erect a boatshed, with requisite slip and winch' to accommodate the new naval vessel (*Brisbane Courier*, 25 October 1884). Initially, *Mosquito* was moored in the Brisbane River near the naval stores facility at Kangaroo Point, but was eventually moved to a boatshed and slipway constructed for it along the city's waterfront immediately adjacent to Parliament House (Figs 3 and 4).

On 11 March 1885, shortly after entering into operational service, *Mosquito* was involved in an embarrassing incident that highlighted the need for skilled crew to operate the vessel safely. The boat, under the command of Lieutenant Drake, RN, engaged in a demonstration run on the Brisbane River with several dignitaries aboard, including the Colonial Secretary and Queensland Premier. The trial run, during which *Mosquito* acquired a top speed of 14½ knots moving against the tide, was reportedly 'quite exhilarating' and

'considered very satisfactory' by all present (*Brisbane Courier*, 12 March 1885). However, shortly after the boat returned to Queen's wharf and the dignitaries were dropped off, miscommunication between Drake and *Mosquito*'s engineer caused the latter to prematurely put the boat's engine into gear. The resulting lurch caught off-guard another guest who had come aboard the torpedo-boat, and he was thrown into the river. Fortunately, a quick-thinking member of the *Brisbane Courier*'s staff—who was aboard *Mosquito* reporting on the demonstration—jumped into the water and rescued the victim ([Melbourne] *Argus*, 12 March 1885; *Brisbane Courier*, 12 March 1885).

For the remainder of the 19th century *Mosquito* was alternately engaged in naval exercises with other vessels in the Queensland Marine Defence Force (such as *Paluma* and *Gayundah*), or inactive within its boatshed at Parliament House. In June 1888 *Mosquito* was complemented by Queensland's second torpedo-vessel, a wooden-hulled 'turnabout' picket-boat christened *Midge*. Like its forebear, *Midge* was constructed by a British firm (J. S. White of Cowes, on the Isle of Wight) and transported to Queensland on the steamer *Duke of Sutherland*. It also carried similar armament, including spar-torpedoes and two twin-barrelled 1-inch Nordenfelt machine-guns (*Mosquito* was armed with a single Nordenfelt of the same type and calibre). On arrival in Queensland, both torpedo-vessels were modified with davits, tackle, and dropping-gear to carry two 14-inch Whitehead torpedoes, early self-propelled variants



Figure 3. *Mosquito* (foreground) moored off the Queensland Marine Defence Force Naval Depot at Kangaroo Point, c.1889. (reproduced by kind permission of the Mitchell Library, State Library of New South Wales)

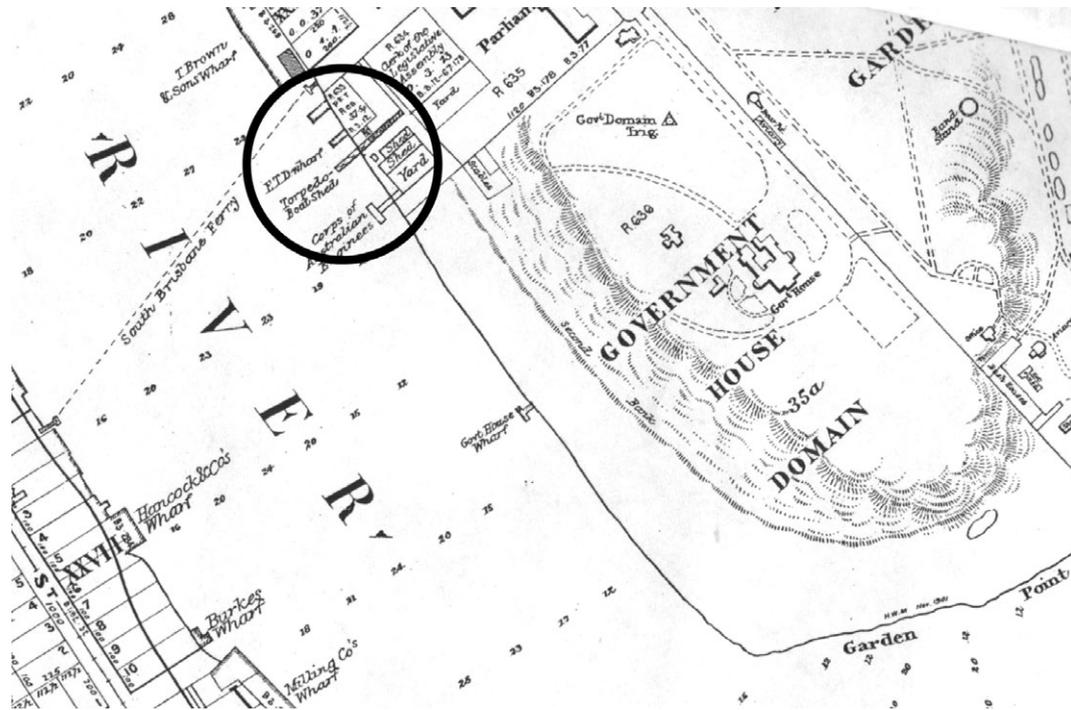


Figure 4. Undated map of Brisbane, showing location of *Mosquito's* boatshed and slipway (circled). (reproduced by kind permission of the Queensland Maritime Museum)

fundamentally similar to modern torpedoes (Gillett, 1982: 34–6, 52–4).

