The Maritime War in Ukraine
The Limits of Russian Sea Control?

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Introduction

At the start of the Russian full-scale invasion of Ukraine in February 2022, the primary maritime basins of the war were under the firm grip of the advancing force. Throughout the previous decade, Russian authorities had sought to reaffirm the country's sea control in the Black Sea and the Sea of Azov. They pursued a strategy that combined material investments in port and naval infrastructures with the pursuit of dubious maritime territorial claims. In 2014, they consolidated their gains by annexing Crimea and, in its aftermath, by enhancing their naval presence. Days after the invasion started, Russia had occupied Snake Island in the western Black Sea, seemingly drawing to a close the Ukrainian ability to use this crucial maritime space.

Or so was the main narrative of the maritime war in its initial stages. Just a month later, however, Russian sea control was standing to be challenged. On 13 April, the Black Sea flagship, the Slava class cruiser Moskva was hit by two Ukrainian Neptune anti-ship missiles and sunk. Two months later, Ukrainian forces had retaken Snake Island, conducted attacks against Russian controlled gas platforms and sunk another ship, the Vasiliy Bekh. In the months since, the maritime theatres of the War in Ukraine have remained contested. By November 2024, Ukrainian forces estimated Russian naval losses to include 28 warships and small boats, and one submarine.[1] How did this reversal of fortunes happen? Russia had overwhelming capabilities and was fighting against a country with virtually no navy to speak of. How did Russia lose the battle for sea control?

This paper addresses the above questions. It sheds light on the strategic dimension of the naval war setting forth a three-fold argument. First, the paper qualifies crucial assumptions about Russian advantages in the Black Sea and the Sea of Azov, making the case that the region's geographical outlook presented inherent challenges to the Kremlin's ability to fully secure sea control – despite its overwhelming numerical advantage. Second, the paper suggests that the key to Ukrainian successes drew upon the country's ability to focus on a sea denial strategy to amplify Russian challenges and limit Moscow's ambitions to command the theatre. In particular, the paper postulates that the clarity of objectives in the Ukrainian strategy enabled its forces to apply technological solutions to maximum effect. Lastly, the paper highlights how, notwithstanding Ukrainian successes, the shipping of grain outside the Black Sea region continues to be one of the most crucial strategic centres of gravity of the maritime theatre.

Crucially, when taken altogether, the above considerations have considerable relevance as we look ahead at what's next in this conflict. They suggest that the maritime theatre of the war will be a significant factor of consideration on both sides if any meaningful ceasefire and peace process is to take place. Ukrainian authorities will not surrender the use of the western side of the Black Sea as an economic artery, but Russian leadership is unlikely to leave an exposed southern flank that could jeopardise its considerable territorial gains.

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1   Ministry of Defence of Ukraine, 'Estimated Combat Losses', 17 November 2024, https://mod.gov.ua/en/news/2024/11/17/the-estimated-combat-losses-of-russians-over-the-last-day-1-640-persons-60-ua-vs-and-36-artillery-systems.

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The Strategic Impact of Maritime Geography on the Russian Planning

The maritime theatre of the war is composed by three main basins. The first is the Black Sea; the second is the Sea of Azov; and the third is the Caspian Sea. The Kerch strait marks a crucial waterway linking the first two basins, whilst the Taganrog Gulf is the primary entry point for the riverine connection that, through the Rostov-on-Don city and the Don River, connects the eastern part of the Black Sea to the Caspian Sea. The wider Black Sea region is linked to the Aegean Sea and wider maritime regions through the Turkish Straits. Shortly after the beginning of the invasion, on 28 February 2022, the Turkish government closed the straits to naval traffic – in accordance with the Treaty of Montreux – consequently sealing the Black Sea region off from any external links.[2]

Narrow and enclosed basins present specific strategic challenges. From a Russian perspective, at the beginning of the century the country's maritime strategic outlook in the Black Sea region was less than ideal. Russian initial operations in the war must be understood against the steps that the Kremlin undertook in the previous two decades to improve this outlook. In 2003, Moscow had secured a first goal through a treaty that recognised the Sea of Azov as Russian and Ukrainian internal waters. Two years later, the Kremlin started also to direct a series of investments to strengthen Russian basing system in the Black Sea. In 2008, the

2   Heather Mongilio, 'Turkey Closes Bosphorus, Dardanelles Straits to Warships', *USNI News*, 28 February 2022, https://news.usni.org/2022/02/28/turkey-closes-bosphorus-dardanelles-straits-to-warships.

