

Pearl Harbor in Perspective: How Much of a Disaster?

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The Japanese attack on Pearl Harbor is often represented as devastating, a disaster, or a catastrophe.¹ When viewed from the perspective of the war as a whole, however, the American materiel losses (ships and aircraft) were not terribly significant. The ships and aircraft attacked were old, and were quickly replaced by newer models. Damaged ships were repaired and salvaged, and only three ships were permanently lost to the fleet. Personnel losses were not large relative to the number of personnel already mobilized, and were rapidly replaced by the enormous wartime manpower mobilization. The losses at Pearl Harbor were small compared to losses in subsequent American battles, and even more so compared to the losses suffered by other nations. Overall, the Pearl Harbor attack was *not* a significant defeat in military terms. The chief result of the attack was psychological shock that energized the nation rather than demoralizing it.

Personnel Casualties

Early estimates of Pearl Harbor casualties were quite high. One Navy witness at the 1945 Hewitt Inquiry stated 3,067 were killed and 896 wounded.² A Navy communique of December 1942 stated that 2,117 Navy and Marine Corps

¹ See, for example, Ronald Spector, *Eagle Against the Sun* (New York: The Free Press, 1985), 93. George Victor, *The Pearl Harbor Myth* (Washington, DC: Potomac Books 2007), 1-3; Roberta Wohlstetter, *Pearl Harbor: Warning and Decision* (Stanford, CA: Stanford University Press, 1962), 3, 387.

² Hearings Before the Joint Committee on the Investigation of the Pearl Harbor Attack, Part 39 (Washington, DC: Government Printing Office, 1946), 568.

personnel were killed, 960 were still missing, and 876 were wounded, and the Army suffered 226 killed and 396 wounded.³ Other witnesses before the Joint Committee reported 2,086 Navy and Marine Corps personnel killed and 759 wounded, as well as 218 Army personnel killed, 22 missing, and 360 wounded.⁴ The Navy Medical Department's postwar study gave lower figures; 1,862 Navy and Marine personnel killed, with an additional 692 injured of whom 643 returned to duty.⁵ The Army official history gave Army casualties as 228 killed and 468 wounded.⁶ The generally accepted numbers today are 2,403 dead and 1,178 wounded: 2,117 Navy/Marine Corps dead and 779 wounded, 218 Army dead and 364 wounded, and 68 civilian dead and 35 wounded.⁷



An unexploded Japanese bomb recovered from the turret of West Virginia. Source: Wallin, p. 276.

³ "The Japanese Attack on Pearl Harbor, December 7, 1941," From: NAVY DEPARTMENT COMMUNIQUE 1-300 AND PERTINENT PRESS RELEASES, DECEMBER 10, 1941 TO MARCH 5, 1943, Office of Public Relations, U.S. Navy, 1943, 140-143. Online at http://www.ibiblio.org/pha/pha/knox/knox_3.html

⁴ *Hearings Before the Joint Committee on the Investigation of the Pearl Harbor Attack*, Part 1 (Washington, DC: Government Printing Office, 1946), 58-59.

⁵ *The History of the Medical Department of the United States Navy in World War II, The Statistics of Diseases and Injuries*, Volume 3 (Washington, DC: Government Printing Office, 1950), 84.

⁶ Stetson Conn, *Guarding the United States and Its Outposts* (Washington, DC: Government Printing Office, 1964), 193.

⁷ Samuel Eliot Morison, *The Rising Sun in the Pacific* (Edison, NJ: Castle Books, 2001), 126. Gordon W. Prange, *At Dawn We Slept* (New York: Penguin, 1991), 539.

Battleships bore the brunt of the Japanese attack. Of the total casualties, 81% were battleship sailors and Marines. Ninety-seven percent of the battleship casualties, and 67% of the total casualties, resulted from the sinking of *Arizona* due to a catastrophic magazine explosion and *Oklahoma* capsizing due to torpedo hits. If *Arizona*'s magazine had not exploded, then she might have suffered on the order of a hundred killed, like *West Virginia* or *Nevada*. On the other hand, *Tennessee* was hit on two different turrets. One bomb broke up and failed to detonate, and the other detonated incompletely without penetrating. Similarly, *West Virginia* was hit in the turret by a bomb that penetrated but then broke up and failed to explode. If these bombs had penetrated and caused a catastrophic explosion on *Tennessee* or *West Virginia*, the number of killed could have increased by a thousand or more per ship. Fortunately for the Americans, Japanese armor piercing bombs were defective, and six of the ten that hit were either duds or failed to detonate properly.⁸

Battleship	Killed
<i>Arizona</i>	1,177
<i>Oklahoma</i>	429
<i>Maryland</i>	4
<i>West Virginia</i>	106
<i>Tennessee</i>	5
<i>California</i>	100
<i>Nevada</i>	60
<i>Pennsylvania</i>	9
<i>Utah</i>	64
Total	1,954

Navy and Marine Corps personnel strength in December 1941 was 395,520. Army strength was 1,686,403.⁹ Casualties at

⁸ Alan D. Zimm, *Attack on Pearl Harbor* (Philadelphia: Casemate, 2011), 234.