The standard attack scenario when using Whitehead torpedoes called for the torpedo-boat to approach an enemy vessel at full speed, stopping only as both weapons were simultaneously released from their dropping-gear via levers manipulated by the boat's crew. The torpedo-boat would then go full astern as a tripping-lever activated within each torpedo by the dropping-gear released compressed air into its engine. By the time each torpedo's engine filled with enough compressed air to send it forward towards its target, the torpedo-boat would be well astern and—barring any significant malfunctions in the steering and/or detonating mechanisms of one or both torpedoes—clear of danger (Jane, 1898: 20; Gray, 1975; Adlam, 1981: 25–6, 28–9; Gillett, 1982: 34; Gardiner, 1992: 136–7).

All 2nd-class torpedo-boats used by the colonial navies of Australia and New Zealand participated in drills and exercises designed to familiarise crews with the boats and their armament, and to simulate the conditions under which they would engage enemy vessels in combat. However, *Mosquito* was one of only a handful of these vessels known to have conducted a 'live-fire' test with spar-torpedoes. In one reported case, the vessel's crew successfully 'attacked' a wooden pile in the Brisbane River by putting the engine full astern as *Mosquito* closed within a short distance of its target, thereby checking its forward momentum in such a manner that the spar-torpedo 'neatly touched

the target' (Adlam, 1981: 29). *Midge* was also successfully employed in live spar-torpedo demonstrations. The description of one such exercise provides an idea of how these weapons were used, as well as their destructive power:

When the *Midge* had arrived opposite Milton, speed was slackened. Mr Morgan then instructed the men how to act in attacking a man-of-war, and the starboard crew rigged out their spar, submerging the torpedo about 10 ft. On the word of command being given the torpedo was fired by Sub-lieutenant Benson, and almost simultaneously with the firing the boat was taken full speed astern. A loud report followed, and an immense volume of water was thrown up about 50ft high. After the spar had been rigged in, the *Midge* returned slowly to the spot, and the port crew fired their torpedo in the same successful manner. The water was terribly disturbed, and numbers of fish which had been stunned by the concussion were seen floating on the surface. The iron work of the spars was fearfully shattered, and the ends of the spars were very much splintered (*Brisbane Courier*, 6 August 1888).

Both torpedo-boats frequently operated in conjunction with one another when conducting exercises, and occasionally served as training platforms for visiting members of the Townsville Naval Brigade, based in northern Queensland. In May 1888 Captain H. T. Wright, RN, the senior naval officer of the Queensland Marine Defence Force, proposed that *Mosquito* embark on a voyage to Townsville with *Gayundah* and provide members of its naval defence-force an

opportunity to engage in torpedo practice. Ultimately, Queensland's Premier scrapped the plan over well-founded concerns about *Mosquito's* seaworthiness in the open ocean (*Brisbane Courier*, 10 and 14 May 1888).

With federation of the Australian colonies at the turn of the century, *Mosquito*, like several other colonial naval assets, was transferred to the newly established Commonwealth Naval Forces. Although 17 years old, the vessel's hull, engine, boilers, and other equipment were reportedly in good order, and during a speed trial on 27 March 1900 the boat was able to attain 16.36 knots (with the tide) over the measured mile. With the exception of a lost Whitehead torpedo on 9 April 1901 during annual Easter exercises with *Gayundah* and *Pahuma*, the first decade of the 20th century was relatively uneventful for the torpedo-boat. Repairs to *Mosquito's* boiler were carried out in January 1909; otherwise, it continued in its previous capacity in Queensland's maritime defence and actively participated in annual naval manoeuvres (Fig. 5) until 1911 (Gillett, 1982: 36).

Ultimately, rapid changes in military technology, and the Australian government's recognition that it needed to modernise and develop its new national navy, sounded the death-knell for the majority of military vessels—*Mosquito* included—purchased during the colonial era (Nicholls, 1988: 172–3). As early as 1908, Captain W. R. Creswell, Director of Commonwealth Naval Forces, stated in an address to the Australian House of Representatives that he did not anticipate any of the nation's former colonial fleet would continue to serve in either a defensive or training capacity ([Melbourne] *Argus*, 12 December 1908). Following the creation of the Royal Australian Navy (RAN) in 1911, all of Queensland's former colonial naval craft were transferred from Commonwealth control to the new naval force for active duty.

Although *Mosquito* and *Midge* were slated to serve as training vessels for the torpedo corps, their respective careers in the RAN would be intermittent at best and only last another two years. On 8 March 1913 both torpedo-boats were docked at Brisbane for the last time. Shortly thereafter *Midge* was decommissioned,

stripped of its engines, sold out of service, and began a new life as the sailing vessel *Nola II* (Adlam, 1981: 31; Gillett, 1982: 54). *Mosquito* was also decommissioned, but suffered a very different fate. Stripped of its engines, machinery and other valuable fittings, it was towed to Boggy Creek—a tributary of the Brisbane River—and discarded in a mangrove swamp (Adlam, 1981: 29; Gillett, 1982: 31; 36; Foote, 2001: 2).

