DKI APCSS SECURITY NEXUS

The DKI APCSS journal for comprehensive security issues throughout the Indo-Pacific region and the world!

Security Nexus Perspective

TOWARDS A LAYERED DENIAL STRATEGY: LESSONS FROM THE BLACK SEA FOR TAIWAN

By Moe Reichardt

Abstract: This article examines how lessons from Ukraine's use of uncrewed surface vehicles (USVs) in the Black Sea can inform Taiwan's asymmetric maritime defense against potential Chinese coercion. It outlines three plausible scenarios for Chinese action against Taiwan: direct invasion, limited maritime quarantine, and full naval blockade, highlighting the central role of the People's Liberation Army Navy (PLAN). It then analyses Ukraine's employment of maritime drones against the Russian Black Sea Fleet, showing how low-cost, adaptable, and networked systems challenged a conventionally superior navy, disrupted blockade efforts, and reshaped the maritime battlespace. Building on this comparison, the article argues that Taiwan should integrate USVs into a broader layered denial strategy designed to deny the PLAN freedom of maneuver, complicate blockade enforcement, raise the costs of amphibious operations, and buy time for allied intervention. Despite key differences between the Black Sea and the Taiwan Strait, maritime drones could become a critical element of Taiwan's future deterrence posture.

Summary: This article argues that the main lesson from Ukraine's use of maritime drones in the Black Sea is the viability of a layered denial strategy for Taiwan. By analyzing how uncrewed surface vehicles (USVs) helped Ukraine challenge Russian naval superiority, disrupt blockade efforts, and reshape the maritime battlespace, the article assesses their relevance for a potential conflict in the Taiwan Strait. It concludes that Taiwan should integrate USVs into a broader asymmetric defense architecture combining surveillance, strike, and denial capabilities. Such a layered denial strategy could restrict the PLA Navy's freedom of maneuver, complicate blockade or invasion plans, raise operational costs, and buy time for allied support.

Key words: Uncrewed Surface Vehicles (USVs), Taiwan, Ukraine, Asymmetric Warfare, Black Sea

Introduction

Tensions are on the rise in the South China Sea. China has long set its sights on eventual control of the island of Taiwan, making it a foremost strategic goal of the current century. The People's Liberation Army (PLA) has developed various concepts for achieving this, aligning political guidelines with practical steps and capabilities to meet the expectations and timelines of the Chinese leadership under President Xi. This article will specifically focus on the role of the Chinese Navy (PLAN) in pressuring Taiwan toward reunification. Yet, thousands of miles east of Taiwan, new developments and technologies could provide viable means to prevent the execution of Chinese strategic planning. Since 2022, Russian aggression in Ukraine has long taken to the maritime domain and transformed the Black Sea into a battlefield. Notably, Ukrainian sea drones had a significant impact, pushing the Russian navy off the Ukrainian coast towards the Russian mainland. This article will investigate the strategic possibilities of uncrewed surface vehicles (USVs) to break a potential Chinese blockade, deter an amphibious invasion of Taiwan, and limit Chinese strategic planning for an “easy grab” of Taiwan. The article will proceed as follows. The first section outlines possible scenarios and the role of the Chinese navy in the event of coercive action against Taiwan. The next section will analyze the use and implications of USVs in the Russo-Ukrainian war. The third section attempts to synthesize the findings and apply the results to a conflict scenario around Taiwan. The article ultimately concludes with a recommendation to strengthen Taiwan's asymmetric maritime defense capabilities and to pursue what it calls a “layered denial strategy.”

Retake Taiwan: Three scenarios for the PLAN in the South China Sea

Estimating the Chinese tactic is not an easy task, nor is it within the scope of this article to do so. However, an understanding of the tactical considerations and likely scenarios can be important for putting the lessons learned from maritime conflicts in Ukraine in the correct perspective. In any case, China would likely be waiting for a politically favorable moment, when the US, Taiwan, and major allies like Japan are politically and militarily weakened, which could enable a peaceful takeover of the island (Brown, 2025). Hence, it is not unimaginable that a peaceful takeover is impossible; however, it does not appear to be the most likely scenario. Taiwan and its allies, however, have demonstrated clear unity against China's aspirations in the South China Sea and its “reunification” with Taiwan. Many experts have therefore developed a rather grim picture of violent scenarios of Chinese actions towards Taiwan, which this article will explore in the following section (Du Fretay, 2024; TheDefensePost, 2024; Bozzi, 2025):

