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# Russian Pop-Up Ambush Drone Tactics Could Change Warfare

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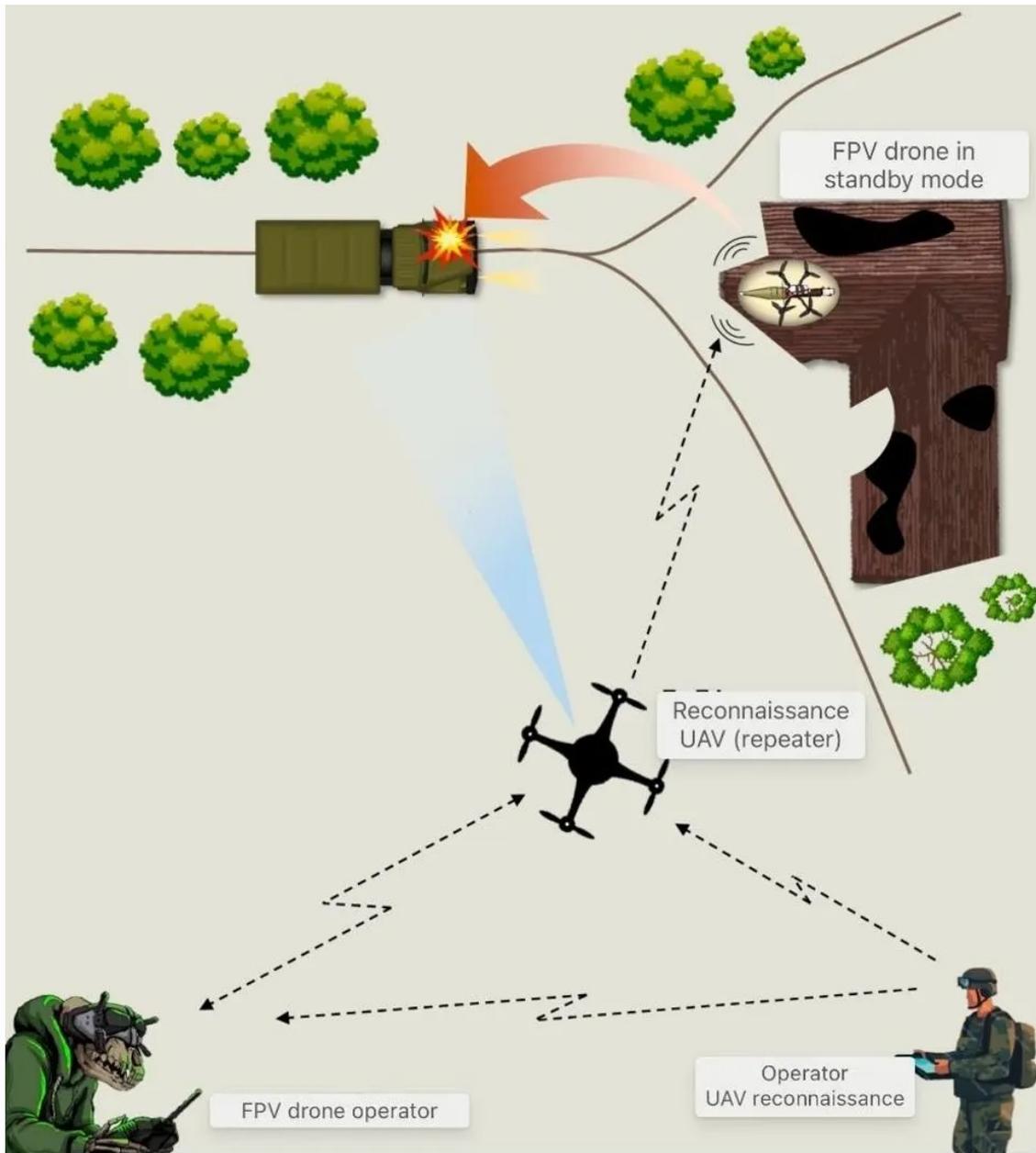
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Document circulated on Russian Telegram shows an FPV perched on a building carrying out an ambush ...  
[+] RUSSIAN MOD VIA TELEGRAM

A Ukrainian paper on counter-drone warfare, [found by Curtis C on Russian channels](#) highlights a new threat: pop-up ambushes by FPV drones which land on

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the ground and lie in wait until a target approaches. We have seen [similar comments before](#), but not in so much detail.

