

# Polish contribution to World War II

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The European theatre of World War II opened with the German invasion of Poland on Friday September 1, 1939 and the Soviet invasion of Poland on September 17, 1939. The Polish Army was defeated after more than a month of fighting. After Poland had been overrun, a government-in-exile (headquartered in Britain), armed forces, and an intelligence service were established outside of Poland. These organizations contributed to the Allied effort throughout the war. The Polish Army was recreated in the West, as well as in the East (after the German invasion of the Soviet Union).

Poles provided crucial help to the Allies throughout the war, fighting on land, sea and air. Notable was the service of the Polish Air Force, not only in the Allied victory in the Battle of Britain but also the subsequent air war. Polish ground troops were present in the North Africa Campaign (siege of Tobruk); the Italian campaign (including the capture of the monastery hill at the Battle of Monte Cassino); and in battles following the invasion of France (the battle of the Falaise pocket; an airborne brigade parachute drop during Operation Market Garden and one division in the Western Allied invasion of Germany). Polish forces in the east, fighting alongside the Red army and under Soviet command, took part in the Soviet offensives across Belarus and Ukraine into Poland, across the Vistula and towards the Oder and then into Berlin. Some Polish contributions were less visible, and some even overlooked, most notably the prewar and wartime deciphering of German Enigma machine codes by cryptologists Marian Rejewski and his colleagues. The Polish intelligence network also proved to be of much value to the Allied intelligence.

Unlike in France, the Nazis did not set up a collaborationist government. Instead Poland was governed directly by a purely German administration known as the *Generalgouvernement*. This administration was in turn opposed by the Polish Underground State, which not only fielded one of the three

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The personnel of submarine *ORP Sokół* displaying a Jolly Roger marking, among others, the number of sunk or damaged ships



PZL.37 Łoś a Polish twin-engine medium bomber built at the PZL factory in Warsaw



*ORP Dragon*, in the Polish Navy since January 1943

largest partisan forces in existence,<sup>[b]</sup> but was a rare example of an underground government, a phenomenon not witnessed in many other occupied countries.

The Polish forces as a whole are considered to have been the 4th largest Allied army in Europe, after the Soviet Union, United States and Britain.<sup>[a]</sup>

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Crusader tank of Polish 1st Armoured Division near Haddington 1943



Anti-aircraft mounting, featuring three Polish Polsten cannons

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## Invasion of Poland

The invasion of Poland by the military forces of Nazi Germany, the Soviet Union and a small German-allied Slovak contingent marked the beginning of World War II in Europe.



British propaganda poster designed by Marek Żuławski, London 1939

In keeping with the terms of the Secret Additional Protocol of the Molotov-Ribbentrop Pact Germany informed the Soviet Union that its forces were nearing the Soviet interest zone in Poland and so urged the Soviet Union to move into its zone. The Soviets had been taken by surprise by the speed of the German advance as they had expected to have several weeks to prepare for an invasion rather than merely a few days. They did promise to move as quickly as possible.<sup>[1]</sup> On September 17 the Soviets invaded eastern Poland, forcing the Polish government and military to abandon their plans for a long-term defense in the Romanian bridgehead area. The last remaining Polish Army units capitulated in early October.

In accordance with their treaty obligations, the United Kingdom and France declared war on Germany on September 3. Hitler had gambled, incorrectly, that France and Britain would allow him to annex parts of Poland without military reaction. The campaign began on September 1, 1939, one week after the signing of the Molotov-Ribbentrop Pact containing a secret protocol for the division of Northern and Central Europe into German and Soviet spheres of influence. It ended on October 6, 1939, with Germany and the Soviet Union occupying the entirety of Poland.