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simultaneous neutralisation of the Georgian navy and the planting of the seeds to access the port of Ochamchira further advanced Russia's presence and power projection potential, while the later annexation of Crimea in 2014 further empowered Russia's basing and military provisions.[3] Consistent with its 2015 Maritime Doctrine, the Kremlin was establishing a status quo – legally and operationally – favourable to Russia.[4]

Subsequent Russian preparations, including the build-up of capabilities to conduct naval blockades, bombardments, amphibious assaults, and strike, offered a sense of the canvass of the country's objectives in the war.[5] This is because Ukraine retained control of important ports both in the Sea of Azov (Mariupol, Berdiansk), and in the Black Sea (Mykolaiv, Odesa) crucial to the export of raw materials and grain, and coastal projection in the Sea of Azov. Concurrently, Romania, Bulgaria and Türkiye extended NATO's presence in the western Black Sea. It should come as no surprise, therefore, that Russian opening maritime operations focused on neutralising the Ukrainian use of the Black Sea region through occupation (Berdyansk, Mariupol, Skadovsk, Kherson) or naval blockade (Pivdennyi, Mykolaiv, Olviia, Odesa, Chornomorsk, Bilhorod-Dnistrovskyi). As one author remarked, before the invasion, these ports processed some 90% of Ukraine's total maritime trade.[6]

Of no less relevance, Russian forces quickly took control of Snake Island, a key strategic spot in the western Black Sea, whilst land forces sought to advance into the Kherson Oblast region to reach the Dnieper River and launch a southern offensive to occupy the entire Ukrainian Black Sea coastline.[7] By September of the war's first year, Russia's overwhelming naval power in the Black Sea region did not translate in an unconditional ability to exercise sea control. On the contrary, the geography of the Black Sea region required Russia to make considerable investments to deny Ukrainian shipping and theatre access, and to take on Ukrainian territory from its southern flank. This, in turn, limited the extent to which its forces could take full advantage of their disproportionate material advantage.

The Operational Consequences of the Ukrainian Focus on Sea Denial

By the end of the first month of the war, the strategic challenge to Russian sea control was on display. A Russian assault boat involved in operations near Mariupol and, notably, the landing ship Saratov, were hit by missiles, the latter whilst unloading at Berdyansk in the Sea of Azov. Just a few weeks later, on 13 April, the sinking of the cruiser Moskva mentioned above marked the first significant blow to Russian plans to assert theatre dominance. Ukrainian forces continued to mount pressure focusing on where they knew Russia was at its weakest, the western Black Sea area. As their capabilities to strike at range increased thanks to Harpoon and Neptune missiles, they focused on the first and most obvious objective: the retaking of

3   Tobias Kollakowski, 'Interpreting Russian Aims to Control the Black SeaRegion through Naval Geostrategy (Part I): "The Azov-Black Sea Basin as a Whole […] This is, in fact, a Zone of Our Strategic Interests"', *The Journal of Slavic Military Studies*, Vol. 36, 2023:1, 67-71.

4   Boris Kormych and Tetyana Malyarenko, 'From Grey Zone to Conventional Warfare: The Russia-Ukraine Conflict in the *Black Sea*', *Small Wars & Insurgencies*, Vol. 34, 2023:7, 1243.

5   Ibid., 1243-1245.

6   Ibid., 1251-1253.

7   Tobias Kollakowski, 'Interpreting Russian Aims to Control the Black SeaRegion through Naval Geostrategy (Part Two): "Establishing Full Control over Southern Ukraine and the Dombas is one of the Tasks of the Russian Army"', *The Journal of Slavic Military Studies*, Vol. 36, 2023:2, 124.