HMQS *Mosquito* rediscovered

Nothing is known of the process by which *Mosquito* was abandoned at Boggy Creek in 1913, nor is there any known record of post-discard activities—such as salvage—that may have occurred at the site for the next 53 years. In January 1966 S. G. Prior, a resident of the nearby community of Hendra, photographed surviving elements of the torpedo-boat's hull exposed above the mud-line at low tide. These images are remarkable in that they provide a snapshot of *Mosquito's* site-formation processes over a half-century after its abandonment, as well as an indication of the vessel's disposition at the time of discard.

When Prior photographed *Mosquito's* hull it was still surprisingly intact. The bow and stern sections, in particular, were largely articulated and in an upright position, with much of the former—including the 'ram'-shaped stem characteristic of Australasia's Thornycroft 2nd-class torpedo-boats—completely exposed above the mud-line (Fig. 6). By contrast, the sides of the hull, bulkheads, and remaining upperworks (consisting primarily of the galvanised steel casemate that enshrouded the torpedo-boat's engine-room, boilers and steering-compartment) had collapsed either within or outside the hull and become partially or completely buried in mud. A single large bulkhead still visible in 1966 clearly exhibits *Mosquito's* trademark 'turtleback' casemate profile (Fig. 7). Of particular note is the vessel's conning-tower, which in the 1960s was disarticulated from the rest of the hull, but almost completely intact as an architectural element (Fig. 8).

The photographs also suggest that *Mosquito's* hull exhibited a slight list to port when discarded, an

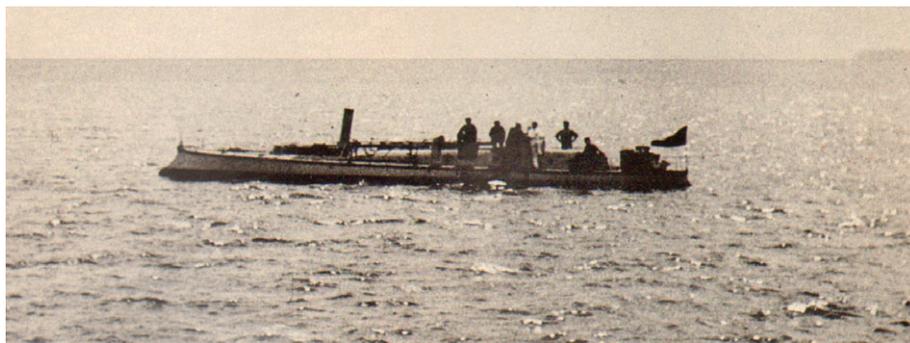


Figure 5. *Mosquito* participating in naval exercises on Moreton Bay, c.1901. (reproduced by kind permission of the Queensland Maritime Museum)



Figure 6. *Mosquito's* starboard bow section, as photographed by S. G. Prior in 1966. Note the distinctive 'ram' shape of the vessel's stem. (reproduced by kind permission of the Queensland Maritime Museum)



Figure 8. *Mosquito's* disarticulated conning-tower, photographed by S. G. Prior in 1966. Note preserved section of hatch-cover still articulated with the conning-tower along its ground-facing side. (reproduced by kind permission of the Queensland Maritime Museum)



Figure 7. S. G. Prior's 1966 photograph of *Mosquito's* collapsed midships and stern sections, as viewed from the vessel's bow. Note the distinctive 'turtleback' shape of the bulkhead in the foreground. (reproduced by kind permission of the Queensland Maritime Museum)



Figure 9. Bow-on view of *Mosquito's* forward section, photographed by S. G. Prior in 1966. Note the bow's exaggerated list to port and visible separation from midships hull components. (reproduced by kind permission of the Queensland Maritime Museum)

attribute that appears to have been exacerbated at the bow over time by corrosion-induced separation from the vessel's midships section (Fig. 9). The detrimental effects of corrosion on the hull's galvanised steel fabric,

particularly in areas alternately exposed to tidally-influenced wet and dry environments, are evident in several images. Perhaps the best depiction of this phenomenon is the photograph of the conning-tower (Fig. 8), which shows a clear demarcation where frequent, episodic exposure to salt and/or brackish water facilitated active corrosion of its metallic constituents. By contrast, metal comprising the upper third of the conning tower—which would have been exposed to a predominantly dry environment—appears relatively inert and unaffected. The swamp's corrosive environment very probably acted as the single most important catalyst for *Mosquito*'s gradual disintegration during the next four decades, and eventually the last vestiges of the hull collapsed and disappeared beneath mud and mangrove.