⁹ Admiral Ernest J. King, *Report to the Secretary of the Navy* (Washington, DC: Navy Department, 1944), 20. Online at <http://www.ibiblio.org/hyperwar/USN/USNatWar/USN-King-1.html>. Army Service Forces, *Statistical Review, World War II* (Washington, DC: War Department, 1945), 197.

Pearl Harbor thus represented 0.5% of total Navy/Marine Corps strength and 0.01% of total Army strength. By December 1942, Navy and Marine Corps strength had reached 1,497,590 and Army strength 5,397,674.¹⁰ In 1942, the Navy and Marines grew by 1.1 million personnel and the Army by 3.9 million personnel. Over 3,000 sailors and Marines and nearly 11,000 soldiers joined the armed forces each day in 1942. Thus, the 2,335 men killed at Pearl Harbor were replaced in less than a day when America mobilized. The Pearl Harbor losses appear even less significant in light of the Army peak strength of 8,291,336 in May 1945 and the Navy and Marine Corps peak strength of 3,892,324 in September 1945.

During World War II, the Army suffered 234,374 deaths from battle and 565,945 non-fatal wounds.¹¹ The Navy had 36,488 killed and 32,754 wounded. The Marines lost 19,568 killed and 55,396 wounded.¹² Deaths at Pearl Harbor represented 0.09% of total wartime Army dead, 5.5% of Navy dead, and 0.5% of Marine dead—with the proviso that the deaths at Pearl Harbor took place in a single day, and the rest of the World War II deaths in 1,360 days. The 2,016 sailors killed at Pearl Harbor were roughly equal to the 2,112 sailors killed in the Civil War, and greatly exceeded the 436 sailors killed in World War I.¹³ Although the Pearl Harbor casualties paled in light of later losses, the instant loss of almost as many sailors as died in all previous wars combined, including World War I, the largest war in living memory, undoubtedly contributed to the psychological shock of the attack.

Compared to losses in other naval actions of World War II, Pearl Harbor was the Navy's most costly defeat, but the Navy had two even more costly victories—Leyte Gulf and Okinawa—

¹⁰ King, 152, and Matloff and Snell, 387.

¹¹ *Army Casualties and Nonbattle Deaths in World War II* (Washington, DC: US Army, 1946), 5. Online at <http://www.ibiblio.org/hyperwar/USA/ref/Casualties/index.html>

¹² *The History of the Medical Department of the United States Navy in World War II*, 76.

¹³ *Ibid.*

and one that was almost as costly—the Naval Battle of Guadalcanal (12-15 November 1942). Later in the war, the U.S. Navy repeatedly inflicted personnel losses on the Japanese Navy that exceeded the U.S. Navy's losses at Pearl Harbor.

Battle	USN KIA	IJN KIA	USN Victory?
Leyte Gulf	4,336	7,475	Yes
Okinawa	4,022	4,037	Yes
Pearl Harbor	2,016	64	No
Guadalcanal (Nov 1942)	1,732	3,000	Yes
Savo Island	1,077	129	No
Tarawa¹⁴	727	516	Yes
Java Sea / Sunda Strait¹⁵	693	47	No
Coral Sea	656	966	Yes
Iwo Jima	403	0	Yes
Tassafaronga	395	197	No
Midway	350	3,057	Yes
Santa Cruz Islands	266	500	No
Kula Gulf	168	324	Yes
Cape Esperance	163	454	Yes
Philippine Sea	109	2,987	Yes
Eastern Solomons	90	290	Yes
Kolombangara	89	482	Yes
Bismarck Sea	13	2,890	Yes
Vella Gulf	0	1,210	Yes
Cape St. George	0	647	Yes

Note: In this table, casualty totals include only casualties at sea, not casualties from any associated ground actions.

In addition to these battles in the Pacific theater, several naval battles in the European theater resulted in casualty levels comparable to Pearl Harbor. At the Battle of Cape Matapan in March 1941, the British defeated the Italians, sinking three heavy cruisers and two destroyers and killing over 2,300 sailors. In the

¹⁴ There was no fleet engagement at Tarawa. The Japanese sent submarines to intercept the invasion. The Japanese lost six submarines but sank the carrier *Liscome Bay*.

¹⁵ Additionally, 368 men from *Houston* were taken prisoner and over 2,000 British and Dutch sailors were killed. In total, 2,007 American sailors died during the loss of the Philippines and Dutch East Indies, December 1941 to March 1942.