Snake Island. By the end of July, Russia had abandoned this key position and Russian surface vessels had withdrawn from the western part of the Black Sea.[8]

In the first months of the war, Ukraine proved that its focus on a sea denial exploiting the weaknesses of the Russian military posture in the Black Sea theatre could be effective. As Russian forces withdrew to the safety of their bases in Crimea – notably in Sevastopol – with the aim to keep the initiative by playing to the strengths of their greater numbers, Ukrainian forces considered this shift in posture an opportunity. By extending sea denial to Crimean shores, the Russian ability to project power against the Odesa area, or indeed on the overall southern theatre of the war, would be significantly reduced. This provided crucial clarity over the Ukrainian need for prioritisation. In July, the first uncrewed air vehicles (UAVs) conducted attacks against the Russian Navy's headquarters in Sevastopol. Symbolically, the blow was remarkable as the Russian Navy had to cancel its navy day celebrations. Politically, the removal of the Commander of the Black Sea Fleet, Admiral Igor Osipov, underwrote the scale of the Russian maritime challenge ahead.

Indeed, by the beginning of the autumn, Ukraine could implement its strategy of targeting Russian bases and assets at sea and from the sky. In addition to UAVs, Ukrainian forces started to unveil the operational potential of Uncrewed Surface Vehicles (USVs).[9] On 29 October, several USVs penetrated Sevastopol harbour hitting two warships, the mine-sweeper Ivan Golubets and the frigate Admiral Makarov.[10] For the first time, Ukrainian forces had proved that no major base across the theatre was safe from its insidious capabilities. In historical terms, the Ukrainians had taken the notion of the 'fire ship' to a new level by developing the capacity to strike havoc among enemy forces at their point and time of choosing.[11] Less than a month later, a similar attack carried out against the Novorossiysk naval base confirmed the increasing range of Ukrainian USVs and longer-range strikes.

The advantages of extended range in a relatively narrow operational theatre explains why Ukraine continued to focus on long-range USVs and UAVs. In particular, the acquisition of new Storm Shadow/SCAL-EG missiles with relevant targeting capabilities, in addition to the development of drones with greater endurance like the Madura V5 USV and the 'Foxbat' UAV, enabled its armed forces to reach Russian targets in the ports of Sevastopol and Fedosia in Crimea, and ultimately Kaspyisk in the Caspian Sea.[12] Russian forces had no place in the Black Sea region where they could feel safe. This state of affairs, when combined with the limits of protection measures against these assets, introduced a sense of persistent incertitude and vulnerability in Russian naval planning.

Nonetheless, as the Ukrainian forces' intent to hold Russian forces at risk across the theatre matched their capabilities, Russian forces sought to innovate to regain the initiative. In 2023, Russian Navy warships introduced new camouflage painting; bases and ports were equipped

8 Yaroslav Lukov and Paul Kirby, 'Snake Island: Why Russia Couldn't Hold on to Strategic Black Sea Outcrop', *BBC News*, 30 June 2022, https://www.bbc.com/news/world-europe-61992491.

9 Abdujalil Abdurasulov, 'Ukraine War: The Sea Drones Keeping Russia's Warships at Bay', *BBC News*, 12 March 2024, https://www.bbc.com/news/world-europe-68528761.

10 Sidharth Kaushal, 'Ukraine's Uncrewed Raid on Sevastopol and the Future of War at Sea', *RUSI Commentary*, 02 February 2023, https://www.rusi.org/explore-our-research/publications/commentary/ukraines-un-crewed-raid-sevastopol-and-future-war-sea.

11 Alessio Patalano, 'Ukraine's Drone Raid on Russian Naval Base Was Tactically Innovative but Not Revolutionary', *The Strategist*, 10 November 2022, https://www.aspistrategist.org.au/ukraines-drone-raid-on-russian-na-val-base-was-tactically-innovative-but-not-revolutionary/.

12 'Ukraine's Hits Russian Navy's Caspian Flotilla with Long-Range Drone Strike', *The Maritime Executive*, 06 November 2024, https://maritime-executive.com/article/ukraine-hits-russian-navy-s-caspian-flotilla-in-long-range-strike.

with new protective measures to prevent access; and increased pressure was adopted through missile strikes and mining operations on the Odesa port area. By 2024, Russia had also developed its own drone capabilities and showed that it could intercept and destroy Ukrainian USVs and UAVs. Ukraine had managed to prevent Russia from retaining sea control, but not to stop its actions altogether. In the safety of the inland basin of the Caspian Sea, for example, Russian forces had options for manoeuvre which, in turn, they used to conduct long-range strikes into Ukraine and to evade sanctions and import combat materials and drones from Iran.[13] More importantly, Russian forces could impose a significant strategic cost on the country: preventing the shipping of grain and other primary resources.

