Encyclopedia > History of the Luftwaffe during World War II

The German Luftwaffe was one of the most powerful, doctrinally advanced, and battle-experienced air forces in the world when World War II started in Europe in September 1939. Officially unveiled in 1935, in violation of the Treaty of Versailles, its purpose was to support Hitler's Blitzkrieg across Europe. The aircraft that were to serve in the Luftwaffe were of a new age and far superior to that of most other nations in the 1930s. Types like the Junkers Ju 87 Stuka and Messerschmitt Bf 109 came to symbolize German aerial might.

The Luftwaffe became an essential component in the Blitzkrieg battle plan. Operating as a tactical close support air force, it helped the German armies to conquer the bulk of the European continent in a series of short and decisive campaigns in the first nine months of the war, experiencing its first defeat during the Battle of Britain in 1940 as it could not adapt into a strategic role, lacking heavy bombers with which to conduct a strategic bombing campaign against the British Isles.

Despite this setback the Luftwaffe remained formidable and in June 1941 embarked on Adolf Hitler's quest for an empire in eastern Europe by invading the USSR, with much initial success. However, the Luftwaffe's striking victories in the Soviet Union were brought to a halt in the Russian winter of 1942-1943. From then on, it was forced onto the strategic defensive contesting the ever increasing numbers of Soviet aircraft, whilst defending the German homeland and German occupied Europe from the growing Allied air forces pounding all aspects of German industry.

Having failed to achieve victory in the Soviet Union in 1941 or 1942, the Luftwaffe was drawn into a war of attrition which extended to North Africa and the Channel Front. The entry of the United States into the war and the resurgence of the Royal Air Force's (RAF) offensive power created the Home Front, known as Defense of the Reich operations. The Luftwaffe's strength was slowly eroded and by mid 1944 had virtually disappeared from the skies of Western Europe leaving the German Army to fight without air support. It continued to fight into the last days of the war with revolutionary new aircraft, such as the Messerschmitt Me 262, Messerschmitt Me 163 and the Heinkel He 162, even though the war was already hopelessly lost.

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### Preparing for war: 1933-1939

Many of the aircraft that served throughout the war were developed prior to it, such as the Messerschmitt Bf 109 single-engine fighter, the Junkers Ju 87 dive bomber, and the Heinkel He 111 medium bomber. Messerschmitt Bf 110 twin-engined heavy fighter and the versatile Junkers Ju 88. The twin-engined Messerschmitt Bf 110 was supposed to fulfill the role of an escort fighter, but it could not compete in aerial combat against modern single-engined fighters, as was shown during the Battle of Britain. As a result the Bf 110 units focussed on fighter-bomber and recon operations but with a much greater success it served as night fighter.
The origins of the Luftwaffe were born just months after Adolf Hitler came to power. Hermann Göring, a World War I ace with 22 victories and the holder of the Orden Pour le Merite became National Commissar for aviation with former Lufthansa employee Erhard Milch as his deputy. In March 1933 the Reichsluftfahrministerium (RLM - Reich Air Ministry) was established. The RLM was in charge of development and production of aircraft, and soon afterwards the test site at Rechlin became its testing ground. Göring's control over all aspects of aviation became absolute. On 25 March 1933 the Deutscher Luftsporthverband (DLV) (German Air Sport Association) absorbed all private and national organizations, whilst retaining its 'sports' title. The merging of all military aviation organizations in the RLM took place on 15 May 1933, which became the Luftwaffe's official 'birthday'. Göring played little further part in the development of the Luftwaffe until 1936, and Milch became the de facto minister until 1937.

In December 1934, Chief of the Luftwaffe General Staff Walther Wever sought to mold the Luftwaffe's battle doctrine into a strategic plan. At this time Wever conducted war games (simulated against the French) in a bid to establish his strategic bombing force that would, he thought, prove decisive by winning the war through the destruction of enemy industry, even though these exercises also included tactical strikes against enemy ground forces and communications. In 1935 "Luftwaffe Regulation 16: The Conduct of the Air War" was drawn up. In the proposal, it concluded "The mission of the Luftwaffe is to serve these goals".

Wever recognized the importance of a strategic bomber force and sought to incorporate it into a war strategy. He believed that 'tactical' aircraft should only be used as a step to developing a strategic air force. In May 1934, Wever initiated a seven year project for the Ural Bomber, the bomber that would take the Luftwaffe's bombing campaign into the heart of the Soviet Union. In 1935 this led to the Dornier Do 19 and Junkers Ju 89 prototypes, although both were underpowered. In April 1936, Wever ordered a requirement for 'Bomber A' which would have a range of 6,700 kilometres with a 900 kilogram bomb load.

Wever's participation in the construction of the Luftwaffe came to an abrupt end on 3 June 1936 when he was killed along with his engineer in a Heinkel He 70 Blitz. His successors, Ernst Udet and Albert Kesselring, changed the operational doctrine of the Luftwaffe into one fit for a tactical air force, and one of close and direct ground support. Udet was a proponent of the dive-bomber, but not a technical expert. Despite this he was appointed to head the Reich's Air Ministry Technical Office (Technisches Amt), and helped change the Luftwaffe's tactical direction towards producing fast medium bombers that were to destroy enemy air power in the battle zone rather than through industrial bombing of its aviation production.

The development of aircraft was now confined to the production of twin-engined medium bombers that required much less material and manpower than Wever's 'Ural Bombers'. German industry could build two medium bombers for three heavy bombers and the RLM would not gamble on developing a heavy bomber which would also take time. Göring remarked, "the furher will not ask how big the bombers there are, but only how many there are". The premature death of one of the Luftwaffe's finest officers, one that left the Luftwaffe without a strategic air force during World War II, eventually proved fatal to the German war effort.

Between March 1934 and April 1936 the Luftwaffe underwent huge expansion, from 77 aircraft to 2,700. Up until 1935 the flak arm had been under the army's operational control; however, as Göring assumed full command of the air arm, it came under Luftwaffe operational control.

The Messerschmitt Bf 109, Heinkel He 111, Junkers Ju 87 Stuka and the Dornier Do 17 all first saw active service in the Condor Legion against Soviet-supplied aircraft. The Luftwaffe also quickly realized that the days of the biplane fighter were finished, the Heinkel He 51 fighter being switched to service as a trainer. Particularly impressive were the Heinkel and Dornier, which fulfilled the Luftwaffe's requirements for bombers that were faster than fighters. Despite the participation of these aircraft (mainly from 1938 onward), it was the venerable Junkers Ju 52 (which soon became the backbone of the Transportgruppen) that made the main contribution to the Legion's bombing campaign. Hitler remarked: "Franco ought to erect a monument to the glory of the Junkers Ju 52. It is the aircraft which the Spanish revolution has to thank for its victory".

Final preparations

By the summer of 1939, the Luftwaffe had nine Jagdgeschwader mostly equipped with Messerschmitt Bf 109E, four Zerstörergeschwader equipped with the Messerschmitt Bf 110 heavy fighter, eleven Kampfgeschwader equipped with mainly the Heinkel He 111 and the Dornier Do 17Z, and four Stukageschwader. The Junkers Ju 88 had encountered design difficulties, as a result only 12 were available when hostilities commenced. The Luftwaffe's strength at this time stood at nearly 4,000. Of this number, 1,100 were single-engined fighters, 400 twin-engined heavy fighters, 1,100 medium bombers and 290 Stuka aircraft. The remainder consisted of 500 transport and 300 reconnaissance machines.

Poland

Poland - Operation Fall Weiß (1 September - 6 October 1939)

On 1 September 1939 German forces invaded Poland, triggering World War II. The Luftwaffe was an instrumental component of the Blitzkrieg battle plan. The Junkers Ju 87 Stuka carried out the first
mission of the campaign, twenty minutes before war was officially announced. This same aircraft was to score the first aerial victory of the war when **Kettenführer** Leutnant Frank Neubert shot down a Polish **PZL P.11c** fighter aircraft piloted by Captain Mieczysław Medwecki. The **Polish Air Force**, contrary to popular belief, was not destroyed on the ground. Most of their units had dispersed to pre-arranged heavily camouflaged airfields in the hours leading up to the invasion. Most of the airfields bombed by the Luftwaffe destroyed empty hangars, and unserviceable machines. The Poles suffered heavy losses but managed to inflict considerable losses on the Luftwaffe.

The Polish Air Force bomber units did attempt to strike at the German Panzer Divisions and slow the speed of advance. Equipped with **PZL.37 Los** bombers, these units were virtually annihilated by the Luftwaffe. The **Bf 110** was proving itself to be more than capable in both the escort and bomber intercept role and accounted for the majority of these kills, which pleased Göring, a fan of the twin-engined heavy fighter.

The Polish fighter units were still active, and were inflicting small losses on the Luftwaffe, however the Jagd and Zerstörergeschwader were increasing their ground attack roles. As a result many Polish fighters were caught taking off, when there were at a considerable disadvantage. It was indirect rather than direct air support which won the Luftwaffe air-superiority. By destroying communications the Luftwaffe increased the pace of the advance which overran Polish airstrips and the early warning sites and causing logistical problems for the Poles. Many Polish Air Force units were now low on supplies, 98 of their number withdrew into neutral (at that time) Romania. The polish initial strength of 400 had been reduced to just 54 by 14 September and air opposition virtually ceased.