German and Soviet units went on a military parade in Brest-Litovsk followed by the joint victory parade in the streets of Lwow. Further cooperation between German and Soviets took the form of an exchange of Polish prisoners of war. Following order by Lavrentiy Beria given to the NKVD on

October 3, 1939, 46,000 Polish prisoners detained in Soviet camps were traded against 44,000 POWs released by the Germans.<sup>[2]</sup>

German losses included approximately 16,000 killed in action, 28,000 wounded, 3,500 missing, over 200 aircraft, and 30% of their armored vehicles. The Polish casualties were around 66,000 dead and 694,000 captured. Though the German attack was successful, losses were greater than expected. It has been estimated that, during the September campaign in Poland, the Wehrmacht needed to use more than twice the ammunition they used in France the following spring.

## Aid to the Jews

There was a substantial group of Poles who risked their lives during the German occupation to save Jews. Nazi-occupied Poland was the only territory where the Germans decreed that any kind of help for Jews was punishable by death for the helper and his entire family. Even though, Poland was unique among the German-occupied countries to establish the only organization in Nazi-occupied Europe, which specifically aided the Jewish people.

Known as the Żegota (Polish: "Council for Aid to Jews") the organization provided shelter, food, medicine, money and false documents for Jews across the country who could pass as ethnic Poles and Catholics. Most of Żegota's funds came directly from the Polish government, then in exile. Individual Poles, both

clerical<sup>[3]</sup> and secular, also offered various forms of aid to the Jewish people. For example, the children's section of Żegota led by Irena Sendler saved 2,500 Jewish children with cooperation of Polish families and the Warsaw orphanage of the Sisters of the Family of Mary, Roman Catholic convents such as the Little Sister Servants of the Blessed Virgin Mary Conceived Immaculate.<sup>[4]</sup>

Most Jews who survived the German occupation of Poland were saved by Poles unconnected with Żegota. Estimates of Jewish survivors in Poland range from 40,000-50,000 to 100,000-120,000.

Scholars estimate that it took the work of ten Poles to save the life of one Jew.<sup>[5]</sup> Of the individuals awarded medals of *Righteous among the Nations* (given by the State of Israel to non-Jews who saved Jews from extermination during the Holocaust) those who were Polish citizens number the greatest.<sup>[6]</sup> There are 6,339<sup>[7]</sup> Polish men and women recognized as "Righteous" to this day, amounting to over 25 per cent of the total number of 22,765 honorary titles awarded already.<sup>[8]</sup>



Jewish prisoners of German camp "Gęsiówka" liberated by Home Army during Warsaw Uprising 1944



## Polish resistance



Polish forest partisan  
Zdzisław de Ville  
"Zdzich", member of AK  
"Jędrusie" with Browning  
wz.1928

The main resistance force in German-occupied Poland was the Armia Krajowa ("Home Army"; abbreviated "AK"), which numbered some 400,000 fighters at its peak as well as many more sympathizers.<sup>[9]</sup> Throughout most of the war, AK was one of the three largest resistance movements in the war.<sup>[b]</sup> The AK coordinated its operations with the exiled Polish Government in London and its activity concentrated on sabotage, diversion and intelligence gathering.<sup>[10]</sup> Its combat activity was low until 1943<sup>[9][11]</sup> as the army was avoiding suicidal warfare and preserved its very limited resources for later conflicts that sharply increased

when the Nazi war machine started to crumble in the wake of the successes of the Red Army in the Eastern Front. Then the AK started a nationwide uprising (Operation Tempest) against Nazi forces.<sup>[10]</sup> Before that, AK units carried out thousands of raids, intelligence operations, bombed hundreds of railway shipments, participated in many clashes and battles with the German police and Wehrmacht units and conducted tens of thousands of acts of sabotage against German industry<sup>[12]</sup> The AK also conducted "punitive" operations to assassinate Gestapo officials responsible for Nazi terror. Following the 1941 German attack on the USSR, the AK assisted the Soviet Union's war effort by sabotaging the German advance into Soviet territory and provided intelligence on the deployment and movement of German forces<sup>[10]</sup> After 1943, its direct combat activity increased sharply. German losses to the Polish partisans averaged 850–1,700 per month in early 1944 compared to about 250–320 per month in 1942.