Denmark Strait in May 1941, *Bismarck* sank *Hood*, killing 1,428 British sailors. Then, the Royal Navy sank *Bismarck*, killing 2,200 Germans. At Mers-el-Kébir in July 1940, the British attack on the French fleet killed 1,297 French sailors, of which 977 were lost when the battleship *Bretagne* exploded. In December 1943, the British sank *Scharnhorst* in the Arctic Ocean, killing 1,932 Germans. In these battles, the victor lost only a handful of men each time.

When compared to other major naval battles in World War II, the casualty levels at Pearl Harbor were not exceptionally high. Pearl Harbor stands out as the most costly defeat for Allied naval forces. However, the Japanese, Germans, and Italians suffered many naval defeats that were as costly, or more costly, than Pearl Harbor. This is not surprising. The Allies were dominant at sea, and did not suffer many defeats. Meanwhile, the Axis navies were systematically hunted down and annihilated.



Arizona's magazine explodes. It was not uncommon for large warships to be lost with heavy casualties due to such explosions. Source: U.S. Navy.

Two events during the Pearl Harbor attack produced the majority of the casualties; *Arizona* exploded and *Oklahoma* capsized. How did these losses compare to other losses of individual ships during World War II? Appendix I shows that during the war, fifteen separate warship sinkings resulted in a larger number of fatalities than the loss of *Arizona*. Thirteen of those fifteen ships were Axis vessels – among the Allies, only the loss of *Hood* and *Glorious* were more costly than the loss of *Arizona*. *Arizona* was the most costly single American ship loss, followed by 879 dead on *Indianapolis* and 807 dead on the carrier *Franklin*, which was hit by a kamikaze but did not sink. High-fatality sinkings often occurred during lost sea battles, when the defeated force did not have the opportunity to rescue survivors, and the victors were unable or unwilling to do so. High fatalities from a ship's destruction were often the product of a catastrophic explosion – *Arizona*, *Hood*, and *Yamato* are famous examples. Submarine attacks often produced high fatality sinkings, because they caused the target to capsize or sink very quickly. American submarines took a severe toll on the Japanese Navy; major victims included one battleship, nine aircraft carriers, sixteen cruisers, and forty-eight destroyers.

Many troopships were sunk during World War II. Appendix II shows that forty-three troopships were lost each with a higher human cost than *Arizona*. Twenty-three of these sinkings killed more people, and sometimes two or three times as many people, as were lost in the entire Pearl Harbor attack. Thirty-five of these losses killed more than the 1,500 people lost on *Titanic* in 1912. Submarine attack was the principal cause of these catastrophes. Many of these ships were loaded with prisoners of war or civilian refugees who had little ability to escape. These ships usually sank very quickly.

The casualties at Pearl Harbor paled in comparison to those resulting from land battles. However, the Pearl Harbor deaths were inflicted in one day, with Pearl Harbor being the single most costly American day of the war. Casualties from land

battles and campaigns were usually incurred over weeks or months:

World War II Battle	KIA	Duration (Days)	KIA/Day
Normandy	20,668	86	240
Ardenes	19,246	40	481
Okinawa	13,704	81	169
Luzon	10,380	219	47
Northern Italy	8,486	206	41
Hürtgen Forest	8,157	95	86
Iwo Jima	6,821	25	273
Lorraine	6,657	108	61
Salerno to Cassino	6,266	134	47
Anzio	5,538	123	45
Marianas	5,219	51	102
Leyte Island	3,504	70	50
North Africa	2,838	177	16
Sicily	2,572	39	66
Pearl Harbor	2,403	1	2,403
Peleliu	2,336	78	32
Gilberts (Tarawa & Makin)	1,753	3	584

American World War II casualties were not evenly distributed in time. The majority of the casualties occurred in 1944 and 1945:

	Americans Killed In Action By Service and Year			Killed/Day
	Army	Navy	Marines	
1941	810	1,921	120	119
1942	20,734	8,351	1,253	83
1943	41,638	6,464	2,046	137
1944	149,822	8,625	6,544	452
1945	95,820	10,239	9,096	474

In 1944 and 1945, the United States averaged well over four hundred battle deaths per day, or a “Pearl Harbor” every five days. Some months were even more intense. In July 1944 and December 1944, the US military lost 630 men killed per day; in March 1945, 656 men killed per day; and April 1945, 677 men killed per day.¹⁶

Pearl Harbor Compared to Civil War Battles			
Battle	KIA	Duration (Days)	KIA/Day
Gettysburg	7,863	3	2,621
Chickamauga	3,969	3	1,323
Antietam	3,675	1	3,675
Shiloh	3,482	2	1,741
Stones River	2,971	3	990
Second Manassas	2,843	3	948
Pearl Harbor	2,403	1	2,403

What about other wars? Compared to Civil War battles, Pearl Harbor was relatively less severe in terms of “deaths in a single day” than Gettysburg or Antietam. In October 1918, American forces suffered 6,589 battle deaths in one week, or 941 per day, and lost 17,767 dead in three weeks, equivalent to the most costly World War II battles but in a much shorter span of time.¹⁷ In September 1950, the most severe month of fighting in the Korean War, 3,165 American troops died, or about 105 per day.¹⁸ In February 1968, at the height of the Vietnam War, 543 Americans were killed, or 78 per day.¹⁹

¹⁶ Army Casualties and Nonbattle Deaths in World War II (Washington, DC: US Army, 1946), 11-12; *The History of the Medical Department of the United States Navy in World War II*, 178-179.