Keeping Ukraine's in Check? Shipping as the Ukrainian Centre of Gravity

In the maritime theatre, Russia had to contend with different objectives. On the one hand, it needed to execute a variety of operations along the Ukrainian coastline, from mining to amphibious assaults, to naval bombardment ashore to secure sea control in the Black Sea and Sea of Azov. On the other, it could also seize the opportunity to disrupt shipping as a key lifeline to Kyiv's economy. Indeed, the naval blockade of Ukrainian ports in both basins started as hostilities broke out, with international shipping being quickly reduced to minimal numbers in the months leading to Summer 2022. After a long negotiation, Russia agreed to a Black Sea Grain Initiative brokered under the United Nations aegis. The agreement was signed on 27 July 2022.[14]

The initiative allowed for commercial food and fertiliser (including ammonia) exports from three key Ukrainian ports in the Black Sea, Odesa, Chornomorsk, and Yuzhny/Pivdennyi. In the aftermath of the outbreak of hostilities, exports of these crucial items for the Ukranian economy had quickly come to an almost complete standstill. Before the war, Ukrainian data indicate that the country accounted for over 15% of global corn exports, 10% of wheat, 15-20% of barley and over 50% of sunflower oil. In 2021, agricultural exports totalled 27.8 billion USD, more than 40% of the country's overall export revenue. Ports on the Black Sea accounted for almost the entirety of these agricultural exports.[15] These numbers had all but vanished as hostilities prevented shipping from leaving ports. The Black Sea Grain Initiative enabled exports to resume, albeit at reduced levels.[16]

By the second year of the war, as Ukrainian successes had reduced Russian hopes for dominance in the Black Sea, the value of shipping to Russian strategy came back into prominence. Authorities in Moscow let the initiative expire and resumed the disruption the country's trade. In September 2023, according to senior UN officials, the number of international ships leaving

13   Institute for the Study of War, 'Russian Offensive Campaign Assessment', 17 November 2024, https://www. understandingwar.org/backgrounder/russian-offensive-campaign-assessment-november-17-2024#:~:text=Russian%20forces%20continue%20to%20innovate,and%20exhaust%20Ukrainian%20air%20defenses; Bridget Diakun, 'Russia Steps Up Suspected Arms Trade with Iran via Caspian Sea', *Lloyd's List*, 10 November 2022, https://www.lloydslist.com/LL1142920/Russia-steps-up-suspected-arms-trade-with-Iran-via-Caspian-Sea,

14   United Nations, Black Sea Grain Initiative Joint Coordination Centre, 'Beacon on the Black Sea', 27 July 2023, https://www.un.org/en/black-sea-grain-initiative.

15   Sam Joiner, Dan Clark, Ian Bott, Sam Learner, Irene de la Torre Arenas, 'How Ukraine Broke Russia's Grip in the Black Sea', *Financial Times*, 02 May 2024, https://ig.ft.com/black-sea/.

16   European Council, 'Ukrainian Grain Exports Explained', July 2023, https://www.consilium.europa.eu/en/infographics/ukrainian-grain-exports-explained/.

Ukrainian ports was again standing in the single digits. Russian strikes to port and other civilian infrastructures in Odesa created an environment that kept insurance rates elevated and reduced the shipping sector's appetite for taking risks. In November 2023, however, a new initiative – this time led by the private sector and with no apparent link to the previous grain initiative – seemed to offer a measure of relief. Global insurers agreed to provide affordable rates for shipping involved in the transport of agricultural products. Numbers quickly went back up to levels during the period of the Grain Initiative. In March 2024, the agreement was updated to include all non-military shipping, with consequent invaluable benefits to the Ukrainian economy.[17]

Favourable commercial conditions were not the only factor of relevance in the resumption of trade. The use of a maritime corridor in the western part of the Black Sea that followed the Ukrainian coast before entering Romanian and Bulgarian waters did much to facilitate shipping. This, when combined with the Ukrainian ability to keep Russian forces at distance, further reduced the risk for shipping enabling the confidence of global insurers to support trade. By November 2024, Russian still represented a significant threat to shipping but not one that could not be adequately mitigated by the Ukrainian continued sea denial strategy.