In addition to the Home Army, there was an underground ultra-nationalist<sup>[9]</sup> resistance force called *Narodowe Siły Zbrojne* (NSZ or "National Armed Forces"), with a fiercely anti-communist stance. It participated in fighting German units, winning many skirmishes. From 1943 onwards, some units



Henryk Dobrzański "Hubal" -  
first partisan of World War II and  
his partisan unit - winter 1940



1944 Warsaw Uprising -  
Patrol of Lieut. Stanisław  
Jankowski ("Agaton")  
from *Batalion Pięść*, 1  
August 1944: "W-hour"  
(17:00)

took part in battling the *Gwardia Ludowa*, a communist resistance movement. From 1944, the advancing Red Army was also seen as a foreign occupation force, prompting skirmishes with the Soviets as well as Soviet-backed partisans. In the later part of the war, when Soviet partisans started attacking Polish partisans, sympathizers and civilians, all non-communist Polish formations were (to an increasing extent) becoming involved in actions against the Soviets.<sup>[13]</sup>

The *Armia Ludowa*, a Soviet proxy fighting force<sup>[14]</sup> was another resistance group that was unrelated to the Polish Government in Exile, allied instead to the Soviet Union. As of July, 1944 it incorporated a similar organization, the *Gwardia Ludowa*, and numbered about 6,000 soldiers (although estimates vary).<sup>[14]</sup>

There were separate resistance groups organized by Polish Jews:<sup>[9]</sup> the right-wing *Żydowski Związek Walki* ("Jewish Fighting Union") (ŻZW) and the more Soviet-leaning *Żydowska Organizacja Bojowa* ("Jewish Combat Organization") (ŻOB). These organisations cooperated little with each other and their relationship with the Polish resistance varied between occasional cooperation (mainly between ŻZW and AK) to armed confrontations (mostly between ŻOB and NZS).

Other notable Polish resistance organizations included the *Bataliony Chłopskie* (BCh), a mostly peasant-based organization allied to the AK. At its height the BCh included 115,543 members (1944; with additional LSB and PKB-AK Guard, for the estimated total of 150,250 men, not confirmed).<sup>[15]</sup>

On the other hand, the role of the Polish Police force ('Granatowa Policja') in the General Government (*Generalna Gubernia*), a semi-state under the full control of Germany remains a debatable issue. There was some co-operation between the Polish Police and the Nazis in persecuting the Jewish community while at the same time some officers secretly supported the underground resistance movement.

Throughout the war the German state was forced to divert a substantial part of its military forces to keep control over Poland:



Captured German Panther tank - armored platoon of *batalion Zośka* under command of Waław Micuta



Members of AK "Wiklina" entering Zamość 1944

**Number of Wehrmacht and police formations stationed in  
General Gouvernment  
(does not include annexed territories of Poland and parts  
of Kresy<sup>[16]</sup>)**

<b>Period</b>	<b>Wehrmacht</b>	<b>Police and SS (German forces only)</b>	<b>Total</b>
October 1939	550,000	80,000	630,000
April 1940	400,000	70,000	470,000
June 1941	2,000,000 (due to invasion of Soviet Union)	50,000	2,050,000
February 1942	300,000	50,000	350,000
April 1943	450,000	60,000	510,000
November 1943	550,000	70,000	620,000
April 1944	500,000	70,000	570,000
September 1944	1,000,000	80,000	1,080,000



Cyprian Odorkiewicz  
commander of "Krybar"  
Regiment (second from left)  
inspects ammunition for PIAT  
anti-tank weapon belonging to  
"Rafałki" unit during Warsaw  
Uprising 1944

**Sabotage and diversionary actions of the Union of Armed Combat (ZWZ) and Home Army (AK) from 1 January 1941 to 30 June 1944<sup>[17]</sup>**