Part of the Luftwaffe's operations involved the destruction of the small but modern **Polish Navy**. The Luftwaffe had few units capable of effective anti-shipping operations. One of these units was 4. (St)/TrGr 186 - a Stuka unit which originally had been trained to operate from the German aircraft carrier Graf Zeppelin. 4.(St)/TrGr 186's most notable success was to sink the destructor Wicher and mine-layer Gryf.

The Luftwaffe had been successful in neutralizing Polish air and sea power within the first day, and with air superiority established the Luftwaffe was free to concentrate on attacking supply and communication links with devastating effect. The outdated Polish Army was denied what mobility it had left as traveling by road became perilous and the rail networks had been largely destroyed.

The Stuka became the symbol of the German war machine throughout the campaign. Operating without opposition, it supported the Panzer Divisions by acting as flying artillery. On one occasion six Polish divisions trapped by encircling German forces were forced to surrender after a relentless four day assault by StG 51, StG 76 and StG 77. Employed in this assault was the 50 kg fragmentation bombs which caused appalling damage to enemy ground troops. Demoralized, the Poles surrendered.

The Wehrmacht however was given a shock soon afterwards. The Polish Army defending Warsaw counter-attacked, threatening to break the flank of the German 8. Arme, and to cut off the 10. Armee. The Luftwaffe was called upon for a maximum effort in what became known as the **Battle of Bzura**. The Luftwaffe's offensive broke what remained of Polish resistance in an "awesome demonstration of air power". The Luftwaffe quickly destroyed the bridges across the Bzura river. Afterward the Polish forces were trapped out of the open, and were attacked by wave after wave of Stukas, dropping 50 kg 'light bombs' which caused huge numbers of casualties. The Polish flank positions ran out of ammunition and they retreated to the forests but were then 'smoked out' by the Heinkel He 111 and Dornier Do 17s dropping 100 kg incendiaries. The Luftwaffe had left the Army with the simple task of mopping up survivors. The **Sturzkampfgeschwader** alone dropped 388 tonnes of bombs during this battle.

The expenditure of munitions was beyond expectations. The Luftwaffe had expended a third of their explosives (some 3,000 tonnes). The Luftwaffe's losses overall were relatively light, 285 machines (including 51 Stukas) had been lost to all causes. The Luftwaffe's aircraft had performed well. The Dornier Do 17 and Heinkel He 111, were faster than the Polish fighters and were able to outrun them. Most losses occurred through anti-aircraft fire.

**Polish resistance ended completely on 6 October 1939.**

**Norway and Denmark**

*Operation Weserübung (6 April - 10 June 1940)*

The Luftwaffe had assembled 527 aircraft for the campaign in Scandinavia, including 300 medium bombers and 50 Stuka dive-bombers. The Germans had also deployed over 40 seaplane reconnaissance aircraft and 200 Junkers Ju 52 transports to carry occupiying forces and Fallschirmjäger paratroops. The opposing air forces of Denmark and Norway were poorly equipped.

The Danes had only 89 combat aircraft and the Norwegians a strength of 74.

Operation Weserübung commenced on the morning of 9 April 1940. The only hostile engagement the Luftwaffe took part in over Denmark was on the first day of the invasion, when a flight of **Bf 110s** of 1./ZG 1 (Zerstörergeschwader 1) shot down five **Fokker D.XXI**'s taking off from Vaerlose airfield. The remaining fourteen machines were then destroyed by ground strafing. Denmark was virtually overrun within 24 hours and capitulated. The surviving Danish aircraft were used for training purposes by the Luftwaffe. During the invasion a significant incident occurred in the town of Aalborg, when Oberleutnant Victor Mölders (brother of Werner Mölders) took the official surrender of the town after landing at the local airfield. Dressed in flying gear he was given a lift into the town center by a milkman to find suitable quarters for 1./ZG 1's Bf 110 crews.
The German invasion of Norway also began that day, and although inferior in the air, the Norwegians put up considerable resistance. Norwegian air strength around Oslo consisted of just 24 combat aircraft including five Tiger Moth biplanes; this force was destroyed or captured by the evening. After the first day’s fighting Norwegian aerial strength fell to 54.[26]

A notable failure of the Luftwaffe during the initial invasion was caused by the Stukas of I./StG 1, whom failed to silence the batteries of the Oscarsborg Fortress thus contributing to the loss of the heavy cruiser Blücher and causing the disruption of the amphibious landings in Oslo through Oslolof.

The Luftwaffe incurred considerable losses over Oslo’s Fornebu airport in which Norwegian Cluster Gladiators, shot down a transport aircraft in exchange for a single loss. The airport continued to be held by the Norwegians and several Ju 52s were forced to land under fire causing considerable losses to the transports. Helmut Lent, a future night fighter ace, destroyed two Gladiators and then proceeded to strafe the defenders. The Bf 110s were running out of fuel and the situation was becoming critical, until more Ju 52s approached and disgorged the airborne troops which then quickly secured the airfield.[26]

With Luftwaffe support, the Wehrmacht had established a toe-hold in Norway. The Germans had flown 680 sorties and had lost 43 aircraft destroyed or damaged. In the next few days the Luftwaffe would establish air-superiority. The British RAF Fighter Command, RAF Bomber Command and Fleet Air Arm continued to support the Allied forces, but suffered heavy losses at the hands of the Luftwaffe.

The Luftwaffe had also dented the Royal Navy during the first phases of the invasion. Junkers Ju 88’s of KG 26 succeeded in damaging the battleship HMS Rodney and sinking the destroyer HMS Gurkha. Focke-Wulf Fw 200 Condors were used to patrol the coast and report shipping positions to the Luftwaffe Kampffgruppen and U-Boats in the area. Southern Norway was effectively in German hands by 20 April but the fighting in northern and central Norway lasted for some weeks. The Norwegian campaign lasted until June 1940, and with the disasters suffered by the Allies in France, British and French Forces withdrew and Norway capitulated.

The campaign had cost the Luftwaffe 260 aircraft, of which 86 were transports. Personnel casualties numbered 342 killed and 448 missing.[27] It had destroyed 96 British aircraft (43 in air-to-air combat) and sunk or damaged six destroyers, 21 other warships of other sorts and 21 merchant ships. Luftwaffe transport losses, while heavy, helped supply the Army with fuel and supplies in 3,018 missions over the course of the battle.[31] The Luftwaffe had no doubt tipped the balance of the campaign in Germany’s favour, without it the Allied advantage on land and at sea might have defeated the invasion. During the remainder of the year the Luftwaffe would meet increasing numbers of British made Hawker Hurricane and Supermarine Spitfire aircraft which were much faster than the Luftwaffe’s bomber fleet; future campaigns, though successful, were to prove far more costly.

France and the Low Countries

Operations Fall Gelb and Fall Rot (10 May - 25 June 1940)

On 10 May 1940, the Wehrmacht launched the invasion of France and the Low Countries. The first phase of the invasion Fall Gelb called for an invasion of Holland and Belgium in which the Germans correctly predicted the French and British Forces would then push into Belgium to stop an advance into France. Geb would then deliver the main blow, as most of the German armoured divisions would strike through the Ardennes and cut off the Allied forces in northern France, leaving the rest of the country defenseless.

The Polish campaign had taught the Luftwaffe valuable lessons. It was no longer thought that it could wipe out the French and British air power immediately on the ground, although Albrecht Kesselring (Commander of Luftflotte 3) hoped this would be achieved against the Dutch and the Belgians. The French Arme de l’Air had 1,562 aircraft, and initial RAF Fighter Command’s strength stood at 680 machines, while Bomber Command could contribute some 392 aircraft to operations.[32]

The Luftwaffe would only attack a handful of airfields in France during the first day of the campaign, as most effort was diverted to ground support operations. In Holland the Luftwaffe made extensive use of paratroopers and glider-borne forces (eventually to little effect). The Luftwaffe had committed a force of 1,815 combat, 487 Transport and 50 Glider aircraft for the invasion of the Low countries.[32]

The opposing air forces of Belgium and Holland (the Militaire Luchtvaart - ML, and the Aeronautique Militaire - AéMl) were far inferior in terms of equipment and numbers, the Dutch Airforce largely used biplanes. The ML had only 144 aircraft but, like the Polish, they were dispersed well. After the first days operations half the ML’s strength had been sapped. During the four days that it resisted the Luftwaffe it accounted for only a handful of Luftwaffe aircraft shot down.

The difficulties facing the Luftwaffe during the Norwegian campaign resurfaced in Holland. The Hague airfields were to be captured by glider and paratroops, but the Dutch had heavily fortified the area and prepared obstacles to hamper landing attempts. Much of the ground was also soft causing many transports to sink into the grass making them very vulnerable to enemy artillery fire. The RAF was quickly deployed to Holland to offer support for the ML. Together with Dutch AA, it inflicted heavy losses on the Transportgruppen, 125 Ju 52 in all, were destroyed and 47 damaged, representing 50% of the fleet’s strength.[34]

With most of the Luftwaffe deployed against targets in Belgium and France the Dutch withdrawals were orderly and many areas in western Holland held out until the official surrender. On 14 May, the Dutch began negotiations for a ceasefire. On this 14th May the city of Rotterdam was bombarded by the Luftwaffe with the objective to support the German ground troops fighting in the city, and thus ultimately to force the Dutch to surrender. The event was displayed as a terror bombing by contemporary Allied press, a belief that is still shared by many. The Dutch officially surrendered on 15
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The Belgian fortress of Eben Emael was taken on the 14 May. This successful action was carried out by glider troops in DFS 230 Gliders, consisting of 85 paratroopers of the 1st Fallschirmjäger Division led by Oberleutnant Rudolf Witzig. Reinforced by the German 151st Infantry Regiment, and on 11 May, 1,200 Belgian soldiers in the fortress surrendered. Despite RAF and French assistance, Belgium surrendered on 28 May. In the first nine days of the Campaign Armée de l'Air losses exceeded those of the other Allied air forces, losing 420 aircraft to all causes. The RAF would lose 203, including 128 on the ground.