¹⁷ Leonard P. Ayres, *The War With Germany: A Statistical Summary* (Washington: Government Printing Office, 1919), 120. This total does not include “died of wounds” which would probably make the ground total 30% larger.

¹⁸ September 1950 KIA included 2,462 Army, 561 USMC, 106 Air Force, and 36 Navy. Numbers from Service official histories.

¹⁹ James H. Willbanks, *The Tet Offensive* (New York: Columbia University Press, 2007), 154.

From 2001 to 2017, 2,350 Americans were killed in Operation Enduring Freedom and 4,425 Americans were killed in Operation Iraqi Freedom. However, these deaths occurred over many years.²⁰

American casualties at Pearl Harbor, and even total casualties in the entire war, were relatively insignificant by Soviet, Chinese, Japanese, or German standards. The Soviet military lost 6.9 million killed in action or died of wounds or disease, or 4,862 per day – two Pearl Harbors a day for nearly four years.²¹ This figure does not include five million missing in action or over twenty million civilian dead. China suffered 3.7 million military deaths and 9.1 million civilian deaths from 1937 to 1945, or about 4,300 deaths per day for eight years. Japan suffered 1.4 million military deaths from 1941 to 1945. However, 1.1 million of these deaths occurred in 1945, or 4,638 per day.²² Germany suffered 5.3 million military dead. Of these, 1.8 million deaths occurred in 1944 (or 4,937 per day) and 1.5 million in 1945 – an astounding 12,126 per day.²³

In sum, American personnel losses at Pearl Harbor caused psychological shock, but represented a tiny fraction of American military manpower in 1941 and were quickly replaced as the nation mobilized. Pearl Harbor was not the most costly battle of the war; subsequent battles in 1944 and 1945 resulted in far more American deaths. The explosion of *Arizona* caused the most deaths from the sinking of a single American ship during the war, but numerous British, Soviet, German, and Japanese ships were sunk with losses that exceeded the loss on *Arizona*.

²⁰ DoD Casualty Statistics accessed 13 February 2017.
<https://www.defense.gov/casualty.pdf>

²¹ G. F. Krivosheev, *Soviet Casualties and Combat Losses in the Twentieth Century* (London: Greenhill Books, 1997), 85.

²² S.C.M. Paine, *The Wars for Asia, 1911-1949* (New York: Cambridge University Press, 2012), 214.

²³ Rüdiger Overmans, *Deutsche militärische Verluste im Zweiten Weltkrieg*, from https://en.wikipedia.org/wiki/German_casualties_in_World_War_II

Aircraft Losses

The Army Air Corps lost 63 aircraft at Pearl Harbor and the Navy and Marines 92 aircraft. This was less than one percent of the 17,757 aircraft in U.S. military service at the time.²⁴ Pearl Harbor was comparatively much less devastating than other surprise air attacks in history, such as Operation Barbarossa, when the Luftwaffe destroyed over 3,000 Soviet aircraft in the first three days, or the Six Day War, when the Israeli Air Force completely eliminated the Egyptian Air Force in three hours.

	In Service, December 1941		Destroyed at Pearl Harbor	
	Army	Navy	Army	Navy
Heavy Bomber	288		4	
Medium Bomber	745		12	
Light Bomber/Attack	799	789	2	26
Fighter	2,170	511	42	13
Patrol/Reconnaissance	475	1,439	3	47
Trainer/Transport/Utility	7,811	2,730		6
Total	12,288	5,469	63	92

The Army lost 63 aircraft on Oahu on December 7, as well as about 110 aircraft in the Philippines.²⁵ The Army did not experience this type of loss rate again until 1944 and 1945. In 1942, the highest loss rate was 25 aircraft per day, and in 1943, 50 aircraft per day. In June 1944, the Army lost 102 aircraft per day, and averaged 78 aircraft per day lost for the entire year. In the first four months of 1945, the average loss rate was 75 aircraft per day.²⁶ Compared to the total losses of 5,415 aircraft in 1942, 15,032 aircraft in 1943, 28,300 aircraft in 1944, and 15,972 aircraft in 1945 from all causes, the Army's loss of 63 aircraft at Pearl Harbor appears insignificant.

²⁴ *Army Air Forces Statistical Digest of World War II* (Washington, DC: HQ Army Air Forces, 1945), 135; E. R. Johnson, *United States Naval Aviation, 1919-1941* (Jefferson, NC: McFarland, 2011), 322.