Action type	◆ Totals ◆
Damaged locomotives	6,930
Delayed repairs to locomotives	803
Derailed transports	732
Transports set on fire	443
Damage to railway wagons	19,058
Blown up railway bridges	38
Disruptions to electricity supplies in the Warsaw grid	638
Army vehicles damaged or destroyed	4,326
Damaged aeroplanes	28
Fuel tanks destroyed	1,167
Fuel destroyed (in tonnes)	4,674
Blocked oil wells	5
Wagons of wood wool destroyed	150
Military stores burned down	130
Disruptions of production in factories	7
Built-in faults in parts for aircraft engines	4,710
Built-in faults into cannon muzzles	203
Built-in faults into artillery projectiles	92,000
Built-in faults into air traffic radio stations	107
Built-in faults into condensers	70,000
Built-in faults into (electro-industrial) lathes	1,700
Damage to important factory machinery	2,872
Various acts of sabotage performed	25,145
Planned assassinations of Germans	5,733

## Intelligence





General Jacob Devers with Major Mieczysław Słowikowski, on awarding him the Legion of Merit for his invaluable contributions to the Allied North African campaign.

During a period of over six and a half years, from late December 1932 to the outbreak of World War II, three mathematician-cryptologists (Marian Rejewski, Henryk Zygalski and Jerzy Różycki) at the Polish General Staff's Cipher Bureau in Warsaw had developed a number of techniques and devices— including the "grill" method, Różycki's "clock", Rejewski's "cyclometer" and "card catalog", Zygalski's "perforated sheets", and Rejewski's "cryptologic bomb" (in Polish, "*bomba*", precursor to the later British "Bombe", named after its Polish predecessor)— to facilitate decryption of messages produced on the German "Enigma" cipher machine. Just five weeks before the outbreak of World War II, on July 25, 1939, near Pyry in the Kabaty Woods south of Warsaw, Poland disclosed her achievements to France and the United Kingdom, which had, up to that time, failed in all their own efforts to crack the German military Enigma cipher.<sup>[18]</sup>

Had Poland not shared her Enigma-decryption results at Pyry, the United Kingdom would have been unable to read Enigma ciphers.<sup>[19]</sup> In the event, intelligence gained from this source, codenamed Ultra, was extremely valuable to the Allied prosecution of the war. While ULTRA's precise influence on its course remains a subject of debate,

ULTRA undoubtedly altered the course of the war.<sup>[20]</sup>

Polish Home Army (*Armia Krajowa*, *AK*) intelligence was vital to locating and destroying (18 August 1943) the German rocket facility at Peenemünde and to gathering information about Germany's V-1 flying bomb and V-2 rocket. The Home Army delivered to the United Kingdom key V-2 parts after a rocket, fired on 30 May 1944, crashed near a German test facility at Sarnaki on the Bug River and was recovered by the Home Army. On the night of 25–26 July 1944 the crucial parts were flown from occupied Poland to the United Kingdom in an RAF plane, along with detailed drawings of parts too large to fit in the plane (see *Home Army and V1 and V2*). Analysis of the German rocket became vital to improving Allied anti-V-2 defenses (see Operation Most III).<sup>[21]</sup>



Home Army intelligence report with V1 and V2 schematic drawings.

In July 1941 Mieczysław Słowikowski (using the codename "*Rygor*" — Polish for "Rigor") set up "Agency Africa", one of World War II's most successful intelligence organizations.<sup>[22]</sup> His Polish allies in these endeavors included Lt. Col. Gwido Langer and Major Maksymilian Ciężki. The

information gathered by the Agency was used by the Americans and British in planning the amphibious November 1942 Operation Torch<sup>[23]</sup> landings in North Africa. These were the first large-scale Allied landings of the war, and their success in turn paved the way for the Allies' Italian campaign.