During the Blitzkrieg operations of Fall Gelb and Fall Rot, as in Poland, it was the Stuka that stood out. The Stukas took a heavy toll of Allied Naval and Ground forces. Its ability to deliver accurate payloads with pinpoint precision along with its psychological screaming sirens became the scourge of the Allies. Although lightly armed, slow and unmanoeuvrable the Luftwaffe had virtually destroyed Allied air superiority and Stukas were to operate with out much opposition. Regarded as 'flying artillery' the Stukas responded to Panzer Division calls by clearing up pockets of resistance along the axis of advance. The Stukas operated virtually at the limits of their range, until the introduction of the Ju 87R which provided extended range. Over 120 Stukas were destroyed or damaged during the campaign (mostly to ground fire), which represented nearly one-third of the Stuka-army's strength.

Allied attempts to stem the advance in the wake of the Battle of Dunkirk (see also Evacuation of Dunkirk) by bombing German forces advancing failed with heavy losses. On 14 May 1940, a day the Luftwaffe called "the day of the fighters", Allied bombers attempted to halt the Wehrmacht crossing the Meuse river, but inadequately protected they suffered appalling losses at the hands of Luftwaffe fighters. Over 120 Bf 109s destroyed as many French and British aircraft (90 of which were bombers) in the day's fighting.

As early on as 16 May, the French position on the ground and in the air was becoming desperate. They pressed the British for to commit more of the RAF fighter groups to the battle. Hugh Dowding, C-in-C of RAF Fighter Command refused, arguing that if France collapsed, the British fighter force would be severely weakened.

The most significant operational failure of the Luftwaffe during these campaigns was the inability to prevent the embarkation of most of the British Expeditionary Force in May-June 1940. Although it can be argued that Hitler ultimately was responsible, fearing the Panzer Divisions' losses would deplete them ahead of the southward drive into France and recalling how in 1914 the waterways in north-eastern France had bogged down the German northern flank he prevented the push which would have netted him the entire Allied land forces on the continent. During the Dunkirk battle the Luftwaffe flew 1,882 bombing and 1,997 fighter sweeps. German losses over Dunkirk represented just 2% of their losses during the campaign, less than 100 aircraft. British losses totaled 6% of their total losses during the French campaign, including 60 precious fighter pilots.

The second, and final, phase of the German plan was Fall Rot. The Luftwaffe supported the rapidly advancing army into southern France. Opposition in the air, significant at first, died away. The Armée de l'Air was now largely absent from French skies. Nearly 1,000 of its aircraft were destroyed and captured on airfields around Paris after the fall of the city on 14 June.

At the beginning of Fall Rot, French aviation industry had reached a considerable output, and estimated its strength at nearly 2,000. However chronic lack of parts crippled this industrial feet. Only 29% (599) aircraft were serviceable, of which 170 were bombers, of which all were vastly inferior and vulnerable to the Luftwaffe's Jagdgruppen equipped with the Bf 109E. The distances proved to be an obstacle to the Jagdwaffe. The result of the Luftwaffe's presence was the destruction of 75 French aircraft in the air and another 400 on the ground.

The French ground forces, now alone after Dunkirk, had virtually no air cover, and as a result the Luftwaffe was able to allow large formations of its Stukas and Bombers to operate without escorts, and fighters were free to conduct sweeps to eliminate any air opposition that remained (see Luftwaffe Organization). It is estimated the French lost 1,274 aircraft destroyed during the campaign, the British suffered losses of 959 (477 fighters).

The battle for France had cost the Luftwaffe 28% of its front line strength, some 1,428 aircraft destroyed. A further 488 were damaged, making a total of 36% of the Luftwaffe strength negatively effected. The Luftwaffe still retained a total reserve strength of 10,000 pilots, which would be needed in the battle of attrition that was to follow over the British Isles.

Overall the first nine months of the war had been a spectacular success for the German air arm. The Luftwaffe had effectively destroyed four Allied air forces and inflicted heavy losses to a fifth.

Battle of Britain

(10 July - 31 October 1940) - See also Battle of Britain

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The Luftwaffe had been designed as a tactical air force to support ground forces on the battlefield and had operated this way during the continental campaigns with enormous success. In the Battle of Britain, however, the Luftwaffe was ordered to operate alone, as a strategic weapon. This new role was something the Luftwaffe had never been designed for: it lacked the strategic bombers and long-range fighters needed for a strategic bombing campaign. The Luftwaffe’s first task was to ensure air supremacy over southeast England, to pave the way for an invasion fleet.

The Luftwaffe committed three Luftflotten to the campaign. Luftflotte 2, under Generaloberst Albert Kesselring, was allocated to targets in the southwest and the London area. Luftflotte 3, under Generaloberst Hugo Sperrle, targeted the West Midlands and northwest of England. Luftflotte 5, led by Generaloberst Hans-Jürgen Stumpff and based in Norway, was deployed against targets in the north of England and Scotland.

The German air crews were overall more experienced but the standard of fighter aircraft was even. The Bf 109E was slightly better in all round performance than the Hawker Hurricane, however the Bf 109 and the Spitfire were equally matched. The Bf 109 was faster at high altitude and the Spitfire had the advantage at medium heights. The Messerschmitts carried heavy armament in the shape of two 20 mm MG FF cannons. A significant advantage for the German fighter was its fuel-injected engine, which allowed it to perform negative-G maneuvers without the engine cutting-out. The Spitfire and Hurricane lacked this capability.

The twin-engined Messerschmitt Bf 110 had performed well in the earlier campaigns. It was well-armed and had the range to escort the bombers deep into enemy territory, which the Bf 109 lacked. Its fatal flaw was that in comparison to the British fighters it was unmanoeuvrable and therefore vulnerable.

The British narrowly avoided defeat in the Battle of Britain. It was a close run battle, and by late August 1940 with the Luftwaffe hammering RAF airfields and communications in south east England, the situation had become desperate. The RAF committed its last reserves, made up almost entirely of inexperienced pilots with only hours of combat training. Czech and Polish pilots were also used to fill the holes in manpower. Saundby concludes, “had the Germans persisted in their policy for another fortnight the result would have been disastrous for Fighter Command.” He also stresses the pressure put on the Fighter Units by the Luftwaffe, “The worst hit Squadrons were sent north to quieter sectors to recuperate, but all too soon ‘rested’ squadrons would have to return to the South East.”

The essential plan for the invasion was air superiority over the beachheads. Göring convinced Hitler that the air war was almost won and that in fact the RAF was in its death throes. Hitler switched targets to London. He hoped to draw out the RAF and completely destroy its remaining strength while devastating civilian morale through mass bombing. It was ultimately this critical error that led to Fighter Command’s recovery. The airfields were repaired, and pilot numbers were stabilized and then gradually increased through the influx of Commonwealth pilots.

On 15 September 1940 Göring sent nearly 1,000 aircraft against London suffering losses of 175 aircraft destroyed or damaged in the day’s fighting. On 17 September 1940 Hitler postponed the invasion. The Luftwaffe switched to a terror bombing campaign against British cities that lasted until the spring of 1941, when most bomber units were redeployed for the imminent invasion of the USSR.

The raids often caused spectacular damage but did little to harm the British war effort. Hitler to postpone the invasion on 13 October 1940 until the spring of 1941. But on 16 December 1940 Hitler issued Directive 21, beginning preparations for the attack on the USSR, effectively canceling the invasion.

Although defeated the Luftwaffe remained formidable: as Air Marshal Sir Robert Saundby concluded, “it was not the beginning of the end but the end of the beginning.” The Battle of Britain cost the Luftwaffe 873 fighters and 1,014 bombers. The RAF lost 1,023 fighters and 524 bombers.

Never again did the Luftwaffe operate in such numbers over Britain.

North Africa and the Mediterranean 1941-44

See - Battle of the Mediterranean, North African Campaign and Italian Campaign

The Luftwaffe saw action in North Africa and the Mediterranean. The Luftwaffe mainly saw action in support of the ground operations conducted by General Erwin Rommel’s Afrika Korps. The Afrika Korps fought in North Africa from February 1941 to May 1943.

Before Rommel's arrival, Mussolini's invasion of Greece, in October 1940 and the Italian offensive against the British in Egypt the previous month had been a complete disaster. The British had driven the Italian forces back into Libya, and now seemed poised to sweep them out of Africa altogether. The Greek Army had also pushed back the Italians into Italian occupied Albania, while the Greek request for British assistance lead to the gradual build up of another British Expeditionary Force on the continent. Hitler was illustrious that the British were now close to the Romanian oil fields. The Germans postponed their attack on the USSR from 16 May 1941, to the 22 June in order to secure their south-eastern flank.