²⁵ Wesley Frank Craven and James Lea Cate, eds., *Army Air Forces in World War II*, Volume I (Washington, DC: Office of Air Force History, 1983), 213.

²⁶ *Army Air Forces Statistical Digest of World War II* (Washington, DC: HQ Army Air Forces, 1945), 184.

The 155 aircraft lost at Pearl Harbor were a trivial fraction of the 13,966 aircraft that industry delivered to the Army and Navy in 1940 and 1941. Moreover, Pearl Harbor aircraft losses were rapidly replaced from burgeoning production lines. In 1942, the Army and Navy acquired 34,795 aircraft; numerically, the Pearl Harbor losses were replaced in about two days. Many other aircraft on Oahu were damaged, but the military managed to repair them so quickly that by December 20, there were more fighters and bombers ready for action in Hawaii than there had been before the attack.²⁷



Many of the aircraft damaged or destroyed during the attack were obsolete and no longer in production, like these B-18 bombers at Hickam Field.

Appendix III shows that many of the aircraft lost in the attack were obsolete and no longer in production. For example, the Brewster F2A, the Boeing P-26, and the Curtiss P-36 fighters were early to mid-1930s designs that were clearly inferior to the Japanese Zero and played little role in the war. Other aircraft in Hawaii were still in production, but were being superseded by superior designs. For example, the Navy lost some Grumman F4F-3 fighters at Pearl Harbor. The Navy was replacing this model with the F4F-4, which had just entered service in November 1941.

²⁷ *Hearings Before the Joint Commission on the Investigation of the Pearl Harbor Attack*, Part 24 (Washington, DC: Government Printing Office, 1946), 1784.

Overall, the impact of Pearl Harbor on American airpower was purely tactical and transient. The Japanese achieved their goal of achieving air superiority for the duration of their attack on the American fleet. But, less than a month later, the Americans had restored their air capability on Oahu. The elimination of a small number of mostly obsolete or obsolescent aircraft had little impact on the growth of American wartime airpower. Industry quickly replaced the lost aircraft with newer, superior models.

Warship Losses

The fleet at Pearl Harbor on December 7 consisted of 101 ships: eight battleships, eight cruisers, thirty destroyers, four submarines, one gunboat, nine minelayers, fourteen minesweepers, and twenty-seven auxiliaries.²⁸ The Japanese focused their efforts on the battleships, sinking four and damaging four. Two cruisers and three destroyers suffered significant damage. The target ship *Utah*—a demilitarized battleship—the minelayer *Oglala*, and the tug *Sotoyomo* were sunk. All other damage was relatively minor. After a salvage and repair effort, the sunk and damaged ships were returned to service before the end of the war except for *Utah*, *Arizona* and *Oklahoma*. Furthermore, the size of the fleet expanded dramatically over the course of the war. Therefore, from a naval standpoint, the impact of the Pearl Harbor attack was minor and temporary.

U.S. Navy Ships in Service, December 1941		
	At Pearl Harbor	Elsewhere
Carriers	0	8
Battleships	8	9
Heavy Cruisers	2	16
Light Cruisers	6	14
Destroyers	30	143

²⁸ Homer N. Wallin, *Pearl Harbor: Why, How, Fleet Salvage and Final Appraisal* (Washington, DC: Government Printing Office, 1968), 54-56.

Submarines	4	109
Other	51	407

As most American naval vessels in service in December 1941 were not at Pearl Harbor, the Japanese did not truly have an opportunity to destroy the American fleet in one blow. The fleet at Pearl Harbor had about half the existing force of American battleships, which were the primary targets. Nevertheless, the Japanese might have been wiser to devote more attention to the “light” naval forces (cruisers and destroyers) at Pearl Harbor. Battleships had little utility in the campaign for Guadalcanal. Four battleships sunk or damaged at Pearl Harbor returned to service in 1942 and *could* have fought in the Solomons, but did not due to their slow speed and high fuel consumption. Meanwhile, all eight cruisers and twenty-three of the twenty-seven destroyers not damaged at Pearl Harbor subsequently fought in the Solomons campaign. These light forces would have been more sorely missed in 1942, during Coral Sea, Midway, Guadalcanal, the Battle of the Atlantic, and the invasion of French North Africa, than elderly battleships.



Righting the capsized *Oklahoma* was a major effort requiring shore winches.
 Source: U.S. Navy.

Immediately after the attack, the Navy began to free men who were trapped in capsized ships and to organize salvage work. The first objective was to get “less damaged” ships back in action. These included four battleships, three cruisers, a destroyer, and four auxiliary ships. *Nevada* and *Sotoyomo* had actually been sunk, but were quickly raised. All these ships were back in service less than a year after Pearl Harbor.