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These ambush attacks can happen anywhere, day or night. While other FPV attacks can be detected by their radio emissions, the dormant ambush drone is invisible until it strikes. This concept has been around some time, but now it is widely acknowledged by both sides it is worth looking at the implications.

## Perching And Staring

Drones, especially quadcopters, have limited flight endurance. Unlike wings, rotor blades need to expend energy just to stay airborne, and small drones typically have a flight time of half an hour or so. FPVs, heavily laden with a large warhead, may have much shorter endurance.

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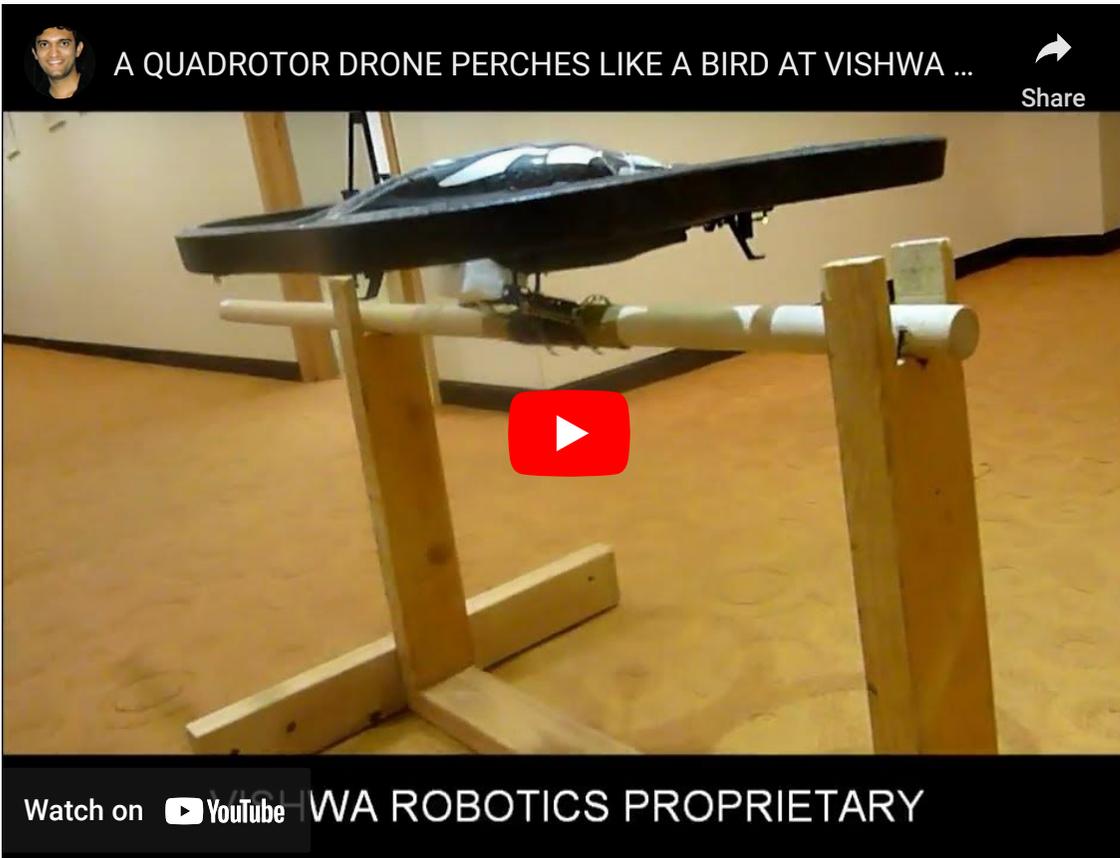
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One way to stretch this out is to [‘perch and stare,’](#) find a convenient vantage point for the drone to land on so the operator can continue to observe the target area without needing to expend battery power. But although there may be a few ledges or flat roofs, the chances of finding one exactly where it is needed are slim. Trees, powerlines, streetlights and other structures are far more common, and over the



years there have been many projects to realize drones that can take advantage of them, like the Air Force's [Perching Micro Air Weapon](#) of 2016, or the [design by Vishwa Robotics](#), also developed for the Air Force, based on an American Falcon's feet which could perch on branches or power lines.