The Luftwaffe provided invaluable air support during the rapidly victorious Balkans Campaign which saw the defeats of Yugoslavia and Greece, (prior to the invasion of the Soviet Union), German participation won victory for the Axis Powers, taking only three weeks (from 5 April - 30 April 1941) to occupy the main land of both countries.

Yugoslavia's refusal to join the Axis camp incurred Hitler's wrath. The Yugoslavian government under Regent Prince Paul had initially been in favour of joining Germany. But acoup d'etat had toppled the government, deposed the Regent, and proclaimed the teenaged Peter II as king. In response to this, Hitler ordered the invasion of Yugoslavia, "Operation Punishment" (Strafgericht) During the bombing of Belgrade, the center of the Yugoslavian capital was destroyed and 15,000 people killed.
Once again the Stuka came back into its own during these campaigns. Having suffered heavy losses during operations over Britain, the Luftwaffe command realised it was vulnerable against a well-organised and determined air defense. These components were lacking by the Yugoslavian airforce, and as a result the Stuka was able to operate effectively without fear of opposition. The Stukas took a heavy toll of Yugoslav ground and naval forces, which including the destruction of most of its torpedo-boats and sinking the 1870-ton seaplane tender Zmaj.[54] During the very brief campaign in Yugoslavia, the Luftwaffe engaged the Yugoslavian Airforce Do 17s and Bf 109s. The Yugoslavs had license built nearly 50 of the Do 17, but most of these were destroyed or captured.[55]

The offensive continued into Greece in which the Luftwaffe Airforce eliminated Greek and British opposition in the air, although many strong points on the ground such as Fort Ithaboli, and other parts of the Melissia Line held out under relentless air assault for several days. The Battle of Crete was fought over the island of Crete from 20 May to 3 June 1941, by which time the German paratroopers had captured the island. The British Eighth Air Force was only able to provide a limited air cover, which was easily overcome by the German Junkers Ju 52 transports. General Kurt Student the commander of the airborne forces commented, "Crete was the grave of the German paratroopers".[56]

Luftwaffe units were instrumental in stopping the British Army from getting control of strategic islands like Leros and Kos. During the Battle of Leros they brought about the last significant defeat of the British in World War II. The Luftwaffe remained in the Mediterranean theatre until the end of the war in May 1945. The most notable fighter unit in North Africa was Jagdgeschwader 27 that for nearly eighteen months (April 1941 - October 1942) was the only fighter unit in North Africa, although many other fighter units took part throughout the Mediterranean.

The strength of the Luftwaffe made all the difference during the North African Campaign. The Luftwaffe supported the Afrika Korps in the Western Desert and Tunisia. In addition to North Africa, the Germans joined the Italians in bombing Malta in 1941-42.

**Luftwaffe in the east 1941 - 45**

Operation Barbarossa - 22 June - 31 December 1941

The preparation for Barbarossa commenced on 18 December 1940, when Adolf Hitler ordered Directive 21. The battle plan, Operation Barbarossa, envisaged three Army Groups, each a million men strong, undertaking a simultaneous offensive from occupied Poland and German-allied Romania and Finland. The central objectives were Leningrad, Minsk, Kiev, and Moscow. The original German goal was the rapid conquest of the European part of the Soviet Union to line connecting the cities of Archangelsk and Astrakhan, often referred to as the A-A line, to the west of the Urals Mountains. The purges of the 1930s affected all branches of the military including the Soviet Air Forces. The poor performance of VVS (Voenny-Vozdushnaya Sily) during the Winter War with Finland had increased the Luftwaffe's confidence that the Soviets could be mastered. The standard of flight training had been accelerated in preparation for a German attack that was expected to come in 1942 or later. As a result Russian pilot training was extremely poor.

The Russian war effort in the first phase of the Eastern Front war was severely hampered by the obsolete aviation industry. In 1941 the MiG-3, LaGG-3 and Yak-1 were just starting to roll off the production lines but were inferior in all-round performance to the Bf 109. Many of these aircraft were delivered before Barbarossa, but Soviet tactical naiveté, ensured most of these were destroyed on the ground as Soviet airfields were full of aircraft parked in groups next to each other making them ideal targets.

The greatest German advantage lay in high standards of tactical deployment, training and experience. The first task of the Luftwaffe was the destruction of the Soviet Air force to establish control of the skies. To achieve this, four Luftflotte (1, 2, 4 and 5) were deployed with a strength of 4,389 aircraft, of which 2,598 were combat aircraft. The greatest German advantage lay in high standards of tactical deployment, training and experience. The first task of the Luftwaffe was the destruction of the Soviet Air force to establish control of the skies. To achieve this, four Luftflotte (1, 2, 4 and 5) were deployed with a strength of 4,389 aircraft, of which 2,598 were combat aircraft.[57] In addition to this the German-Allied nations; Italy, Romania, Bulgaria and Hungary committed another 980 combat aircraft.[58] Of the Luftwaffe contingent 929 were medium bombers. The Luftwaffe had fewer bombers than at the start of the Battle of Britain because of heavy losses the previous summer.[59]

The attack on 22 June 1941 came as a complete surprise to the Russians. Unprepared they lost enormous numbers of aircraft on the ground. Many of the Russian pilots had not been trained properly on the fighters they were allocated, making missions less effective. The situation was so one-sided that some Russian pilots resorted to ramming German aircraft if they could.

Three of the top German aces in North Africa. (From right) Hans-Arnold Stahlschmidt (59 kills), Werner Schroer (114 kills), Hans-Joachim Marseille (158 kills).

Johannes Steinhoff, an ace with 176 victories (152 on the Eastern Front) described the standard of Soviet pilots in combat:

In fighting the Soviets, we fought an apparatus, not a human being— that was the difference. There was no flexibility in their tactical orientation, no individual freedom of action, and in that way they were a little stupid. If we shot down the leader in a Soviet fighter group, the rest were simply sitting ducks, waiting to be taken out.[60]

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The scale of the Luftwaffe's victory on the first day of operations was doubted by its commander-in-chief, Hermann Göring. The official report claimed 1,489 Soviet aircraft destroyed. Göring ordered this checked. After picking their way through the wreckage across the front, Luftwaffe officers found that the tally exceeded 2,000. The Luftwaffe's losses stood at 78 (24 Bf 109s, 23 Ju 88s, 11 He 111s, 7 Bf 110s, 2 Ju 87s, 1 Do17 and 10 transport and reconnaissance aircraft. Also lost were 12 aircraft from the Romanian Air Force.

In a desperate bid to stop the rapid German advance the Soviets sent huge waves of unescorted bombers to blunt the German Panzer divisions thrusts into Soviet territory. The result was appalling Soviet losses. Jagdgeschwader 77 shot down 47 VVS bombers on the 25 June. A particularly disastrous day for the Russians came on 29 June when Jagdgeschwader 51 shot down 65 bombers during the day. By the 18 July it had shot down 500 Soviet aircraft in combat.

The Germans were assured of air-superiority throughout the year. The VVS, although continually resisting, was powerless to prevent the Luftwaffe inflicting heavy losses to Soviet ground forces, and for the rest of 1941 the Luftwaffe could devote much of its energy to these ground support missions. In the following two days the Soviets reported the loss of another 1,922 aircraft. Three weeks into the campaign German pilot Werner Mölders scored his 100th aerial victory, the first pilot to do so.

The Luftwaffe was particularly effective in breaking up and destroying Soviet armored divisions. The Soviet tank force had an estimated strength of 15,000 tanks at the beginning of the invasion. By October that force had, in the central sector, been reduced to 150. Despite the clear victories being won and the rapid advances deep into Soviet territory, the Luftwaffe had lost its 1,000th aircraft destroyed within the first two months. It became apparent that the Luftwaffe could not sustain these losses for long. The increasing distances meant delivery of replacement manpower and machinery took much longer and spare parts to replace battle damaged aircraft became a problem. Despite this the Luftwaffe had reduced the Soviets to a mere 389 aircraft in the central sector of the front.

The Luftwaffe supported all three army groups in their push eastward and it helped the ground forces achieve a spectacular victory at Kiev in which an estimated 600,000 Red Army soldiers were killed or captured. The impact of the Luftwaffe during these months was critical to the pace of the advance. During the Battle of Kiev the Luftwaffe accounted for 2,171 Soviet vehicles and 23 Soviet tanks, and 107 Soviet aircraft destroyed between 12 September - 21 September 1941, and inflicted heavy casualties to the Soviet ground troops. Soviet prisoners revealed that the Stuka attacks in particular devastated morale. On 15 September Heinkels of 3./Kampfgeschwader 55 destroyed eight locomotives in a single sortie. But the drive toward Moscow was halted during the two month campaign, giving the defenders of the Soviet capital time to prepare defenses and move an enormous amount of industry eastward.

During this month, Stuka pilot Hans-Ulrich Rudel sank the Soviet battleship Marat, during an air attack on Kronstadt harbour in the Leningrad area, with a hit to the bow with a 1000 kg armour-piercing bomb. Several other Soviet ships were sunk in this engagement. The Soviet Navy suffered heavy losses at the hands of the Luftwaffe during the war.

By the end of 1941 the Luftwaffe had been reduced to just 30 - 40% of their original strength. The winter weather and the snow caused damage to aircraft, as engines seized and the oil and fuel froze inside the tanks. The Luftwaffe was losing as many aircraft damaged than in combat. The Luftwaffe also lost its General der Jagdflieger Werner Mölders, who was killed on 22 November in an accident, sapping morale even further.