More seriously damaged ships included four battleships, *Utah*, two destroyers, and a minelayer. *Arizona* was a total loss. Salvage crews cut free topside structures and removed ordnance, but left the hull in place. The capsized *Oklahoma* was righted, refloated, and put in drydock in 1943. Too damaged to return to duty, she was sold for scrap after the war. *Utah* had no military value and was left in place. These three ships represented the only permanent naval losses from the attack.

California and *West Virginia* were sunk, but did not capsize. They were refloated and put in drydock in mid-1942. They were refitted and modernized on the West Coast, and returned to combat in 1944. Five battleships attacked at Pearl Harbor – *West Virginia*, *Maryland*, *Tennessee*, *California*, and *Pennsylvania* – later engaged the Japanese at the Battle of the Surigao Strait on 25 October 1944. All six surviving Pearl Harbor battleships supported the invasion of Okinawa in 1945.

Destroyers *Cassin* and *Downes* were heavily damaged – effectively sunk, though they were in drydock during the attack. Their hulls were scrapped but their machinery recovered and installed in new ships of the same names later in the war. They also fought at Leyte Gulf in 1944. Minelayer *Oglala* was sunk. She was raised, repaired, and returned to service in mid-1944.

Repair and Salvage after Pearl Harbor

Type	Name	Damage	Back in Service
Battleship	<i>Arizona</i>	Sunk	Never
Battleship	<i>Oklahoma</i>	Sunk	Never
Target Ship	<i>Utah</i>	Sunk	Never
Repair Ship	<i>Vestal</i>	Minor	December 1941
Seaplane Tender	<i>Curtiss</i>	Minor	January 1942
Cruiser	<i>Honolulu</i>	Minor	January 1942
Battleship	<i>Tennessee</i>	Minor	February 1942
Battleship	<i>Maryland</i>	Minor	February 1942
Battleship	<i>Pennsylvania</i>	Minor	March 1942
Cruiser	<i>Helena</i>	Minor	June 1942
Tug	<i>Sotoyomo</i>	Sunk	August 1942
Battleship	<i>Nevada</i>	Sunk	October 1942
Cruiser	<i>Raleigh</i>	Minor	July 1942
Destroyer	<i>Shaw</i>	Minor	July 1942
Destroyer	<i>Downes</i>	Sunk	November 1943
Battleship	<i>California</i>	Sunk	January 1944
Destroyer	<i>Cassin</i>	Sunk	February 1944
Minelayer	<i>Oglala</i>	Sunk	February 1944
Battleship	<i>West Virginia</i>	Sunk	July 1944

After Germany conquered France in 1940, Congress authorized a major expansion of the U.S. Navy under the Two-Ocean Navy Act of July 1940. This construction program was well underway when Japan attacked Pearl Harbor. The fleet at Pearl Harbor included eight battleships, eight cruisers, and thirty destroyers; meanwhile, fifteen battleships, forty-six cruisers, and 206 destroyers were under construction. If the Japanese attack had been much more successful, or even had sunk *all* the ships at Pearl Harbor, American industry would have replaced the losses with more modern vessels in 1942. In such a case, the only question would be the impact of a greater than historical loss of U.S. naval capability in 1942. As it was, the Pearl Harbor attack did not significantly hinder the wartime expansion of the fleet.

American Ships on Hand and Under Construction, 1942 – 1945²⁹

	January 1942		January 1943		January 1944		January 1945	
	On Hand	Building	On Hand	Building	On Hand	Building	On Hand	Building
Battleship	17	15	20	11	22	4	23	1
Carrier	7	16	4	35	10	19	16	13
Escort Carrier	1	15	12	85	35	51	65	21
Heavy Cruiser	18	8	14	25	16	25	17	27
Light Cruiser	20	38	26	43	32	43	43	25
Destroyer	173	206	229	267	335	222	371	132
Destroyer Escort	0	300	0	800	230	394	376	10
Submarine	113	94	133	187	178	241	238	64

How did the naval losses at Pearl Harbor compare to subsequent American naval losses? Firstly, after losing two battleships at Pearl Harbor, the Navy did not lose any additional battleships during the war. The Navy did, however, lose five carriers, although not in a single battle and without high loss of life each time. The Guadalcanal campaign, the Battle of Leyte Gulf, and the invasion of Okinawa caused more extensive loss and damage to the U.S. Navy than did the Pearl Harbor attack. In the battles of 1944 and 1945, the Navy also suffered loss and damage to great numbers of transports and auxiliary vessels, none of which were permanently lost in December 1941.

American Ships Sunk or Damaged³⁰

	Pearl Harbor	Guadalcanal Aug-Nov 1942	Leyte Gulf Oct 1944	Iwo Jima Feb 1945	Okinawa April-May 1945
Permanently Sunk					
Carriers		2			
CVL/CVE			3	1	
Battleships	2				
Cruisers		5			
Destroyers		13	2		9
Damaged					
Carriers		4	2	1	7
CVL/CVE			9	1	7

²⁹ Paul H. Silverstone, *The Navy of World War II* (New York: Routledge, 2008), 380. Many American ships under construction were transferred to allies once completed.