Scenario 1: Invasion by Force

The first scenario, and certainly the most extreme, involves a direct invasion of Taiwan by China. This option would represent Beijing's ultimate expression of its intent to integrate Taiwan by force. Such an operation would require complex coordination of Chinese land, naval, and air forces. Ground forces,

supported by massive amphibious landings and naval support, would be tasked with seizing control of Taiwan's major cities and infrastructure (Du Fretay, 2024; TheDefensePost, 2024). Simultaneously, Chinese air power, including the PLA Air Force, would be employed to neutralize Taiwan's air defenses and ensure total air superiority.

Naval forces would play a critical role in securing the maritime routes around the island, preventing any external support from reaching Taiwan. Further, the navy would likely cover any ground operations as forward air defense, providing cover for amphibious operations. The objective would be to isolate the island, deny allied support and intervention, and conduct targeted strikes on military and civilian infrastructure to break Taiwan's resistance. Although this scenario poses significant risks to Beijing, especially given the potential for U.S. and allied intervention, it represents the most direct form of military coercion intended to force Taiwan's surrender. It will aim for operational speed, overwhelm the defenders, and quickly establish realities on the ground, utilizing the US´s long supply routes and time necessary to position itself for a counterattack.

Scenario 2: Limited Maritime Quarantine

A second, less aggressive but still strategic scenario is the implementation of a limited maritime quarantine. In this case, China could announce "enhanced customs inspection rules," requiring all ships entering Taiwan to submit pre-arrival declarations to Chinese authorities. In practice, this would translate into the presence of the Chinese Coast Guard (CCG) around one or more of Taiwan's major ports, with the authority to inspect non-compliant vessels (Du Fretay, 2024).

This strategy would allow Beijing to test the international and Taiwanese response without immediately triggering open warfare. It could test international responses and exert high pressure without drawing in outside support, especially as democratic governments will have a harder time convincing their population to intervene since the Chinese level of violence will remain very subtle. Further, widespread international compliance could strengthen China's position, demonstrating its ability to control access to Taiwan without deploying massive military force. If Taiwan or other countries attempted to resist, China could gradually increase the pressure by deploying more forces or extending the quarantine to other parts of the island. This scenario, however, might not be sufficient to achieve a full takeover, though it appears viable. It is noteworthy, however, that the navy again plays a critical role in achieving these Chinese goals, responsible for enforcing the quarantine (Du Fretay, 2024).

Scenario 3: Full Naval Blockade

This scenario presents a mixed approach of the first and second scenarios. Again, the Chinese navy (PLAN) would play the decisive role, setting up a full blockade of the island and tightening the grip on Taiwan to pressure the island into submission (TheDefensePost, 2024). China can rely on its naval strength to create a blockade which will be hard for any outside support to break, cutting off Taiwan from any supplies and arms reaching the island (Bozzi, 2025). This is certainly a more extreme approach, but without the use of open violence, international responses will have a harder time justifying and putting up responses, since they could refrain from "taking the first shot" in order to break the blockade around the island, which China could frame as "an internal Chinese matter", this is essential since the involvement of the United States and other regional powers, such as Japan or Australia, would be crucial in responding to Chinese action against Taiwan. Washington has reaffirmed its commitment to support Taiwan, but the extent of this support would depend on the nature of the Chinese attack. A quarantine or blockade might therefore not provoke an immediate military response, unlike a direct invasion, which could trigger a major conflict throughout the Indo-Pacific Region. While this tactic has the potential to evolve into an expensive and protracted mission, the Atlantic Council Strategy Paper deems it "China´s most viable option" (Jestrab, 2023).