2009 site survey

In 1975 S. G. Prior donated a section of steel hull to the Queensland Museum in Brisbane, and claimed it originated from *Mosquito* (Prior, 1983). The author learned of this artefact while canvassing museums and other repositories for information pertaining to his doctoral research, and arranged with museum staff to access it during a visit to Brisbane in October 2009. Subsequent inspection and documentation of the object by the author confirmed its identity as a section of *Mosquito*'s armoured casemate. The casemate section comprises a single $\frac{1}{8}$ -inch (3.18 mm) thick semi-hemispherical galvanised steel plate open on one end (Fig. 10). The opposite end features a flat, angled section of identical plate riveted to its interior face. A 155-mm (6.1 inch) diameter aperture for a scuttle or glass viewport, ringed by eight 1-cm (0.39 inch) diameter holes for the fasteners that held the scuttle/viewport assembly in place, is located in the approximate centre of the angled section. The plate's maximum length, height and width are 96 cm (3 ft 2 in), 78 cm (2 ft 6 in) and 91 cm (2 ft 11 in) respectively. Prior claimed the casemate section originated from *Mosquito*'s forward superstructure; however, its dimensions and overall appearance—including the presence of the viewport aperture, which was not featured on the forward casemate of Australasian 2nd-class Thornycroft torpedo-boats—are more consistent with the casemate's stern end. Figure 11, which depicts *Mosquito*'s Tasmanian sister-ship, torpedo-boat no. 191, illustrates how the casemate section would have originally appeared on the hull.

During the 1980s Prior donated the 1966 photographs of *Mosquito* to the Queensland Maritime Museum. An explanatory covering letter, which contains a sketch-map showing the approximate location of the torpedo-boat's discard site on Boggy Creek, was included with the photographs (Prior, 1983). Although some of the roads on the map are no longer listed on modern Brisbane street directories, and Boggy Creek's flow was diverted northwards into a man-made cause-



Figure 10. Aftermost section of *Mosquito*'s armoured casemate, donated to the Queensland Museum in 1974 by S. G. Prior. Note viewport aperture in approximate centre of flat steel plate. Scale in centimetres. (author)

way during the 1970s, enough geographical references existed in the document to enable the author and the Queensland Maritime Museum's Assistant Librarian David Jones to limit an archaeological survey for the site to a 100 m² area. As it turned out, a systematic search for *Mosquito* proved unnecessary, as the accuracy of Prior's description of the site's location facilitated its almost immediate rediscovery.

When found, the site was almost completely obscured by c.0.5 m of murky, brackish swamp water. Only a small portion of what proved to be the remains of the conning-tower protruded far enough above the waterline to be spotted. Metallic features that appeared to represent additional structural remnants were located in a roughly linear scatter c.5 m north of the conning-tower. Because the site is located within a tidal zone, the decision was made to revisit and document all visible hull remains and artefacts during a subsequent low-tide event.

The next site visit coincided with extreme low water and led to the discovery of more of *Mosquito*'s structural elements, all of which were either partially or completely exposed above the mud-line. Visible features were documented via photography and baseline offset measurements, and the latter were used to produce a site-plan (Fig. 12). The visible extent of the site covers an area measuring 19.25 m east-west by 5.49 m north-south. When converted to Imperial measurements, the former dimension (63 ft 2 in) is almost identical to the length between perpendiculars (63 ft, or