Conclusions: The Lessons of Sea Denial from the Maritime War so far

What does this all mean? How does an in-depth investigation of the maritime dynamics in a war that is still ongoing allow us to infer more general lessons for maritime strategy and the role of the maritime domain in modern war? There are four main observations that can be set forth from the way in which the war has evolved in its first one thousand days.

First, context matters. International observers long assumed before the war – and throughout the initial weeks of hostilities in the Black Sea region – that Russia's material superiority provided its navy with an unquestionable advantage, if not outright sea control. A closer examination of the theatre's strategic outlook and the steps Russia had taken in the decade before the war would suggest otherwise. The fractured nature of the theatre – divided in three relatively narrow basins – and the simple fact that the western part of the Black Sea region stood beyond the Russian grasp presented a genuine challenge. Russian naval planners had to allocate considerable resources to establish control and, crucially, retain it. Their concepts of operations seemingly sought to achieve just that through early gains but that, in turn, exposed Russian forces to Ukrainian counterattacks. Within a matter of months, Russia was struggling to take advantage of its numerical advantage.

This leads to a second observation. Correlating operational design to available means (at different points of the conflict) was essential to maximise the chances to secure desired objectives in the war at sea. The Ukrainian forces knew that they were at disadvantage and focused on concepts of operations aimed at denying Russia freedom of movement at sea in a fashion that was consistent with the reach of their combat systems. As the Russian extended their area of operations within Ukrainian range, the latter sought to exploit the situation to their advantage. Their ambitions remained anchored to the reach of their capabilities, but they also provided Ukrainian forces guidance on how to prioritise investments to further enhance them.

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17   Joiner at All., "How Ukraine Broke Russia's Grip in the Black Sea', op. Cit., https://ig.ft.com/black-sea/.

This is an important consideration that leads to a third point. In Ukraine, the role of technological innovation and its impact on operational adaptation has been somewhat misrepresented. Since Ukraine's early successes, international observers have consistently argued that maritime and air drones are fundamentally altering the character of war at sea because of the devastating results in the battle for the Black Sea region. This is not necessarily true. The ability of these unmanned systems to secure effects depended on the operational demands that guided their development and shaped their tactical uses. Technology did not change the character of naval warfare; rather the Ukrainians proved that relevant concepts of operations are key in the application of technology-enabled solutions.

The fourth and final conclusion pertains to matters of strategy. The war in Ukraine has proven once more Julian Corbett's observation that maritime strategy matters insofar as it relates to the effects it allows to achieve on land. In this respect, Russia had a one specific strategic advantage in the Black Sea in that shipping of agricultural products represented a crucially significant vulnerability for Ukraine. The importance of these exports to the Ukrainian economy meant that Russian naval planners had an option to impose considerable pressure on Kyiv through blockade. The Ukrainian ability to remove the option for Russia to operate comfortably in the western Black Sea, and the availability of a NATO maritime corridor – through Romanian and Bulgarian waters – offered vital support to the possibility to resume shipping in the aftermath of the end of the international grain agreement.

In all, the impact of the maritime theatre on the war has been considerable. Ukraine constrained Russia's ambitions to secure the war's southern flank. Russia crucially wounded the Ukrainian economic lifeline in the Black Sea but failed to end it completely. Russia's exercise of sea control remains contested whilst Ukraine's sea denial grows in efficacy. Whilst the limits on Russian sea control imposed by Ukrainian sea denial are unlikely to hand Kyiv the keys to victory, they offer Ukrainian authorities with a powerful negotiating advantage. The Black Sea is a non-negotiable strategic point of pressure in the Russian ambition to keep its territorial gains long-term. Conversely, the loss of the current advantage would put the future of Ukraine at the mercy of Russian sea control. Of no less relevance, political events unfolding in Georgia and Syria might contribute to weaken Russian strategic access to, and position in, the Black Sea.[18] This, in turn, might add to Russian demands to constrain Ukrainian defences in this basin.

It would therefore appear that, looking ahead, the maritime theatre of the war is unlikely to deliver victory for either side. Yet, it would also appear that its final balance will vitally define if, and how, a lasting settlement to the Ukraine war can be found.

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18   'As Syrian Rebels Advance, Russian Navy Leaves Port of Tartus', *The Maritime Executive*, 06 December 2024, https://maritime-executive.com/article/as-syrian-rebel-advance-russian-navy-leaves-port-of-tartus.