Drone with birds feet: A U.S. Perching Micro Air Weapon demonstrator U.S. DOD



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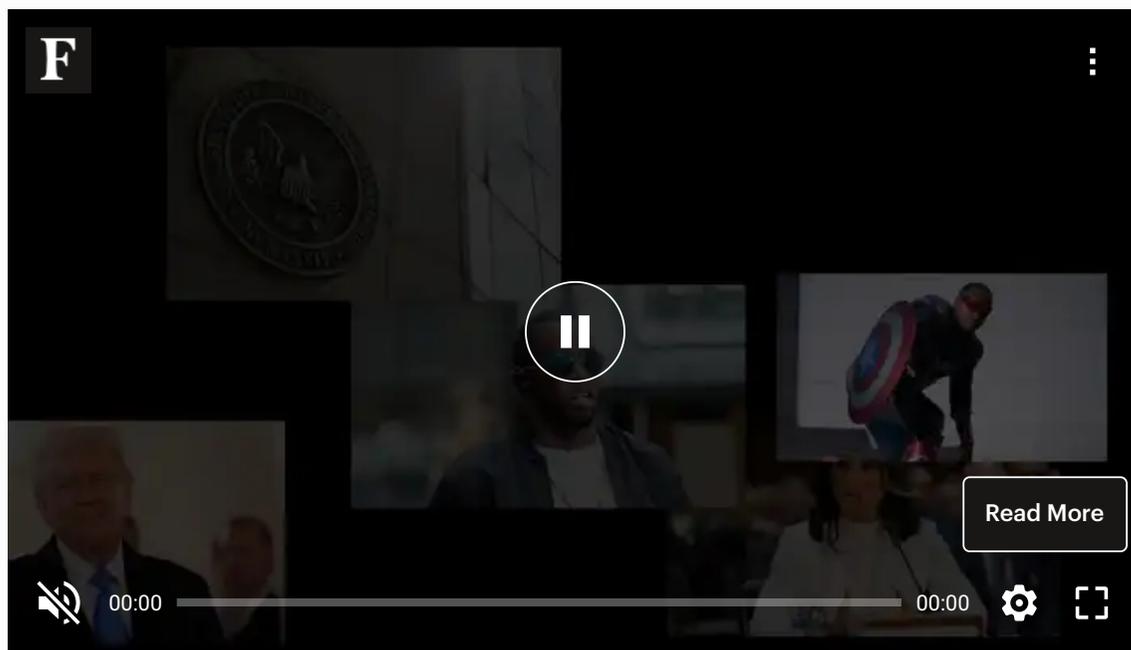
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This type of perching is tricky though, requiring extra hardware and complex flight software . In Ukraine both sides have adopted simpler solutions using the technology they already have. This approach involves having the perching and staring done by two different drones.



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### The Two Drone Ambush

As the counter-drone document notes, pop-up ambush tactics involve two drones. The FPV attack drone lies dormant along the expected line of enemy advance. A reconnaissance drone provides overwatch, scanning the area for signs of advancing vehicles. This second drone is also a communications relay. Radio control is generally limited to line-of-sight; by having a relay in the sky, the operator can connect with a drone which is on the ground.

The beauty of this arrangement is that fixed-wing reconnaissance drones have a flight time measured in hours, and they operate as tag teams so that one will always be observing the target area. The FPV drone can stay on the ground as long as needed until activated.

When a target approaches, the FPV takes off and strikes. The attack may come from just a few meters away if the FPV has been positioned beside a road, or it might much further. Normal FPV attacks can be detected from some distance away by the video and control signals, giving the targets a chance to flee or take cover – drone detectors are now considered essential equipment – but the ambush attacks may only give a few seconds warning.