Polish intelligence operated in every European country and ran one of the largest intelligence networks in Nazi Germany. Many Poles also served in other Allied intelligence services, including the celebrated Krystyna Skarbek ("Christine Granville") in the United Kingdom's Special Operations Executive. Of all reports received by the British secret services from continental Europe in 1939–45, 43 percent came from Polish sources.<sup>[24]</sup> Until 1942 most of Britain's intelligence from Germany came from Polish Home Army reports; until war's end, the AK would remain Britain's main source of intelligence from Central and Eastern Europe. Polish Home Army intelligence provided the Allies information not only on the V-1 flying bomb and the V-2 rocket but also on German concentration camps. As early as 1940, Polish agents (including Witold Pilecki) penetrated German concentration camps, including Auschwitz, and informed the world about Nazi atrocities.



Polish Home Army recovers a V-2 from the Bug River.

## Polish Forces (West)

### Army

After the country's defeat in the 1939 campaign, the Polish government in exile quickly organized in France a new army of about 75,000 men.<sup>[26]</sup> In 1940 a Polish Highland Brigade took part in the Battle of Narvik (Norway), and two Polish divisions (First Grenadier Division, and Second Infantry Fusiliers Division) took part in the defense of France, while a Polish motorized brigade and two infantry divisions were in process of forming.<sup>[27]</sup> A Polish Independent Carpathian Brigade was formed in French Mandate Syria, to which many Polish troops had escaped from Romania.<sup>[28]</sup> The Polish Air Force in France had 86 aircraft with one and a half of the squadrons fully operational, and the remaining two and a half in various stages of training.<sup>[28]</sup>



Winston Churchill reviewing Polish troops in England 1943.

By the fall of France, numerous Polish personnel had died in the fighting (some 6,000) or had been interned in Switzerland (some 13,000). Nevertheless, about 19,000 Polish - about 25% of which were aircrew - were evacuated from France, most alongside other troops transported from western France to the United

Kingdom.<sup>[26]</sup> In 1941, following an agreement between the Polish government in exile and Joseph Stalin, the Soviets released Polish citizens, from whom a 75,000-strong army was formed in the USSR under General Władysław Anders.

Without any support from the Soviets to train, equip and maintain this army, the Polish government in exile followed Anders' advice for a transfer of some 80,000 (and around 20,000 civilians), in March and August 1942, across the Caspian Sea to Iran permitting Soviet divisions in occupation there to be released for action.<sup>[29]</sup> In the Middle East, this

"Anders' Army" joined the British Eighth Army, where it formed the Polish II Corps.<sup>[30]</sup>

The Polish armed forces in the west fought under British command and numbered 195,000 in March 1944 and 165,000 at the end of that year, including about 20,000 personnel in the Polish Air Force and 3,000 in the Polish Navy. At the end of World War II, the Polish Armed Forces in the west numbered 195,000 and by July 1945 had increased to 228,000, most of the newcomers being released prisoners of war and ex-labor camp inmates.

## Air force

### Polish Armed Forces in the West at the height of their power<sup>[25]</sup>

Deserters from the German Wehrmacht	89,300
Evacuees from the USSR	83,000
Evacuees from France in 1940	35,000
Liberated POWs	21,750
Escapees from occupied Europe	14,210
Recruits in liberated France	7,000
Polonia from Argentina, Brazil and Canada	2,290
Polonia from the United Kingdom	1,780
<b>Total</b>	<b>254,830</b>

By July 1945, when recruitment was halted, some 26,830 Polish soldiers were declared KIA or MIA or had died of wounds. After that date, an additional 21,000 former Polish POWs were recruited.



The 1st Polish Armoured Division in the Normandy Campaign 1944.

The Polish Air Force first fought in the 1939 Invasion of Poland. Significantly outnumbered and with its fighters outmatched by more advanced German fighters, remained active up to the second week of the campaign, inflicting significant damage on the *Luftwaffe*.<sup>[31]</sup> The *Luftwaffe* lost, to all operational causes, 285 aircraft, with 279 more damaged, while the Poles lost 333 aircraft.<sup>[32]</sup>

After the fall of Poland many Polish pilots escaped via Hungary to France. The Polish Air Force fought in the Battle of France as one fighter squadron GC 1/145, several small units detached to French squadrons, and numerous flights of industry defence (in total, 133 pilots, who achieved 53-57 victories for a loss of 8 men in combat, what was 7.93% of allied victories).<sup>[33]</sup>