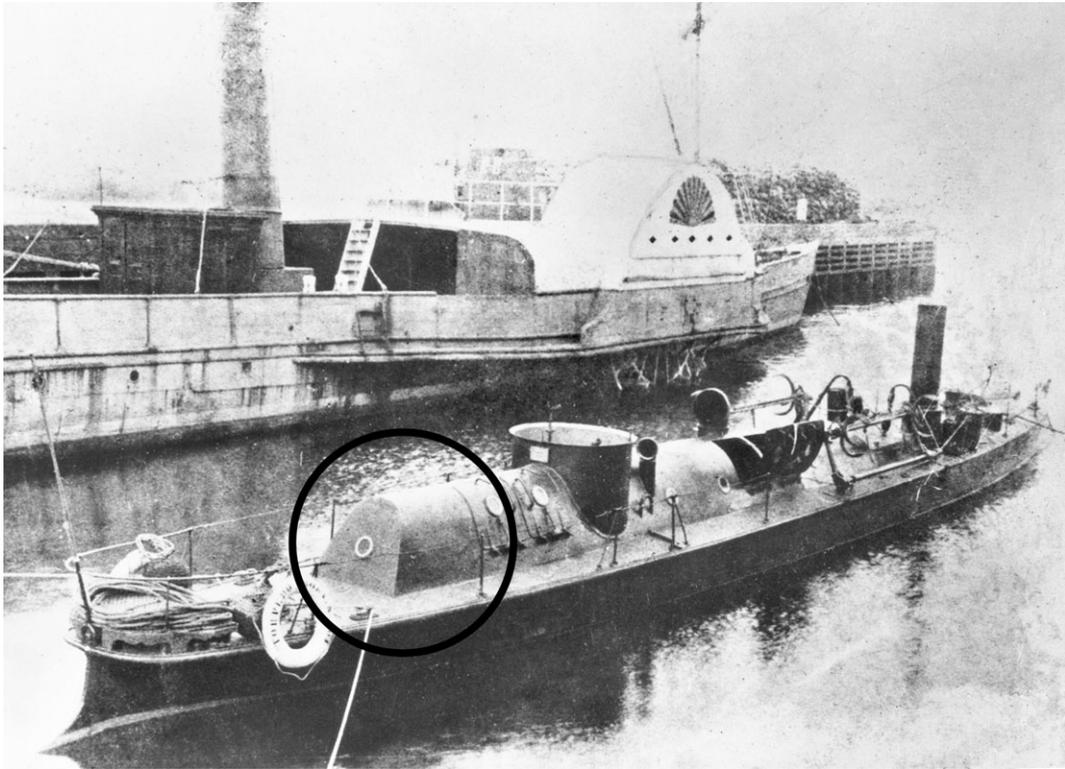


Figure 11. *Mosquito's* sister-vessel, torpedo-boat no. 191, photographed at Hobart, Tasmania *c.* 1890. The circle highlights the aftermost casemate section and viewport assembly. (reproduced by kind permission of the Australian War Memorial)

19.20 m) listed for *Mosquito* in newspaper accounts (*Brisbane Courier*, 10 October 1884). Placement of chaining-pins during the survey also revealed the presence of several hard, metallic subsurface contacts throughout the site, suggesting a sizeable percentage of the vessel's articulated lower hull and/or collapsed upperworks remains buried beneath the mud.

Surviving elements of the torpedo-boat's conning tower (Fig. 13) were recorded in detail to obtain baseline measurements for comparison with surviving archival records of its manufacture and appearance. Since being photographed in 1966, the conning tower has deteriorated significantly, due in no small part to the combined effects of tidal action and corrosion on its highly-reactive galvanised steel matrix. Over time, these processes invariably weakened portions of the tower wall that were exposed to alternating wet and dry conditions, causing the side that once stood proud of the swamp-floor to fragment and collapse downwards. Ironically, the tidal fluctuations which destroyed exposed portions of the conning-tower also probably fostered preservation of what remained via burial in silt and other fine sediments. This process insulated the tower's surviving metal fabric from the detrimental effects of oxygen and chloride ions (corrosive salts).

Approximately half the conning-tower's diameter appears to have collapsed by the time of the site's

rediscovery in 2009; a large fragment can still be seen lying within the surviving section (Fig. 13). Nearly one-third of the conning-tower hatch—which would have been closed over the conning-tower during an attack to protect the torpedo-boat's helmsman from small-arms fire—is extant and still largely in its original position atop the tower's rim (Fig. 14). The visible portion of the conning-tower has a preserved height of 86 cm (2 ft 10 in), a maximum diameter of 1.22 m (4 ft), and is 25 mm (1 inch) thick. These dimensions correspond very well to measurements for the conning-tower's height (3 ft, or 91 cm) and minimum diameter (3 ft 11 in, or 1.2 m) in the Thornycroft draught (Fig. 2). The same holds true for the hatch-cover's maximum preserved diameter and height, which at 1.2 m (3 ft 11 in) and 18 cm (7 inches) compares favourably to the draught's measurements (3 ft 11 in (1.2 m) and 8 in (20 cm) respectively). The apparent inconsistency between the conning-tower's archaeologically and historically recorded diameters can be explained by its oval shape, which gradually increases to a maximum dimension of 4 ft 7 in (1.4 m) on the Thornycroft draught.

In a fortunate turn of events, the low tide revealed a second structural element which solidified the site's identification as *Mosquito*. The feature, located at the eastern extremity of the linear scatter of hull components, is a single narrow section of iron with a pronounced curve at its approximate midpoint. Looking