According to the document: "*The tactical technique is based on the landing and occupation of a hidden position by the FPV drone near roads with heavy traffic, intersections, places of possible accumulation of equipment and personnel with the subsequent sudden attack on the target.... At night, attacks on the headlights of moving vehicles are possible, or the use of FPV drone with a thermal imager.*"



The Russian Joker drone has a 'hibernate' capability so it can wait in place for a month before ... [+] CENTER FOR INTEGRATED UNMANNED SOLUTIONS

The FPVs may fly themselves to the ambush location, but could be dropped off by larger drones or emplaced by hand. The document suggests that they may be able to wait for up to six hours. This likely applies to standard FPVs; specialist versions can lurk for much longer.

[The Joker](#) made by the Russian “Center for Integrated Unmanned Solutions” is a multipurpose drone which can be used for

reconnaissance, bombing or FPV attack missions, as well as air-to-air interception. Back in March, director Dmitry Kuzyakin told Russian newspaper Izvestia that the new Joker-10 had a hibernate function which allowed it to wait in ambush for up to a month. He claimed this drone was already in use with Russian Special Forces.

The Russians are not the only ones using these tactics. In September, a [Russian Telegram channel warned that](#): *"Ukrainian FPV drones are also used more cunningly: they land near a road and wait for a target. Once a vehicle or group of people enters their field of view, the drone takes off and strikes from ambush."* (This implies that the FPV is finding its own targets, which seems unlikely given the limited view from a drone on the ground).

A similar comment last year from a Russian blogger [picked up by WarTranslated](#) claimed that the Ukrainians carried out drone ambushes *“by landing their FPV drones in frequently visited locations or even on top of Russian vehicles, waiting for the owners to return, and exploding.”*

We even have video of this type of incident, with a Ukrainian FPV operator [landing his drone on a Russian armored vehicle](#) and waiting for the crew to open a hatch.



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The ambush of FPV drone operators on the Russian military.

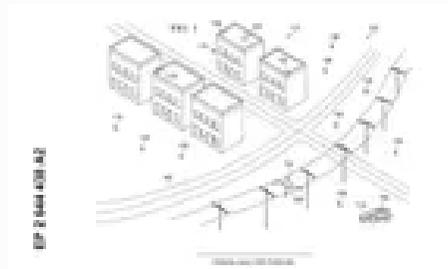
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(Boeing came close to this [concept in a 2016 Patent](#), which had a squad of 10 to 30 small drones operating from an automated base station which they returned to for recharging. The base station could also reload the drones with a ‘dispensable payload.’ )

## New Dimensions Of Warfare

Direct drone attacks are a regular feature of this war, and mining by drone has become increasingly common, with drones scattering tiny PFM-1 ‘Petal’ mines on paths, placing more sophisticated mines with tripwires or magnetic sensors beside roads, and larger drones laying 21-pounds TM-62 anti-tank mines. But ambush drones, now only appearing on a small scale, combine the most dangerous features of both.



This Boeing Patent shows a remote drone unit operating from an automated base station situation on a ... [+] US PATENT OFFICE

Like drone-laid mines, ambush drones can be anywhere, including tens of miles behind enemy lines. Like them they can be precisely located along busy roads, chokepoints and outside busy installations where they can do most damage.

Unlike mines, ambush drones are not limited to attacking targets nearby, and they cannot be easily detected and removed.

The current generation are operator controlled, and so could be neutralized by jamming. This can be difficult because the drone is silent until activated, giving no time to establish what frequencies are being used and jam them before it attacks.

Such drones are likely to be used in combination with minefields, laid manually or remotely, to deny territory. The drones can be relocated to cover gaps in the minefield, or reinforced with more drones flown or dropped into the area by other platforms as needed.

Future versions are likely to have greater autonomy, a technology which is advancing rapidly in Ukraine with [new AI capabilities on small drones](#). They may have acoustic, seismic, magnetic or other sensors to detect targets and wake them up. Jamming prevents remote activation, but there is also the risk that ambush drones may listen for jamming signals and activate when they sense them.

At present, drones cannot hold ground on their own. But ambush drones capable of attacking anything which moves across a wide area, directed by operators many miles away, open up new tactical possibilities.

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