The Wehrmacht was now pushing toward Moscow and the Luftwaffe delivered its first raids over the capital but caused little damage. The Russians however were reinforced with fresh forces from Siberia including significant numbers of the T-34 tanks and nearly 1,000 aircraft. The Russian counter-attack, despite Luftwaffe intervention, succeeded in pushing the Germans back in December, saving Moscow and cutting off large parts of Army Group Centre. Faced with annihilation of its forces in the central sector, the Luftwaffe was ordered to increase its efforts, and it managed to prevent the destruction of the central front forces. The VVS now had numerical superiority.

The failure of the Luftwaffe during Barbarossa was reflected in its losses, with 2,093 aircraft of all types being destroyed. Soviet losses stand at 21,200 destroyed, 10,000 in combat, of which 7,500 were shot down by the Luftwaffe fighters, who could now boast some of the top aces like Günther Lützow who had already surpassed the 100 victory mark; these scores were to increase over time. The successes of the German air arm were offset by the losses which unlike the Soviet Air Force could not be replaced easily as the German economy had not yet been put on a full war footing. Losses in personnel were also high and irreplaceable with 3,231 killed, 2,026 missing and 8,453 wounded.

The campaign in Russia had commenced with an insufficient number of combat aircraft. The reduction in serviceable aircraft, in particular dive-bombers, meant medium bomber and fighter-bomber units were rushing to ‘hot-spots’ to prevent enemy gains. Arguably the lack of a strategic bomber force denied the Luftwaffe the opportunity to attack Soviet industry and would prove fatal to the success of the campaign, as Soviet production continued to increase which would help them maintain high numbers of aircraft and gain numerical and then, briefly, air superiority in November/December 1941.

### Eastern Front: 1942 - 1943

The Wehrmacht’s failure to achieve victory in the Soviet Union before 1941 was not a complete disaster for the German war effort as on all fronts the Germans still held the strategic initiative. The entry of the United States into the war, on the side of the Allies, in December 1941 however, would pit its enormous industrial power against Germany. Hitler had stated that he would avoid a war on two fronts and knew he needed to end the war on the Eastern Front before the Americans built up significant strength in Europe.
Hitler and the Oberkommando der Wehrmacht (OKW) had decided that the main offensive effort of the Wehrmacht should fall in the south, to capture or cut off the Caucasus oil fields from the rest of Russia, then move north out-flanking Moscow from the south. Conquering the Caucasus would also doom the considerable Soviet forces holding Sevastopol in the Crimea. The operation became known as Operation Fall Blau.

The Luftwaffe assisted with the capture of Sevastopol by subjecting Soviet defenses in and around the city to heavy assault, the bombings mainly carried out by Luftflotte 4. The Luftwaffe had effectively dealt with Soviet opposition in the air, the VVS force of 300 had been destroyed leaving the Luftwaffe to operate unmolested, with air support the city fell on 4 July 1942.[74] The Battle of Sevastopol had seen the Luftwaffe support the German Army extremely effectively. With the Eastern Front largely quiet in early 1942, the Luftwaffe was able to concentrate its forces, as it had done in previous campaigns. The Russians also lacked adequate air cover in the Crimea, allowing the Luftwaffe to avoid time consuming task of achieving air superiority. During the summer offensive the Luftwaffe would find itself increasingly spread thin on the eastern front while contesting powerful numerical forces of the VVS.[75]

The Luftwaffe was also instrumental in the Second Battle of Kharkov destroying enemy airpower of 615 aircraft whilst destroying hundreds of Tanks. The German air-arm had helped the Army achieve another spectacular victory.

As Fall Blau began the Luftwaffe wiped out the strong contingent of VVS forces and were instrumental in disrupting supply lines and destroying enemy troop and vehicle concentrations. By 19 November 2,846 Soviet aircraft were destroyed[76]. In an unwelcome turn of events for the Luftwaffe the Soviets started to operate large numbers of British lend-lease aircraft like the Hawker Hurricane. In the opening month the Luftwaffe lost 251 aircraft but the advance was in full swing and the Germans looked set to take the Kuban food producing region and the Baku oil fields.

Due to appalling losses Soviet resistance in the air was radically reduced in August[77]. But even without the threat of enemy air attack the Wehrmacht's supply lines were long and difficult to maintain.

The Luftwaffe continued to pound the Soviet Navy's Black Sea Fleet and inflicted heavy losses to Soviet Shipping. From February - August the Germans had sunk 68 freighters, a tortilla leader, three destroyers and three submarines[78]. Despite such successes and air support the advance had slowed to a "snail's pace" in the Kuban region, with its forces spread thin, the Luftwaffe was powerless to prevent Soviet aircraft inflicting considerable losses to the Army[79].

As the Battle of Stalingrad got underway the Luftwaffe was now operating often from poor airfields, which caused accidents and damaged aircraft, which the Luftwaffe could ill afford. As a result of the bombing of Stalingrad, which was largely destroyed, the Luftwaffe created ruins in which the Red Army could defend effectively[80].

The Luftwaffe had, by October 1942 flown over 20,000 individual sorties but its original strength (in the shape of Luftflotte 4s 1,600 aircraft) had fallen 40% to 950 aircraft. The bomber units had been hardest hit having only 232 out of a force of 480 left[81]. The Luftwaffe still held air superiority but clearly its strength was being eroded. The Russian output of aircraft continued unabated—no matter how many enemy machines were destroyed, more appeared, while its own much smaller losses, particularly among the crews, were becoming serious. The Luftwaffe's Sturzkampfgeschwader made maximum effort during this phase of the war flying 500 sorties per day and causing heavy losses among Soviet forces losing just an average of one Stuka per day[82].

On 19 November 1942 the Soviets launched Operation Uranus, which cut off the entire German Sixth Army. Göring assured Hitler that the Luftwaffe could airlift in supplies to the surrounded Army. Hans Jeschonnek also convinced Hitler that if both bombers and transports were used and the airfields in and outside the pocket were maintained the operation was possible[83]. The Luftwaffe tried to fulfill these grand promises, but failed to deliver the required tonnage and the German sixth Army surrendered on 2 February 1943. The Luftwaffe had managed to evacuate 30,000 wounded German soldiers, and supply the Army with 8,350.7 tons of food and ammunition. However some 488 aircraft, including 286 Junkers Ju 52 transports (one-third of the Luftwaffe's Eastern Front strength) and 165 Heinkel He 111s were lost. The Luftwaffe also suffered casualties of nearly 1,000 airmen, many highly experienced bomber pilots[84]. The Battle at Stalingrad had turned the tide of the war in the east in favour of the Soviet Union.

Eastern Front: 1943

Despite the disaster at Stalingrad the Oberkommando der Wehrmacht decided to launch another offensive in the summer of 1943 in which Hitler had hoped would cut off the large salient now protruding into the German front, eliminating the large Soviet Forces within it and turning the tide once more into the Wehrmacht's favour. This new operation was named Operation Citadel, the Battle of Kursk. To support the ground forces the Luftwaffe committed Fliegerkorps I and Fliegerkorps VIII under Luftflotte 6 and Luftflotte 4 (under the command of Generaloberst Hans Jeschonnek) and Generalfeldmarschall Robert Ritter von Greim, respectively. Some 2, 109 machines were allotted to the air fleets, 65 percent were operational[85].

On 5 July the Germans began the offensive. The Luftwaffe rendered more invaluable support to the Army despite the operations failure. By the 12 July Fliegerkorps I flew 37,241 sorties dropping 20,000 tons of bombs destroying 1,735 Soviet aircraft, 1,100 tanks, 1,300 vehicles for the loss of 64 of it's own. Its Kampf and Jagdgruppen flew between six and seven sorties per day over Kursk[77]. Examination of Soviet archive records indicate the loss of 677 aircraft in the southern sector of the Kursk salient, for the period 5–31 July. On the Northern Sector Soviet losses were 439. The Luftwaffe Generalfeldzeugmeister reported a loss of 687 machines with 420 totally destroyed[86] 220 of them on the northern sector. In the following month Soviet losses were to reach 1,104 for 12 July - 18 August[86].
Attritional air battle alarmingly depleted the Luftwaffe's strength, 911 aircraft were lost in July, while inflicting much heavier losses on the Soviet Air Forces, whose strength appeared to be undiminished. Despite this the Luftwaffe decisively intervened in the battle. The Soviet 11th Guards Army initiated an offensive aimed at cutting off the 2. Panzerarmee and German 9th Army. The Luftwaffe was called upon to rescue the situation in a huge aerial counter-offensive lasting from 16 July - 31 July against a Soviet offensive at Khotynets and saved two German armies from encirclement, reducing the attacking Soviet 11th Guard Army to just 33 tanks by 20 July. The Soviet offensive had been completely halted from the air.[90]

The Soviet losses were so heavy the 1st Tank Corps had only 33 tanks remaining on 20 July.[91] Model sent a message to von Greim thanking him, "the Luftwaffe's intervention was absolutely decisive to prevent a second, more disastrous Stalingrad".[93]

By October 1943 with the Soviet forces pushing the Wehrmacht back toward the Dnieper, the Luftwaffe had some 1,150 of its aircraft, 60 percent of its eastern front strength concentrated around Kiev. By December the Luftwaffe had just 425 operational fighters alone on the eastern front.[94] Despite its efforts the seeming endless numbers of the Soviets, both on the ground and in the air had rebuffed the Wehrmacht's last significant offensive on the Soviet-German front.