³⁰ Karl E. Heden, *Sunken Ships World War II* (Wellesley, MA: Branden Books, 2006).

Battleships	6	4	1	1	14
Cruisers	3	13	2	5	8
Destroyers	3	18	5	19	83

The Navy permanently lost two battleships at Pearl Harbor, but as already noted, lost no other battleships during the war. Over the course of the war, every major naval combatant lost at least two battleships. The British lost five—*Royal Oak*, *Hood*, *Barham*, *Prince of Wales*, and *Repulse*. The last two were lost together on December 10, 1941, three days after Pearl Harbor. France lost five, including three—*Dunkerque*, *Provence* and *Bretagne*—on the same day in 1940 when the British attacked them in port. The Germans lost three—*Bismarck*, *Tirpitz*, and *Scharnhorst*. The Italians lost two—*Conte di Cavour* and *Roma*—although the former would probably have returned to service if Italy had not surrendered. Japan lost twelve battleships, including *Yamashiro* and *Musashi* during the Battle of Leyte Gulf and *Haruna*, *Hyūga* and *Ise* during the carrier attacks on Kure in July 1945. Japan also lost four carriers in a single battle on two occasions—at Midway and Leyte Gulf. Clearly, the loss of multiple battleships in a single battle was not an exceptional event during the war.

Conclusion

The Japanese attack on Pearl Harbor put the American battleship force *temporarily* out of action – two were permanently sunk, four returned to service in 1942, and two returned to service in 1944. The attack largely ignored the cruisers and destroyers that later played a key role in the battles for the Solomon Islands in 1942. Britain, France, and Japan all suffered comparable “single day naval disasters” in which two or more battleships or carriers were permanently lost. Most of the ships damaged or sunk at Pearl Harbor were quickly repaired or salvaged. Even a much more devastating Japanese attack would not have decided the war in Japan’s favor, as an overwhelming American naval construction program was already in progress. The aircraft lost at Pearl Harbor were largely obsolete and quickly replaced with more modern types. Personnel losses were

shocking because they occurred in a single day, but paled in comparison to American losses in later battles. Overall, the effect of Pearl Harbor was far more psychological than military. The attack unified the nation, and motivated America to suffer the casualties necessary to impose unconditional surrender on Japan.



Appendix I: Fatalities due to Warship Losses in World War II

- Grey shading indicates Axis ships.
- Red text indicates ships lost at Pearl Harbor.
- “Catastrophic Explosion” indicates whether or not the ship experienced a catastrophic explosion before it sank.
- “Defeat?” indicates whether the ship was on the losing side in a major naval battle.
- Source: Wikipedia entry for each ship.

Ship	Nation	KIA	Sunk By	Catastrophic Explosion?	Defeat?
Yamato	Japan	3,055	Air	Yes	Yes
Bismarck	Germany	2,200	Surface	No	Yes
Scharnhorst	Germany	1,932	Surface	No	Yes
Taiho	Japan	1,650	Sub	Yes	Yes
Yamashiro	Japan	1,626	Surface	No	Yes
Chiyoda	Japan	1,470	Air, Surface	No	Yes
Shinano	Japan	1,435	Sub	No	
Hood	Britain	1,415	Surface	Yes	Yes
Roma	Italy	1,393	Air	No	
Ashigara	Japan	1,300	Sub	No	
Shokaku	Japan	1,272	Sub	No	Yes
Chuyo	Japan	1,250	Sub	No	
Unryu	Japan	1,239	Sub	Yes	
Glorious	Britain	1,207	Surface	No	Yes
Tirpitz	Germany	1,204	Air	No	
Arizona	USA	1,177	Air	Yes	
Shinyo	Japan	1,130	Sub	Yes	
Kongo	Japan	1,123	Sub	Yes	
Mutsu	Japan	1,121	Internal	Yes	
Fuso	Japan	1,100	Air, Surface	Yes	Yes
Musashi	Japan	1,023	Air	No	Yes
Bretagne	France	977	Surface	Yes	Yes
Chitose	Japan	903	Air, Surface	No	Yes
Haguro	Japan	900	Surface	No	Yes
Indianapolis	USA	879	Sub	No	
Barham	Britain	862	Sub	Yes	
Zuikaku	Japan	842	Air	No	Yes
Blücher	Germany	830	Surface	No	No
Royal Oak	Britain	833	Sub	No	
Fiume	Italy	814	Surface	No	Yes
Kaga	Japan	811	Air	Yes	Yes