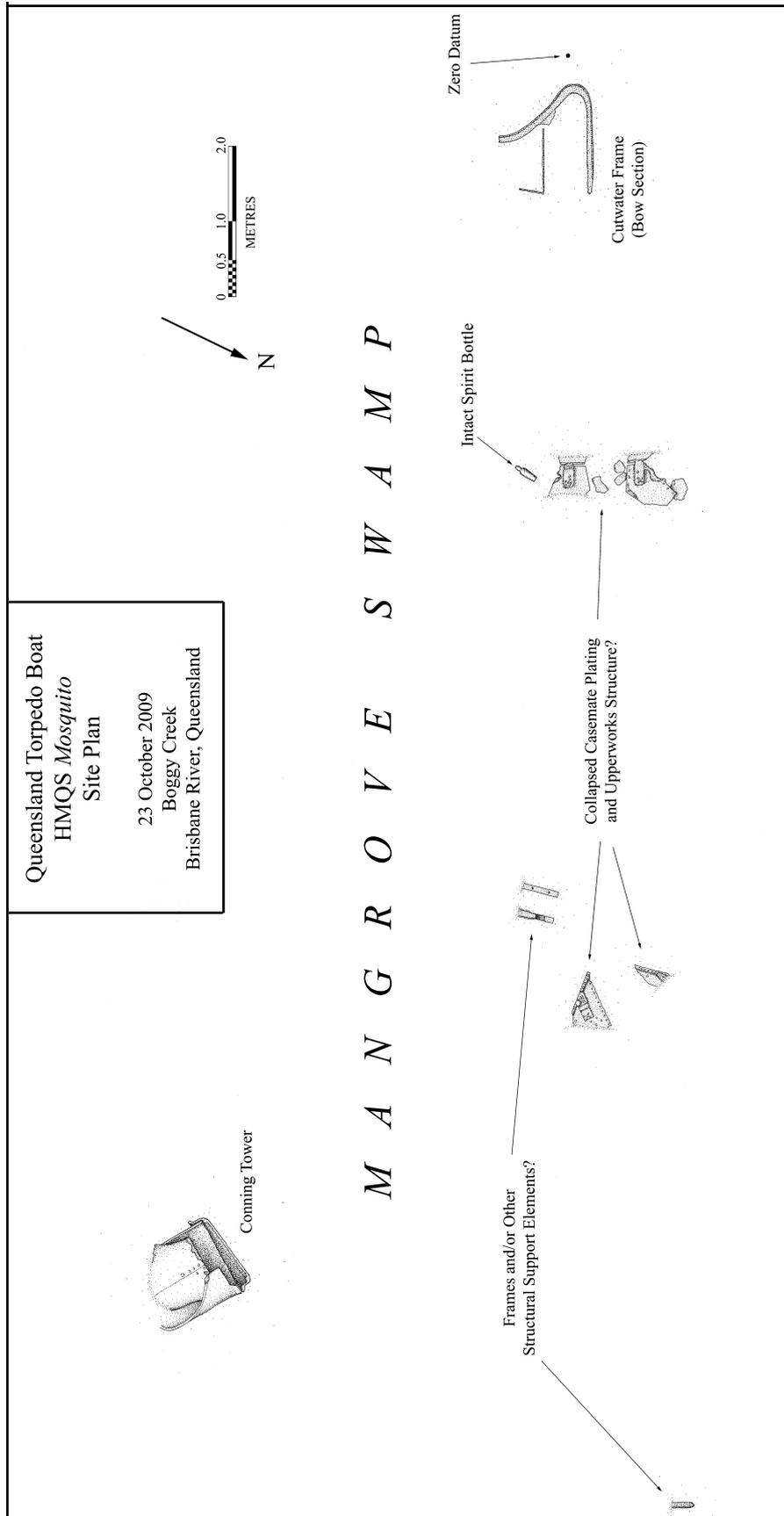


Figure 12. Plan of *Mosquito*'s discard site, as recorded in October 2009. Scale in metres. (author)



Figure 13. Surviving elements of *Mosquito's* conning-tower, as documented in October 2009. Note collapsed section of conning-tower wall in approximate centre of image. Scale in centimetres. (author)



Figure 14. Surviving elements of *Mosquito's* conning-tower in October 2009, showing articulation between tower rim and hatch-cover. Curve in conning-tower at left corresponds to 'turtleback' shape of the torpedo-boat's armoured casemate. Scale in centimetres. (author)

innocuous at first glance, it was soon identified as the torpedo-boat's stem—the hull element that gave *Mosquito's* bow its distinctive 'ram' shape when viewed in profile. The stem was discovered lying on its side, with its starboard moulded face upwards. Its average preserved moulded and sided dimensions are 8 and 6 cm respectively, while its preserved height of 1.25 m (4 ft



Figure 15. Intact green-glass bottle discovered in close proximity to *Mosquito's* surviving bow section, October 2009. Scale in centimetres. (author)

1 in), is a close match for *Mosquito's* original depth-of-hold at the bow (4 ft 4 in, or 1.32 m).

A small section of surviving hull-plate still adheres to the stem and has a preserved thickness of 2 mm (0.79 inches). What appears to be a surviving section of 5-mm (0.2 inch) thick deck-plate emerges from beneath the hull-plate fragment and extends aft for a distance of 86 cm (2 ft 10 in), where it terminates at the base of a vertical metal element of identical thickness which almost certainly represents a partial bulkhead. The relative positions of these members correspond well to *Mosquito's* internal arrangement (see Fig. 2), and their association with the stem suggests that at least a portion of the vessel's articulated port bow hull-structure may still be buried beneath the mud.

With the exception of a single intact olive-green glass bottle (Fig. 15) located immediately adjacent to a section of collapsed upperworks, no small artefacts were visible at the time of the 2009 survey. In accordance with the Queensland government's underwater cultural heritage legislation, and a specific request from the state's Principal Heritage Officer that the site be exposed to the absolute minimum of disturbance, the bottle was left *in situ*; however, it was photo-documented extensively, measured where exposed, and incorporated within the site-plan. It exhibits an overall length of 31 cm, and base, shoulder and lip diameters of 75 mm, 10 cm and 5 cm respectively. In terms of overall appearance, the bottle most closely resembles a port-style variant of late-19th or early-20th century date. Although a temporal association could be inferred between the bottle and *Mosquito's* discard site, there is nothing in the existing archaeological data-set to definitively link the two to one another.