Sea drones in the Russo-Ukrainian War: Push the Russians out

Since the beginning of the Russian Invasion on February 24th 2022, the Black Sea has gained significant importance in the context of the war. Although the war is clearly a war on and for land, the Black Sea proved central to Russian strategic planning on the south-eastern axis. Unhindered access to the Black Sea and protecting Crimea were vital in this effort; this underscored the importance of the role of the Russian navy in the invasion of Ukraine. The Russian naval strategy had three goals (Cropsey, 2022):

- Support the south-eastern axis by providing additional strike capabilities
- Provide air cover and access denial for Ukrainian aerial attacks on vulnerable supply lines in Crimea
- Blockade Ukrainian ports and exports, damaging vital economic sources of income, since Ukraine heavily relies on exports of sunflower seeds and grain

Given the significant constraints on naval capabilities, since the Ukrainian navy had largely been stripped of its assets after the Russian takeover of Crimea in 2014, some sources acknowledge that the Ukrainians appeared all but defenseless at sea (Kirichenko, 2025a; Bursuc et al., 2024). Given these constraints, Ukraine adopted an asymmetric counter-strategy that relied on newly developed USVs to undermine Russia's naval presence in the Black Sea with the goal of pushing the Russian navy away from Ukraine (Kirichenko, 2025b).

USVs quickly began showing their effect on the battlefield when the key Russian port of Sevastopol was attacked for the first time in late 2022, including USVs; however, the effect was limited, and it

appeared that the main threat would still be posed by a combination of aerial drones and missiles. Even in later uses, the limitations of the Ukrainian fabric USVs still outweighed the opportunities, as there were persistent issues with hardware reliability, loss of connectivity, and Russian countermeasures. Ukrainian engineers, however, manage to adapt quickly and launch new variants and models of sea-based drones, notably the "sea baby" drone and the TLK 150 Series (Cheetham, 2023). These new models were far more effective, since they use hybrid electric-diesel engines, which allow them to significantly increase range while still retaining a substantial switch to an attack speed of up to 40 knots. Further developments in sonar and visual navigation improved positioning, and automatic targeting systems proved more resistant against jamming and the electronic warfare capabilities of the Russians (Abdurasulov, 2024). USVs, therefore, became more reliable and notably remained cheap, while relying on "off-the-shelf products" that did not require complicated supply lines or maintenance and could therefore be fielded without a specialized crew. Depending on the variant and purpose, Ukrainian USVs are estimated at around $250,000 (Cheetham, 2023; Bursuc et al., 2024). Rapid, cheap adaptation and innovation pushed the threat posed by USVs to another level. While 2022 saw only limited attacks with limited success, the period between 2023 and 2024 saw a steady increase in the use of sea drones. In 2023 alone, there were 13 successful attacks on Russian ships and infrastructure targets, which forced the Russian Black Sea Fleet back towards the better-protected harbor of Novorossiysk on the Russian Black Sea coast, 362 miles from Odesa. The Russian navy was now unable to fulfil its strategic objective, even though Russia withdrew from the grain agreement, the trade routes remained open. More Success was to follow with the introduction of the Magura V5 model USV. This model, with a length of roughly 5.5 meters, a width of 1.5m, and night-vision capabilities, proved a fierce enemy for the Russians, even more so as the Ukrainians significantly advanced their maritime warfare strategy (Kaminsky et al., 2025). Now, packs of up to 12 drones would be used to observe, surveil, attack, and overwhelm Russian defenses.

According to Kirichenko, Ukraine has scored 21 successful hits on Russian ships to date, sinking 10, most notably the corvette Sergey Kotov and the R-334 Ivannovets missile cruiser (2025a). Further attacks even targeted the heavily fortified military ports of Novorossiysk, proving that Ukrainian drones were now able to cover and operate across substantial distances. One Ukrainian drone was even discovered around 900 miles off the coast of Odesa, close to the coast of Turkey, highlighting the significant advancements in the range of the USVs (Kirichenko, 2025a).