Franklin	USA	807	Air	Yes	No
Zara	Italy	799	Surface	No	Yes
Taiyo	Japan	747	Sub	Yes	
Nachi	Japan	807	Air	Yes	
Chokai	Japan	773	Surface, Air	No	Yes
Neptune	Britain	737	Mine	No	
Gloucester	Britain	722	Air	No	Yes
Soryu	Japan	711	Air	No	Yes
Juneau	USA	687	Sub	Yes	No
Mikuma	Japan	650	Air	Yes	Yes
Sydney	Britain	645	Surface	No	Yes
Liscome Bay	USA	644	Sub	Yes	
LST-531	USA	636	Surface	No	Yes
Trento	Italy	570	Air, Sub	Yes	
Courageous	Britain	519	Sub	No	
Avenger	Britain	516	Sub	No	
Kinugasa	Japan	511	Air	No	Yes
Repulse	Britain	508	Air	No	
Kumano	Japan	497	Air	No	Yes
Maya	Japan	479	Sub	No	Yes
Galatea	Britain	469	Sub	No	
Charybdis	Britain	464	Surface	No	Yes
Suzuya	Japan	450	Air	No	Yes
Tama	Japan	450	Sub	No	Yes
Yahagi	Japan	445	Air	No	Yes
Oklahoma	USA	429	Air	No	
Cornwall	Britain	424	Air	No	
Dunedin	Britain	419	Sub	No	
Penelope	Britain	417	Sub	No	

Appendix II: Fatalities due to Transport Ship Losses in World War II

Ship	Nation	KIA	Sunk By
Wilhelm Gustloff	Germany	9,400	Sub
Armenia	USSR	7,000	Air
Goya	Germany	7,000	Sub
Junyo Maru	Japan	5,620	Sub
Toyama Maru	Japan	5,400	Sub
Cap Arcona	Germany	5,000	Air
Ryusei Maru	Japan	5,000	Sub
Tamatsu Maru	Japan	4,890	Sub
Oria	Germany	4,074	Storm

General von Steuben	Germany	4,000	Sub
Mayasan Maru	Japan	3,536	Sub
Nikkin Maru	Japan	3,200	Sub
Tango Maru	Japan	3,200	Sub
Lancastria	Britain	3,000	Sub
Lima Maru	Japan	2,750	Sub
Thielbek	Germany	2,750	Air
Petrella	Germany	2,670	Sub
Yoshida Maru	Japan	2,669	Sub
Teia Maru	Japan	2,665	Sub
Rigel	Germany	2,571	Air
Lenin	USSR	2,500	Mine
Yoshino Maru	Japan	2,495	Sub
Sakito Maru	Japan	2,475	Sub
Hisagawa Maru	Japan	2,285	Sub
Hawaii Maru	Japan	2,134	Sub
Edogawa Maru	Japan	2,114	Sub
Sinfra	Germany	2,098	Air
Akitsu Maru	Japan	2,046	Sub
Kamakura Maru	Japan	2,035	Sub
Awa Maru	Japan	2,003	Sub
Ural Maru	Japan	2,000	Sub
Teiyo Maru	Japan	1,915	Air
Gaetano Donizetti	Germany	1,800	Surface
Arisan Maru	Japan	1,772	Sub
Laconia	Britain	1,649	Sub
Tsushima Maru	Japan	1,508	Sub
Tatsuta Maru	Japan	1,400	Sub
Fuso Maru	Japan	1,384	Sub
Akagi Maru	Japan	1,309	Air
Mario Roselli	Germany	1,302	Air
Conte Rosso	Italy	1,297	Surface
Oigawa Maru	Japan	1,229	Aircraft
Yaukuni Maru	Japan	1,188	Sub

Appendix III: Aircraft Losses at Pearl Harbor³¹

Gray shading indicates an aircraft type that was no longer in production or was about to be replaced with a superior model.

Type	Destroyed at Pearl Harbor	Number Produced in 1941	Number Produced in 1942
B-17	4	144	1,412
B-18	12	0	0
A-20	2	1,011	1,785
P-40	32	2,246	4,454
P-36	4	30	0
P-26	6	0	0
O-49	1	171	152
OA-9	2	0	0
F2A-3	2	0	0
F4F-3	12	248	37
J2F-4	2	0	0
JO-2	1	0	0
JRS-1	1	0	0
O2SU-2	1	158	0
O2SU-3	9	366	638
PBY-3	9	0	0
PBY-4	1	0	0
PBY-5	32	336	348
R3D-2	1	0	0
SBD-1	9	0	0
SBD-2	8	87	0
SBD-3	3	584	0
SB2U-3	8	57	0
SNJ-3	1	270	0

³¹ *Hearings Before the Joint Commission on the Investigation of the Pearl Harbor Attack*, Part 12 (Washington, DC: Government Printing Office, 1946), 323, 351-352, 357-358.
Army Air Forces Statistical Digest of World War II (Washington, DC: HQ Army Air Forces, 1945), 118.