

WWII Carrier Effectiveness¹

The utility and effectiveness of the aircraft carrier was first tested in the South Pacific in 1942. How effective they would be was a much-debated point. Tacticians on both sides had knowledge of the advantages of scouting and striking power. The main effect of scouting, as far as a carrier vs carrier battle was concerned, was to locate the opposing carrier group so that an air strike could be launched. This determined who attacked first and, if the attacked force had resources remaining, whether or not there was a counterattack. The net striking power of a carrier air wing was largely unknown at the outset of hostilities. Estimations varied from the air wing of one carrier being able to sink 2 or 3 opposing carriers (if they were clustered in a battle group), to 2 or 3 air wings being required to sink one opposing carrier.

During May and June 1942, two major carrier vs carrier battles were fought.

The Coral Sea (May 1942). On 7 May the *USS Lexington* and the *USS Yorktown* sent a major strike against the small carrier *Schoho* and sank her. On 8 May the U.S. force and the Japanese striking force from the carriers *Shokaku* and *Zuikaku* struck simultaneously. The *Lexington* was sunk and the *Yorktown* suffered minor damage. The *Shokaku* suffered heavy damage, while the *Zuikaku*, since U.S. aircraft did not find it, survived undamaged.

Midway (June 1942). On 4 June the U.S. force, comprised of the carriers *Yorktown*, *Hornet*, and *Enterprise*, successfully surprised the Japanese force containing the carriers *Kaga*, *Akagi*, *Soryu*, and *Hiryu*. The *Kaga* and the *Soryu* were sunk and the *Akagi* was so heavily damaged that she was scuttled. After the successful U.S. surprise attack, the *Hiryu* counterattacked, finding and heavily damaging the *Yorktown* (she was then sunk by a Japanese submarine). Finally, the *Enterprise* reattacked and sank the *Hiryu*.

- a. The scouting effectiveness was basically equal (mostly ineffective) for both sides in each of the battles. What do the results of the battles indicate about the effectiveness of the carrier striking force? Is it roughly the same for both sides? On the average (count a small carrier as $\frac{1}{2}$), how many carriers can be sunk (or heavily damaged) by one carrier air wing per strike?
- b. To develop a model for a 1942 carrier vs carrier battle, complete the following table. Each block should contain three entries. The first should be the predicted results of the first attack, the second the results after a counterattack (if made), and the third the results of a second attack by the side which attacks first. If no counterattack or second attack is possible, the correct entry should be *NA*. For example the entry in the row U.S. and column 2/1 should reflect the outcome of a battle in which the U.S. had 2 carriers and attacked first, while the Japanese had only 1 carrier. The entries should be $a_1/a_2, b_1/b_2, c_1/c_2$, where a_1 =number of U.S. carriers after first attack, a_2 =number of Japanese carriers after first attack, b_1 =number of U.S. carriers after counterattack, etc.

¹ Adapted from Wayne P. Hughes, Jr., *Fleet Tactics*, Naval Institute Press, 1986.

first strike	Initial Number of Carriers (U.S./Japanese)		
	2/1	2/2	4/3
U.S.			
Japanese			
simultaneous			

- c. On 24 August 1942, in the Eastern Solomon Islands, a U.S. striking force from the carriers *Enterprise* and *Saratoga* attacked the small Japanese carrier *Ryujo* and its three escorts. The Japanese were evidently using the *Ryujo* as a decoy, as air wings from the *Shokaku* and the *Zuikaku* then surprised the U.S. force. What does your model predict about this battle?