Further, the Maguro V5 has proven highly adaptable, as it can be converted into various versions, including those equipped with rocket launchers and anti-aircraft missiles (NavyLookout, 2025). The USV's success has therefore expanded into other domains, as Ukrainians have managed to shoot down two MI-8 helicopters near Crimea, and one confirmed SU-30, marking the first ever recorded fighter aircraft shot down by a water-based uncrewed system. Moreover, the first successful attempts to use the Maguro V5 as a small mobile carrier for FPV drones have been tested (NavyLookout, 2025). These would clearly increase Ukrainian tactical flexibility, as their swarm tactic can now include aerial drones, which are almost impossible to jam, creating a layered strategic approach that brings together

technological advances across land, air, and sea to deny Russian maritime superiority. As Vialko notes: "Ukraine became the first country in the world to widely and effectively use naval drones […], significantly shifting the balance of power in the Black Sea" (2026), denying the Russians the ability to meet their strategic objectives. Further, it demonstrated "the ability of smaller nations to challenge larger naval powers through asymmetric warfare [at sea and a] re-evaluation of maritime dominance" (Kaminsky et al., 2025, p.13).

Towards a layered denial strategy: the case of asymmetric warfare in the Pacific

This section aims to synthesize and analyses the previous section on Taiwan and the potential of maritime drones for Taiwan's defense strategy.

First of all, it is important to recognize that Taiwan is not Ukraine, and Russia is not China, especially the latter, which should be quite obvious given that the PLAN's abilities and resources exceed those of the Russian navy with ease (Kirichenko, 2025a). However, it became clear that in both cases, the navy had similar and critical operational goals:

- support the (possible) land operations
- protect own supply lines
- and, most importantly, to establish a blockade to exert maximum economic and political pressure.

That being said, the case of Ukraine and maritime drones is highly relevant to Taiwan. The Ukrainian navy managed to break the Russian encirclement by introducing and adapting sea drones. These drones are technologically advanced and have proven highly effective, especially when fielded against a navy that relies heavily on larger ships to meet its strategic objectives. China certainly fits this category.

Taiwan must learn from Ukraine and should push for greater integration of drones to strengthen its asymmetric capabilities. A drone fleet comprised of a mixture of suicide, mini carrier and attack USVs could credibly threaten Chinese vessels, from landing craft to larger vessels and even the projection of airpower. These drones could therefore threaten China's ability to maintain a blockade or land its troops safely. Further, drones could be used to attack vulnerable maritime supply lines, ports, and supply hubs in the event of a blockade or invasion. Ukrainians have proven that drones, especially when further integrated with missile strikes and intelligence gathering, can be very effective in pushing back a more advanced, better-armed, and, on paper, superior enemy. The PLAN will field more modern systems than the Russians do; it can further rely on a large dual-use fishing fleet, but the possibility of hundreds of drones over, on, and possibly even under the water surface can credibly threaten every strategic objective of the PLAN (MoneyControl World Desk, 2026). Planning a layered maritime drone defense could turn the SCS around Taiwan into a strategic nightmare for the Chinese navy and play into Taiwan's biggest strategic advantage: its 130-mile natural ocean barrier against its

biggest threat; the People's Republic of China. Taiwan must learn from Ukraine's advances in USVs and adapt them to the specific conditions in the Pacific. It should further investigate integrating these drones into a larger, layered strategic defense using conventional air and artillery doctrine, which this article coins the "layered denial strategy," recognizing the importance of denying the Chinese freedom of operation around the Taiwanese Island(s). In doing so, such an asymmetric strategy could both push the PLAN back and disrupt a potential blockade, thereby buying valuable time for the United States and its allies to move into position while increasing the operational costs of any Chinese attempt at either an amphibious assault or a maritime encirclement, as the Ukrainian case has demonstrated.

Conclusion

This article has investigated the lessons learned from the maritime dimension of the War in the Black Sea and their implications for a conflict in and around the Island of Taiwan. It recognized that through innovation and by bolstering asymmetric capabilities with USVs, Ukraine achieved impressive results in the Black Sea. Russia continues to struggle to cope with these developments, showing its value within a conflict scenario. Further, the developments shown in this article suggest that USVs are likely to evolve and operate across different domains. This opens the possibility of a more layered defense system that combines attack, suicide, and air-defense systems, all conducted by an autonomous navy.

It must be said that the Chinese navy is not the Russian navy, and the SCS is not the Black Sea; any use of sea-based drones by Taiwan will have to adapt to Pacific conditions.