The Battle of the Atlantic

Following some early experience in support of the war at sea during the Norwegian Campaign, the Luftwaffe contributed small amounts of forces to the Battle of the Atlantic from 1940 to 1944. These were primarily long-range reconnaissance planes, first with Focke-Wulf Fw 200 and later Junkers Ju 290 maritime patrol aircraft. The initial Focke-Wulf aircraft were very successful, claiming 365,000 tons of shipping in early 1941. The development of escort carriers and increased efforts by RAF Coastal Command soon made the task more dangerous and less rewarding for the Luftwaffe though. The defeats on the Eastern Front, in North Africa and the ever increasing raids of American bombers of the Reich ensured that the Luftwaffe's naval arm, the Fliegerführer Atlantik was denied the necessary resources to combat Allied air and naval superiority over the Atlantic. By the end of 1943 a Gruppe of He 177s that had been committed lost 17 of their number to air opposition.[95] These units had trained with radio controlled anti-shipping bombs, and this loss of fully trained crews prompted a switch to night fighting with even fewer successes.

The Luftwaffe also contributed fighter cover for U-boats venturing out into and returning from the Atlantic, and for returning blockade runners.

Development of night fighting

Although night fighting had been undertaken in embryonic form way back in World War I, the German night fighter force, the Nachtjagd, had to virtually start from scratch when British bombers began to attack targets in Germany in strength from 1940 as far as tactics were concerned. A chain of radar stations was established all across the Reich territory from Norway to the border with Switzerland known as the "Kammhuber Line", named for Generalleutnant Josef Kammhuber, and nearby night fighter wings, Nachtjagdgeschwader (NJG), were alerted to the presence of the enemy. These wings were equipped mostly with Messerschmitt Bf 110 and Junkers Ju 88 aircraft, which would later be outfitted with the Lichtenstein nose-mounted radar. The Messerschmitt Bf 110 was the most successful night fighter that served in the Luftwaffe. Among the most notable night fighter aces were Helmut Lent, who shot down 110 enemy aircraft and Wolfgang Schnaufer, who shot down 102 enemy aircraft. Lent mostly flew in the Bf 110 (and variants of the Ju 88), while Schnaufer flew the Bf 110 exclusively. The Bf 110's main strength was its ability to carry heavy armament in its nose section. Early versions had four MG 17 machine guns in the upper nose and two 20 mm MG FF/M cannons fitted in the lower part of the nose. G-series aircraft replaced the MG FF/M with improved 20 mm MG 151/20 and the upper nose MG 17 were sometimes replaced with two 30 mm MK 108 cannons. Starting in mid-1944 the Bf 110 G-4 night fighters entered serial production with two MG FF/Ms as the Schrägle Muskel 'off-bore gun' (upward firing) system for attacking Allied bombers from underneath with several units field modifying their Bf 110 with this system some time earlier. The Schrägle Muskel cannons were typically mounted just to the rear of the cockpit in the Bf 110 or in the fuselage behind the cockpit on other machines. Several Dornier Do 217, Junkers Ju 88 and Heinkel He 219 carried similar installations. To compound the British night bomber problems the Avro Lancaster, Handley Page Halifax and Short Stirling did not carry ventral ball turrets under their fuselage, making them vulnerable to this kind of attack.

During mid-1943, a Luftwaffe bomber pilot, Major Hajo Herrmann devised a new plan for night attacks. Bombers were silhouetted over the target areas from the fires below and searchlights, which would make them vulnerable to attack from above. Three Jagdgeschwader, (JG 300, 301 and 302) were tasked with these operations codenamed as Wilde Sau attacks.[96] The units were equipped with Bf 109 G-6/N and Fw 190 A-5/U2, both aircraft versions were modified for night use and some of them were fitted with a Naxos passive radar detector. The FuG 350 Naxos-Z detector set could track enemy H2S radar transmissions from a range of thirty miles, which enable the German fighters to "home in" on British Bombers.[97] Herrmann's tactics were reasonably successful, but the 30 Jagddivision only saw action until it was disbanded in March 1944.

In early 1944, to counter the Luftwaffe's NachtJagdgeschwader, the British operated Mosquito night fighters in the bomber support role, with RAF Bomber Commands 100 Group. These units were tasked with harassing the German night fighter airfields, and disrupting their operations and attacking them when they were most vulnerable, during take off and landing.

The Heinkel He 219 Uhu (Owl) was considered one of the most effective night fighters in the
effort was severely damaged. The P-51D Mustangs and P-47 Thunderbolts with extended range were
passed to the Western Allies.

When long-range fighter support became widely available by May 1944, the Luftwaffe's victory in October 1943 was obvious to the Americans, General of the Air Force Henry H. Arnold said, "the largest and most savage fighter resistance of any war in history". In the second week of that month four full strength missions to Bremen, Marienburg, Munster and Schweinfurt had cost the Eighth Air Force 148 heavy bombers, fifty percent of its daily operational strength.

The American then had to direct their attacks against targets within the range of fighter cover for the bombers. The RAF, having learned this lesson, were now executing their offensive by conducting night bombing operations on an increasingly large scale, with 1,000 bomber raids being assembled for night bombing could not be accomplished as Allied fighters lacked the range to escort bombers to and from the target. Initially the British were to be proved right, as by the end of 1943 losses nearly halted daylight raids. The USAAF maintained an unescorted daylight bombing campaign of industrial targets until October 1943, when it lost 120 bombers in two raids on \textit{Regensburg} and \textit{Schweinfurt}.

On 14 October 1943, a mission to Schweinfurt cost the Americans 60 B-17s destroyed in just over three hours of continuous attacks. The target of these attacks, the ball bearing plants were dispersed before the Americans returned to Schweinfurt. Albert Speer, Hitler's armament minister, said that no weapon failed to reach the front due to a lack of ball bearings.

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THE TURN OF THE TIDE

Until the development of Allied long-range fighters the Luftwaffe remained capable of inflicting serious losses by the day fighter and night fighter units (\textit{Nachtschlachtverband}), as well as the anti-aircraft guns under its command. The Luftwaffe employed twin-engined Ju 88 and Bf 110 Zerstöer, or bomber destroyer units to attack American formation with rockets and heavy cannon with considerable success. However with the arrival of the long range P-51D these units suffered heavy losses.

The disastrous Me 210, designed to replace the Bf 110, encountered design difficulties and was replaced with the Me 410 Hornisse, which was a development of the Me 210. The Me 410s were extremely vulnerable in hostile skies, and by 1944 were nothing more than cannon fodder for marauding Allied “day” fighters.

The turn in the Luftwaffe's fortunes came during \textit{Big Week} in which the U.S. Eighth Air Force flying from bases in Britain, and Fifteenth Air Force flying from bases in Southern Italy, carried out raids against German aviation industry throughout Europe. Together they dropped roughly 10,000 tons of bombs and seriously disrupted German fighter production. During Big Week, the Eighth Air Force lost 97 B-17s. Coupled with B-24 losses the figure totaled 137 initially and 20 more scrapped due to damage. The Fifteenth Air Force lost 90 aircraft and American fighter losses stood at 28. The Luftwaffe losses were high amongst their twin-engined Zerstöer units which suffered heavy losses and decimated the Bf 110 and Me 410 Gruppen. More worrying for the Jagdwaffe was the loss of 17 per-cent of its pilots; nearly 100 were killed. The tide had turned, and air superiority had passed to the Western Allies.

When long-range fighter support became widely available by May 1944, the Luftwaffe's defensive effort was severely damaged. The P-51D Mustangs and P-47 Thunderbolts with extended range were
The Allied air campaign was not successful in knocking Germany out of the war by itself, but it contributed to the German defeat, by forcing the Germans to focus valuable resources on the battle over Germany, which were then missed on other fronts.[1] Albert Speer said that if the 1944 campaign against the Romanian oil fields had been continued for another month, the entire Wehrmacht would have been crippled.[109] According to Speer, 98% of Germany's aircraft fuel plants were out of production. The production of aviation fuel fell from 180,000 tons to 20,000 tons between March and November 1944.[110]

To increase the Jagdwaffe's woes the American fighters were now flying shuttle missions and landing at bases in the Soviet Union. This tactic enabled them to extend their already considerable combat time over the target area. American enthusiasm for these missions ended when the Russians failed to defend these aircraft from Luftwaffe attacks. One such raid in March 1944 destroyed 43 B-17s and 15 P-51 fighters on the ground.[111]

Strafing Luftwaffe airbases became common place as 1944 wore on, until nowhere in Europe could the Jagdwaffe remain outside of Allied range. If the fuel crisis was bad enough the casualties suffered by the now largely defunct Kampfgruppen were starting to become serious. Most bomber units were now ferrying and transporting personnel across Germany. In April/May 1944 the Luftwaffe lost 67 aircraft of this type, as far east as Dresden.[112]

Many Allied fighter gun cameras often revealed that aircraft which had been claimed destroyed as '109's were often Arado Ar 96 trainers with a cadet pilot at the controls.[113] To counter this non-combat flights were only to carried out at dawn and dusk. The Luftwaffe expanded aircraft warning systems and devised radio signals to warn flights of intruders. If attacked, poorly armed aircraft were to dive down to tree-top level, and if necessary, the pilot was to belly land and take cover, as pilots were far more important than aircraft.[114]

The Germans also used camouflage, smoke screens and resorted to burying vital communications and electrical cables serving their radar and command stations. Ammunition was stored in tunnels along with precious fuel supplies. Allied pilots also noted that the Germans covered the airfields with 20 mm quadruple and 37 mm flak guns capable of putting up withering sheets of fire in the path of low flying fighters. As a result of these measures Allied fighter losses increased.[115]

The introduction of the B-17G with its remote controlled 'chin' turret forced a change of tactic on the Jagdwaffe. Throughout 1943 head-on attacks had proved successful against American heavy bombers. Many Luftwaffe units now upgraded the firepower of their fighters. Some Fw 190 fighters carried MK 108 30 mm cannon that could destroy most heavy bombers with two or three hits. The later variants of the Messerschmitt Bf 109 (from the Gustav onwards) were also capable of carrying heavier armament like the MK 108, although only a single barrel firing through the propeller shaft as an engine-mounted Motorkanone.

