Hide and Seek in the Philippine Sea: China's Ability to Detect U.S. Surface Ships using Drones and Irregular Forces

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Abstract

How likely are U.S. Navy ships to be found by Chinese drones and irregular ships during a war? If U.S. Navy ships cannot hide, it's unlikely that they will be make operationally significant contributions during a war. While satellites and over-the-horizon backscatter radars are the central tools in China's ISR toolkit, drones and irregular ships are also mentioned but never analyzed. This paper builds an agent based model of these assets and simulates their effectiveness, factoring in the Chinese order of battle, maintenance and travel time, plausible search patterns, and realistic sensor effectiveness. We find that U.S. ships have a 50% chance of being detected within 24 hours of getting within 2,000 nautical miles of China. The implication of this

is that, even should the United States negate Chinese satellites and ground-based radars, surface ships will be unlikely to conduct missions without taking fire from China. Methodologically, this paper contributes to the state of the art in modeling operational problems.

1 Introduction

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2 Literature Review

3 Methodology

4 Results

5 Analysis

6 Conclusion