Summary and conclusion

Archaeological investigation of visible portions of the vessel-remains at Boggy Creek has provided irrefutable proof of their identity as Queensland's colonial torpedo-boat HMQS *Mosquito*. This conclusion is drawn primarily from positive identification of the boat's conning-tower and stem, but is also based on identical—or near-identical—dimensions exhibited by these and other hull-features to measurements derived from the 1883 Thornycroft draught produced for *Mosquito* and its sister-vessels. Another critical line of evidence exists in the form of S. G. Prior's 1983 letter and 1966 photographs. The former provided a location for *Mosquito*'s discard-site accurate enough to precipitate its immediate rediscovery, while the latter depicted enough of the torpedo-boat's surviving structure to serve as a reference against which features documented in both earlier archival photographs and the 2009 survey could be compared. Finally, Prior's 1975 donation to the Queensland Museum of a section of metal hull-fabric recovered from the hulk shown in the 1966 photographs has been positively identified as the aftermost section of *Mosquito*'s galvanised-steel casemate, based on its dimensions and other specific attributes.

Mosquito's significance to the respective histories of Queensland and Australia cannot be overstated. Purchased at the height of the 'Russian Scare', it is a tangible reminder of efforts undertaken by the Australasian colonies to protect themselves from the perceived threat of seaborne invasion, and indicative of the adaptability of those charged with creating and operating homegrown *de facto* naval forces on the farthest edge of the British Empire. In a broader context, the site is a testament to the creative ingenuity of military technology and naval warfare during the industrial era. Like ironclads and ironclad rams developed during the 1860s and 1870s, torpedo-boats were a vessel-form adapted to a specific tactical purpose, and consequently featured unique design parameters specially suited to this role (Gould, 2000: 272, 284, 289).

Particular attributes of *Mosquito*'s design not identified or addressed in builder's draughts or operational planning documents could be the focus of future targeted research at the site. These features may include shipyard deviations from Thornycroft's design parameters, modifications to the vessel after it arrived in Queensland, or activity areas aboard ship that were adapted from their intended use, or are otherwise unidentifiable in existing archival sources. At least three other colonial Australasian torpedo-boat discard sites—the Victorian vessels *Lonsdale* and *Countess of Hopetoun* and New Zealand boat *Defender*—have been identified and the subject of preliminary archaeological surveys (Williams, 1992; Tucker and Hewitt, 2007: 12–32; Hunter, 2009). Aside from the Australasian examples, no other torpedo-boat sites of this type and vintage have been investigated anywhere else in the world to date. Archaeological excavation of *Mosquito*

would therefore offer the first opportunity to examine in detail the internal arrangement of a Thornycroft 2nd class torpedo-boat, would complement data recovered from the Victorian and New Zealand vessels, and would significantly contribute to our understanding and knowledge of late-19th century torpedo-craft and torpedo warfare.

The torpedo-boat's design appears to have limited its operational capacity to the specific task for which it was constructed. This no doubt played a significant role in the RAN's decision to discard *Mosquito* outright, rather than reuse the vessel in either a front-line military capacity or a secondary role (such as a launch, lighter, or barge). Expanding upon this theme, the site could potentially contribute to ongoing archaeological research exploring the discard of watercraft, and material culture abandonment and discard in general. Richards (2008: 183) notes that many potential research themes have emerged 'from the need to refine the abandoned vessel data set and more comprehensively establish, dismiss, and discuss any number of discard trend correlates'. This includes the intentional disposal of obsolete military vessels. As mentioned previously, the discard locations of *Lonsdale*, *Countess of Hopetoun*, and *Defender* have all been identified and addressed in archaeological literature (Williams, 1992; Tucker and Hewitt, 2007: 12–32; Hunter, 2009). Taken as a whole, these sites—*Mosquito* included—could comprise a data-set with which to develop hypotheses about specific military watercraft discard trends within a colonial Australasian context.

Similarly, *Mosquito*'s remains could expand our understanding of archaeological site-formation processes in foreshore and submerged environments. One particularly important aspect of the site is that it was the subject of multiple photographs taken during a single visit almost exactly at the midpoint of the 96-year span between when it was discarded (1913) and the 2009 archaeological survey discussed here. Using these photographs as a benchmark, the transformative effects of natural—and possibly human—processes on *Mosquito* can be extrapolated in very general terms. By the 1960s, the presumably-once-intact hull was showing clear signs of disarticulation and collapse, but was still relatively complete. The next 43 years witnessed a continuation of this trend, but at an accelerated rate that resulted in the near-complete disintegration and burial of all exposed features. Future site-formation-themed investigation of the site could build upon the existing data-set and perhaps identify specific processes which altered *Mosquito* to its present form.

Mosquito's location has been reported to Queensland's Historic Shipwrecks Officer and Principal Heritage Officer, and a subsequent site-inspection by these and other state historic-preservation representatives resulted in additional assessment of its visible and buried features. The results of this survey are

currently being reviewed in conjunction with the data discussed in this article to develop a strategy for the site's management. Because it is over 75 years old, *Mosquito's* abandonment site is now protected the Queensland Heritage Act 1992. This law imposes significant penalties for unauthorised disturbance of protected shipwrecks and other maritime heritage sites, and provides for the creation of a protected area or protected zone around any vessel or artefact

deemed historically significant (Queensland Government, 2008). Renewed interest in *Mosquito's* protection, preservation, and interpretation is a fitting tribute to a humble little vessel which, abandoned and largely forgotten in a mangrove swamp for almost a century, now offers a rare conduit through which Queenslanders—and Australians as a whole—may reconnect with a significant aspect of their naval and maritime origins.