By September 1944 the Soviets were advancing into Romania and the oilfields were lost. From this time, the Luftwaffe experienced chronic shortages of fuel. Many German interceptors returning from missions switched off their engines on touching down to avoid wasting fuel. Ground crews then quickly got them under cover. By this time fighter pilot losses were becoming unbearable, and the Jagdwaffe was nearing breaking point.

The end in the West 1944 - 45

Between January and May 1944 the Luftwaffe undertook Operation Steinbock, the so-called Baby Blitz, assembling 474 bombers for a campaign against London. Steinbock was called off when V-1 rockets became available for the retribution attacks and after the loss of 329 bombers.[116] The lack of night flying experience of the crew contributed to the losses. The bomber force, under the command of Oberst Dietrich Peltz, now had only 143 bombers available for the Normandy invasion.

By 1944 the Luftwaffe was no longer in a position to offer serious opposition to Operation Overlord, the Allied invasion of France on 6 June 1944. The only Luftwaffe action to occur over the beaches was a strafing run conducted by the Fw 190 ace Josef Priller and his wingman, Emil Lang. Priller scored 29 victories against the Western Allies, all but one over the Normandy invasion front, making him the highest-scoring German ace of the campaign. [117] Though outnumbered many times over the Jagdwaffe continued to oppose the Allied bomber fleets. Many Eastern Front veterans with well over 100 victories (like Emil Lang) found that this theatre was no respecter of reputations.

During Operation Market Garden, the Allied attempt to end the war in 1944 by forcing a route through the Netherlands and into the Ruhr region of Germany, Luftwaffe fighter forces managed to inflict significant losses on Allied planes transporting paratroopers and supplies into battle, but their own losses were serious. The Jagddivision's operational in the area claimed 209 Allied aircraft destroyed, including only 35 transport aircraft. In return the Luftwaffe lost 192 fighters.[118] The Allied operation failed, and the Luftwaffe survived into the following year.
During the Battle of the Bulge, the Luftwaffe undertook night bombing attacks against Bastogne. A paratroop and aerial re-supply of German spearheads failed completely. On 1 January 1945 the Luftwaffe undertook a final attack operation known as Operation Bodenplatte against Allied airfields in Holland and Belgium in a bid to establish air superiority and eliminate air attacks on the German forces in the Ardennes area.

Adolf Galland, who had replaced Werner Mölders as General der Jagdflieger protested as he had been carefully conserving the Luftwaffe's fighter strength for his 'Great Blow' against Allied Bombers in which over 800 fighter would be sent in massive attacks to cause devastating losses to Allied bombers, which he hoped would persuade the Allies to cease the bombing over Germany for a time. He along with others such as Johannes Stahnoff tried to persuade Hitler to remove Reichsmarschall Göring from command of the Luftwaffe, leading to the Fighter Pilots Revolt. They were dismissed and sent back to their front line units.

Correctly believing that a 1 January attack would catch the Allied airforces napping, the Luftwaffe destroyed many Allied aircraft on the ground but in return suffered crippling losses to Allied bombers, which he hoped would persuade the Allies to cease the bombing over Germany for a time. The operation had been so secret that the Luftwaffe failed to notify its front line anti-aircraft units resulting in many losses due to friendly fire. Of the remaining Luftwaffe pilots few had more than ten missions to their credit. The loss of twenty-two unit commanders were devastating, such men at this point were irreplaceable. The loss of such outstanding pilots caused a drop in morale and the loss of the guidance they gave to younger pilots.

In return for the crippling losses, it was first thought the Luftwaffe destroyed 232 Allied aircraft and damaged 156. Examination of Allied records shows that the figures were nearer 305 destroyed and 190 damaged. The operation was a disaster for the Jagdwaffe. The Luftwaffe turned its attention to a revolutionary jet fighter in the Messerschmitt Me 262. Stormbird or Schwäbich (Swallow). While this aircraft could outrun any Allied aircraft, and had armament that could effectively destroy Allied bombers with a single 'burst' of fire, it was not produced in sufficient numbers to change the air war.

The Luftwaffe continued to resist the Allied air assault over Germany proper, which had by March 1945, become the front line itself. In several missions during March the American bomber fleets reported attacks from large groups of German piston-engined and jet aircraft, sometimes numbering up to 150. The fuel shortages were now responsible for grounding the Jagdwaffe. Priority was given to jet units now operating the Messerschmitt Me 163 and Me 262.

Adolf Galland, formerly General der Jagdflieger and now in disgrace after the Fighter Pilots Revolt, formed Jagdverband 44 (JV 44). This unit was a special fighter force consisting of some of the top German fighter aces in the Luftwaffe which would fly the Messerschmitt Me 262 jet fighter.

The unit was established in February 1945. The flying personnel of the squadron were made up almost exclusively of high scoring aces, or Experten. The unit's top five aces alone had more than 1,000 victories. JV 44 defended southern Germany and Austria from aerial attack.

Because of the greater length of runway it required, and the slow acceleration it had at low speeds, the Me 262 was especially vulnerable during take-off and landing. The unit constructed a protection squadron, the Platzschutzstaffel (Protection squadron), headed by Lieutenant Heinz Sachsenberg, to provide air cover for takeoffs and landings. This unit flew the long-nosed 'Dora', Fw 190 D, variant of the well-known Fw 190. These aircraft were painted bright red on their underbelly with contrasting white stripes so anti-aircraft batteries could distinguish them from Allied aircraft. The unit continued operations until the end of the war, Galland himself was wounded, after destroying a solitary B-26, when he was shot down by a P-47 Thunderbolt.

By April the German front in the west had disintegrated and in the east the Red Army had encircled Berlin. The last battles fought in the skies over Germany were now insignificant. All but overrun, the mass surrender of German military personnel began. All that remained of the Luftwaffe were scattered wrecks over airfields that were virtually aircraft 'graveyards'. Many examples of the revolutionary aircraft that the Luftwaffe hoped would turn the tide fell into Allied hands, examples like the Me 262 and Heinkel He 162 greatly impressed the Allies.

Omissions and Failures

Mistakes in Command

The failure of the Luftwaffe in the "Defense of the Reich" campaign was a result of a number of factors. The build up of the Jagdwaffe was too rapid and its quality suffered. It was not put under a unified command until 1943, which also affected performance. Of the nine Jagdgeschwader in existence in 1939, no further units were built until 1942, and the years of 1940-1941 were wasted. The Oberkommando der Luftwaffe failed to construct a strategy, instead its command style was reactionary, and its measures not as effective without thorough planning. This was particularly apparent with the Sturmböcke units which were armed with heavy 20mm and 30mm cannon to destroy heavy bombers. This increase in weight effected the performance of the Fw 190 and Bf 109 at a time when the two aircraft were meeting large numbers of equal if not superior Allied types.

Mistakes in Development and Equipment

The RLM lacked a technical-tactical department, that would combine the two elements for better efficiency. As a result all fighter and bomber development was oriented toward short range aircraft, as they could be produced in more numbers, rather than quality long range aircraft, something that put the Luftwaffe at a disadvantage as early as the Battle of Britain. Types that were obsolete were kept in production for far too long, in particular the Ju 87 Stuka, and the Bf 109. Production was also slow,
Mistake in Pilot selection and Training

The bomber arm was given preference and received the “better” pilots. Later fighter pilot leaders were few in numbers as a result of this. As with the late shift to fighter production, the Luftwaffe pilot schools were did not give the fighter pilot schools preference soon enough. The Luftwaffe, the OKW argued was still an offensive weapon, and its primary focus was on producing bomber pilots. This attitude prevailed until the second half of 1943.

Mistakes in Leadership

At the beginning of the war commanders were replaced with younger commanders too quickly. These younger commanders had to learn “in the field” rather than entering a post fully qualified. Training of formation leaders was not systematically until 1943, which was far too late, with the Luftwaffe already stretched. The Luftwaffe thus lacked a cadre of Staff officers to setup, man and pass on experience.