However, bolstering Taiwan's deterrence and asymmetric capabilities to strengthen its most important natural defense line, its maritime border, against a Chinese takeover is crucial. This article, therefore, advocated for a “layered denial strategy” that integrates maritime USVs as a significant part of a larger integrated defense network capable of repelling Chinese maritime aggression.

Bio: Moe Reichardt is a graduate of the London School of Economics (LSE), holding a Master’s degree in International Relations with a focus on geopolitics and security. He served as an adjunct faculty member at the George C. Marshall Center, specializing in geopolitics and organized crime in conflict. He is currently an intern at the Daniel K. Inouye Asia-Pacific Center for Security Studies.

Bibliography:

Abdurasulov, B.A. (2024) *Ukraine war: The sea drones keeping Russia’s warships at bay*. Available at: https://www.bbc.com/news/world-europe-68528761.

Bozzi, C. (2025) 'China may not invade Taiwan, but rather blockade it. How would this work, and could it be effective?,' *TheConversation*. Available at: https://doi.org/10.64628/aa.pjgddn3gu.

Brown, K. (2025) *How China Could Take Taiwan, Without Firing a Shot*. Available at: https://time.com/7304355/china-invasion-taiwan-2027/.

Bursuc, A., Munteanu, C. and Rus, S. (2024) 'Overview on Sea Drones Evolution and their Use in Modern Warfare,' *Revista Academiei Forţelor Terestre*, 29(2), pp. 195–209. Available at: https://doi.org/10.2478/raft-2024-0021.

Cheetham, B.J. (2023) *Sea drones: What are they and how much do they cost?* Available at: https://www.bbc.com/news/world-europe-66373052.

Cropsey, Seth (2022) "Naval Considerations in the Russo-Ukrainian War," Naval War College Review: Vol. 75: No. 4. Available at: https://digital-commons.usnwc.edu/nwc-review/vol75/iss4/4and operational planning.

Du Fretay, H. (2024) *Analysis: How China could invade or blockade Taiwan*. Available at: https://www.armyrecognition.com/focus-analysis-conflicts/army/analysis-defense-and-security-industry/analysis-how-china-could-invade-or-blockade-taiwan.

Jestrab, M. (2023) *A maritime blockade of Taiwan by the People´s Republic of China: a strategy to defeat fear and coercion*. The Atlantic Council.

Kaminsky, K. *et al.* (2025) *The autonomous Navy Sea drones and the future of maritime conflict*. Available at: https://researchonline.ljmu.ac.uk/id/eprint/27274/1/Drone%20warfare%20-%20Apr%2025.pdf.

Kirichenko, D. (2025a) 'Step by Step, Ukraine Built a Technological Navy,' *Proceedings*, 150(5).

Kirichenko, D. (2025b) *Ukraine's sea drones are now launching unjammable Fiber-Optic drones*. Available at: https://www.forbes.com/sites/davidkirichenko/2025/10/06/ukraines-sea-drones-are-now-launching-unjammable-fiber-optic-drones/.

MONEYCONTROL WORLD DESK (2026) *Is China's 'third sea force' mobilising near Taiwan? What the massing of 2,000 fishing boats signals*. Available at: https://www.moneycontrol.com/world/is-china-s-third-sea-force-mobilising-near-taiwan-what-the-massing-of-2-000-fishing-boats-signals-explained-article-13859842.html.

NavyLookout and NavyLookout (2025) 'Black Sea battle: how Ukraine's drones overpowered the Russian Navy - Navy Lookout,' *Navy Lookout - Independent Royal Navy news and analysis*, 22 July. Available at: https://www.navylookout.com/black-sea-battle-how-ukraines-drones-overpowered-the-russian-navy/.

TheDefensePost (2024) *Possible scenarios for a Chinese invasion of Taiwan*. Available at: https://thedefensepost.com/2024/01/09/china-invasion-taiwan-scenarios/.

Vialko, D. (2026) *Zelenskyy hints at new developments in Ukraine's sea drones*. Available at: https://www.msn.com/en-us/news/world/zelenskyy-hints-at-new-developments-in-ukraine-s-sea-drones/ar-AA1YR0l5?ocid=BingNewsSerp.

June 2026