Acknowledgements

The author offers unqualified gratitude to David Jones, without whose assistance *Mosquito's* rediscovery would have been difficult, if not impossible. Thanks to Peter Nunan and Warrick Foote of the Queensland Maritime Museum for access to the Museum's library and archives. Peter Volk of the Queensland Museum kindly provided access to *Mosquito's* casemate section. Queensland's Maritime Heritage Officer Ed Slaughter, and Principal Heritage Officer Cameron Harvey offered expert guidance about their state's submerged-cultural-heritage legislation and reporting procedures, and enthusiasm for *Mosquito's* continued management and protection. Drafts of this paper benefited tremendously from the input of Emily Jateff and Mark Staniforth.

References

- Adlam, H., 1981, Colonial Torpedo Boats, *The Navy: the Magazine of the Navy League of Australia* 43.3, 25–31.
- Brisbane Courier, 10, 13 and 25 October 1884, 12 March 1885, 10 and 14 May and 6 August 1888, *Historic Australian Newspapers, 1803 to 1954*, National Library of Australia online resource, <http://newspapers.nla.gov.au/ndp/del/article/3482118>, also 3475170, 3474911, 3439962, 3435466, 3435048, 3434966.
- Colwell, M., 1973, *The National Trust in Australia*. Adelaide.
- Cooke, P., 2000, *Defending New Zealand: Ramparts on the Sea, 1840s–1950s (Part 1)*. Defence of New Zealand Study Group, Wellington.
- Fitzhardinge, V., 1966, Russian Naval Visitors to Australia, 1862–88, *Journal of the Royal Australian Historical Society* 52.2, 129–58.
- Foote, W., 2001, Queensland Marine Defence Force and Naval Brigade, unpublished manuscript on file at the Queensland Maritime Museum, Brisbane.
- Gardiner, R. (ed.), 1992, *Steam, Steel and Shellfire: The Steam Warship, 1815–1905*. Annapolis MD.
- Gillett, R., 1982, *Australia's Colonial Navies*. Naval Historical Society of Australia, Garden Island.
- Gould, R., 2000, *Archaeology and the Social History of Ships*. New York.
- Gray, E., 1975, *The Devil's Device: The Story of Robert Whitehead, Inventor of the Torpedo*. London.
- [Hobart] *Mercury*, 18 October 1884, *Historic Australian Newspapers, 1803 to 1954*, National Library of Australia online resource, <http://newspapers.nla.gov.au/ndp/del/article/9094719>.
- Hunter, J., 2009, The Archaeology of Military Mismanagement: An Example from New Zealand's Colonial Torpedo Boat Defences, 1884–1900, *Bulletin of the Australasian Institute for Maritime Archaeology* 33.1, 1–10.
- Hupchick, D., 2004, *The Balkans: from Constantinople to Communism*. New York.
- Jane, F., 1898, *The Torpedo in Peace and War*. London.
- Jones, C., 1995, The Purchase of the Australian Colonial Gunboats, *Mariner's Mirror* 81.2, 182–94.
- McCarthy, J., 2000, *The Ottoman Peoples and the End of Empire*. London.
- Massov, A., 2008, *The Visit of the Russian Naval Squadron of Admiral Aslanbegov to Australia in 1881–1882*. <http://www.argo.net.au/andre/aslanbegovENFIN.htm>.
- [Melbourne] *Argus*, 12 December 1908, *Historic Australian Newspapers, 1803 to 1954*, National Library of Australia online resource, <http://newspapers.nla.gov.au/ndp/del/article/10177694> and 6070782.
- Nicholls, B., 1988, *The Colonial Volunteers: The Defence Forces of the Australian Colonies, 1836–1901*. Sydney.
- Prior, S., 1983, Letter (with attached photographs) to Queensland Maritime Museum, on file, Queensland Maritime Museum Research Library, Southbank, Brisbane.
- Queensland Government, 2008, *Cultural Heritage Information Sheet: Protection of Shipwrecks*. Cultural Heritage Branch, Queensland Dept of Environment and Resource Management, Brisbane.
- Richards, N., 2008, *Ships' Graveyards: Abandoned Watercraft and the Archaeological Site Formation Process*. Gainesville FL.
- Tucker, C. and Hewitt, G., 2007, Queenscliff Harbour Consolidated Archaeological Excavation Reports, draft report on file at Maritime Heritage Unit, Heritage Victoria. TerraCulture Pty. Ltd., Melbourne.
- Williams, D., 1992, Letter, with attached photographs and notes produced by the Maritime Archaeological Association of Victoria, to Maritime Heritage Unit, Heritage Victoria., on file, Maritime Heritage Unit, Heritage Victoria, Melbourne.
- Wimmer, M., 2008, *Archaeology of the Russian Scare: the Port Adelaide Torpedo Station*, Flinders University Maritime Archaeology Monograph Series 18, Adelaide.