Luftwaffe ground forces

One of the unique characteristics of the Luftwaffe (as opposed to other independent air forces) was the possession of an organic paratrooper force called Fallschirmjäger. These were established in 1938. They saw action in their proper role during 1940–1941, most notably in the capture of the Belgian army fortress at Eben-Emael and the Battle of the Netherlands in May 1940, and during the invasion of Crete in May 1941. However, more than 4,000 Fallschirmjäger were killed during the Crete operation.[129] This put a stop to the proposal (Operation Herkules) to seize Malta and eliminate the threat to Rommel’s supply lines in North Africa. A shocked Adolf Hitler ordered that these elite paratroopers never be used for such large-scale paratroop operations again, but only for smaller-scale operations, such as the successful rescue of Benito Mussolini, the then-deposed dictator of Italy, in 1943.

Following Crete, Fallschirmjäger formations were used as standard foot infantry in all theatres of the war. During 1942 surplus Luftwaffe personnel was used to form so-called Luftwaffe Field Divisions, with disastrous consequences for the newly formed units, since the Luftwaffe refused to let experienced Heer officers command and lead them. From 1943, the Luftwaffe also had an armoured paratroop division called Fallschirm-Panzer Division 1 Hermann Göring, which was expanded to a Panzerkorps in 1944.

The Luftwaffe also controlled significant numbers of anti-aircraft guns of all calibres that often acted in support of Heer ground forces. These were organised just like Heer formations in regiments, divisions, and corps.

Luftwaffe organisation

Main article: Luftwaffe Organisation

Luftwaffe commanders

Herman Göring, C-in-C of the Luftwaffe.

Throughout the history of the Third Reich, the Luftwaffe had only two commanders-in-chief. The first was Herman Göring, who was fired by Hitler near the end of the war in Europe on account of his having contacted (western) Allied forces without his authorisation with a view to securing a ceasefire before the Soviets overran Berlin. Hitler appointed Generalfeldmarschall Robert Ritter von Greim as the second (and last) commander-in-chief of the Luftwaffe, concomitant with his promotion to Generalfeldmarschall, the last German officer in World War II to be promoted to the highest rank. Other officers promoted to the second-highest military rank in Germany were Albert Kesselring, Hugo Sperle, Erhard Milch, and Wolfram von Richthofen, a cousin of the *Red Baron* who rose from staff officer in Spain to Air Assault Corps and later Air Fleet commander. Von Richthofen retired in late 1944 on medical grounds and died of a brain tumour while in American captivity at Bad Ischl on July 12, 1945.

Göring and Sperle were prosecuted at the OKW Trial, one of the Nuremberg Trials after the war. Göring was sentenced to death, while Sperle was acquitted. Milch was tried in a separate trial and sentenced to a lengthy prison sentence. Kesselring was a witness in the OKW Trial, and was himself sentenced for actions in Italy later.

Organisation and chain of command

See Luftwaffe Organisation

Fighter wings (Jagdgeschwader) (JG) consisted of groups (Gruppen), which in turn consisted of fighter squadrons (Jagdstaffel). Hence, Fighter Wing 1 was JG 1, its first group was I./JG 1 and its first squadron was 1./JG 1. JG 1 was operating the Heinkel He 162 at the end of the war. In the final two months, JG 1 lost 22 of them, mostly in crashes, resulting in ten pilots being killed and another six injured.

Similarly, a bomber wing was a Kampfgeschwader (KG), a night fighter wing was a Nachtjagdgeschwader (NJG), a dive-bomber wing was a Stukageschwader (StG), and units equivalent to those in RAF Coastal Command, with specific responsibilities for coastal patrols and search and rescue duties, were Küstenfliegergruppen (KGr). Specialist bomber groups were known as Kampffliegergruppen (KGr).

Each Geschwader was commanded by a Kommodore, a Gruppe by a Kommandeur, and a Staffel by a Stabsoffizier. However, these were appointments, not ranks, within the Luftwaffe. Usually, the Kommodore would hold the rank of Oberstleutnant (lieutenant colonel) or, exceptionally, an Oberst
Famous Luftwaffe pilots

Hans-Ulrich Rudel was the most highly decorated German soldier of the war. He won the Knight's Cross with Golden Oakleaves, Swords and Diamonds (Das Ritterkreuz mit Goldenem Eichenlaub, Schwertern und Brillianten) by the end of 1944 and being promoted to Oberst (Colonel). Unlike other officers of such high rank, Oberst Rudel would remain in the front line until his surrender as Kommodore of SG 2 (a combined dive-bomber and fighter unit) to the U.S. Army at Kitzingen on V-E Day, May 8, 1945. Rudel flew 2,530 combat missions (a world record) and successfully attacked many tanks, trains, ships, and other ground targets, claiming a total of 2,000 targets destroyed - including 519 tanks, 800 vehicles, 150 artillery guns, a battleship, two cruisers, and a destroyer.

Amongst the other Experten, Erich Hartmann emerged at the end of the war with the highest number of enemy aircraft shot down—352, a total initially disputed but eventually accepted. After the end of the war it was established that 105 German pilots and possibly four others shot down over 100 enemy aircraft. Some thirteen were able to score over 200 and two men, Gerhard Barkhorn and Hartmann scored over three hundred. Most of these aces flew or did fly the Bf 109 at some stage during the war.

Technological achievements

Advanced propulsion

After playing a pioneering role in the development of aircraft powered by jet engines ("TL Triebwerke") with prototypes such as the Heinkel He 178 and Heinkel He 280, the Luftwaffe became the first air force in the world to press an operational jet fighter into service—the twin-engine Messerschmitt Me 262. The aircraft was still plagued by reliability problems of its power plants; however, while the Junkers Jumo 004 engines were of the advanced axial-flow design, they suffered from a lack of high-quality strategic materials required during the manufacturing process, a result of the Allied bombing offensive and the turn of war fortunes for Germany. At Peenemünde, the Luftwaffe also developed the Vergeltungswaffe-1 (V-1 flying bomb).

The Me 262 was soon joined by other highly advanced aircraft designs, such as the Arado Ar 234 twin- and four-engine jet bomber/reconnaissance aircraft, the Heinkel He 162 single-engine jet fighter (powered by a BMW jet engine), the Messerschmitt Me 163 rocket fighter and others. A variety of further highly advanced aircraft designs, such as the Horten Ho 229 flying wing (originally designated Horten Ho IX and later to be manufactured by the Gothaer Waggonfabrik aircraft factory), were either at the testing stage or even ordered into production by the time the war ended.

Notes

Note: The name of the book appears next to some author references. The reason for this is that two or more of their sources/works are used for this article, and a distinction is required as readers can then trace the citation to the correct source.

2. ^ Homze 1976, p. 123
5. ^ E.R Hooton 2007 Vol.1, p. 31
6. ^ E.R Hooton 2007 Vol.1, p. 34
8. ^ E.R Hooton 2007 Vol.1, p. 34
10. ^ E.R Hooton 2007 Vol.1, p. 34
11. ^ Dressel & Griehl 1994, p. 176
14. ^ E.R Hooton 2007, p. 79 (Luftwaffe at War: Gathering storm
15. ^ Weal 1997, p. 20
16. ^ Weal 1997, p. 22
18. ^ E.R Hooton 2007 Vol. 1, p. 87
20. ^ Taylor & Mayer 1974, p. 45
22. ^ E.R Hooton 2007 Vol.1, p. 91
23. ^ Hooton 2007 Vol. 2 p. 43
24. ^ Hooton, p29
25. ^ Hooton, p30
See also

- German Air Fleets in World War II
- List of aircraft of the WWII Luftwaffe
- Luftwaffe serviceable aircraft strengths (1940-1945)
- Trial of Erhardt Milch
- High Command Trial
- Bomber Command
- Eighth Air Force
- Arthur Harris
- Carl A. Spaatz

External links

- Traditionsgemeinschaft JG 52
- Graf & Grislawski
- Air War over the Eastern Front
- The Pre-Normandy Air Battle
- Losing Air Superiority - A Case Study from World War II
- Lt.Col. Gunzinger Air Power as a Second Front - PDF File
- Forum Discussion on reasons for Luftwaffe Defeat in BoB
- Davis, R. General Spaatz and D-Day
- Andrews, W.F. The Luftwaffe and the Battle for Air Superiority PDF-File
- Hayward, J.S. Stalingrad An Examination of Hitler's Decision to Airlift
- Carter, W. Air Power in the Battle of the Bulge
- iBiblio Hyperwar - The Air War over Europe
- Bomber Command War Diary Online
- USAF Historical Research Agency at Maxwell AFB
- Book Review of American Raiders - discusses some of the Luftwaffe secrets captured at the end of the war.
- German article on Operation Paperclip
- Luft '46
- German wartime newsreel, showing Luftwaffe fighters in dogfights, 1942

Wikipedia - see also, History of the Luftwaffe (1933–1945). Advertising ▼. All translations of History of the Luftwaffe during World War II, sensagent. sensagent's content. English thesaurus is mainly derived from The Integral Dictionary (TID). English Encyclopedia is licensed by Wikipedia (GNU). Copyrights. The wordgames anagrams, crossword, Lettris and Boggle are provided by Memodata. The military history of the United States in World War II covers the war against Germany, Italy, and Japan, starting with the 7 December 1941 attack on Pearl Harbor. During the first two years of World War II, the United States had maintained formal neutrality as made official in the Quarantine Speech delivered by U.S. President Franklin D. Roosevelt in 1937, while supplying Britain, the Soviet Union, and China with war material through the Lend-Lease Act which was signed into law on 11 March 1941, as