Later, Polish pilots fought in the Battle of Britain, where the Polish 303 Fighter Squadron claimed the highest number of kills of any Allied squadron. From the very beginning of the war, the Royal Air Force (RAF) had welcomed foreign pilots to supplement the dwindling pool of British pilots. On 11 June 1940, the Polish Government in Exile signed an agreement with the British Government to form a Polish Army and Polish Air Force in the United Kingdom. The first two (of an eventual ten) Polish fighter squadrons went into action in August 1940. Four Polish squadrons eventually took part in the Battle of Britain (300 and 301 Bomber Squadrons; 302 and 303 Fighter Squadrons), with 89 Polish pilots. Together with more than 50 Poles fighting in British squadrons, a total of 145 Polish pilots defended British skies. Polish pilots were among the most experienced in the battle, most of them having already fought in the 1939 September Campaign in Poland and the 1940 Battle of France. Additionally, prewar Poland had set a very high standard of pilot training. The 303 Squadron, named after the Polish-American hero, General Tadeusz Kościuszko, claimed the highest number of kills (126) of all fighter squadrons engaged in the Battle of Britain, even though it only joined the combat on August 30, 1940<sup>[34]</sup> These Polish pilots, constituting 5% of the pilots active during the Battle of Britain, were responsible for 12% of total victories in the Battle.

The Polish Air Force also fought in 1943 in Tunisia - the Polish Fighting Team (nicknamed "Skalski's Circus") - and in raids on Germany (1940–45). In the second half of 1941 and early 1942, Polish bomber squadrons formed a sixth of the forces available to RAF Bomber Command but later they suffered heavy losses, with little replenishment possibilities. Polish aircrew losses serving with Bomber Command from 1940 to 1945 were 929 killed. Ultimately eight Polish fighter squadrons were formed within the RAF and had claimed 629 Axis aircraft destroyed by May 1945. By the end of the war, around 19,400 Poles were serving in the RAF.<sup>[35]</sup>



Polish flag flying over the ruins of conquered Monte Cassino monastery

## Polish squadrons in the United Kingdom:

- No. 300 "Masovia" Polish Bomber Squadron (*Ziemi Mazowieckiej*)
- No. 301 "Pomerania" Polish Bomber Squadron (*Ziemi Pomorskiej*)
- No. 302 "City of Poznań" Polish Fighter Squadron (*Poznański*)
- No. 303 "Kościuszko" Polish Fighter Squadron (*Warszawski imienia Tadeusza Kościuszki*)
- No. 304 "Silesia" Polish Bomber Squadron (*Ziemi Śląskiej imienia Księcia Józefa Poniatowskiego*)
- No. 305 "Greater Poland" Polish Bomber Squadron (*Ziemi Wielkopolskiej imienia Marszałka Józefa Piłsudskiego*)
- No. 306 "City of Toruń" Polish Fighter Squadron (*Toruński*)
- No. 307 "City of Lwów" Polish Fighter Squadron (*Lwowskich Puchaczy*)
- No. 308 "City of Kraków" Polish Fighter Squadron (*Krakowski*)
- No. 309 "Czerwien" Polish Fighter-Reconnaissance Squadron (*Ziemi Czerwieńskiej*)
- No. 315 "City of Dęblin" Polish Fighter Squadron (*Dębliński*)
- No. 316 "City of Warsaw" Polish Fighter Squadron (*Warszawski*)
- No. 317 "City of Wilno" Polish Fighter Squadron (*Wileński*)
- No. 318 "City of Gdansk" Polish Fighter-Reconnaissance Squadron (*Gdański*)
- No. 663 Polish Artillery Observation Squadron - flying in support of Polish artillery units
- Polish Fighting Team (*Skalski's Circus*) - attached to No. 145 Squadron RAF
- No. 138 Special Duty Squadron Polish Flight "C"
- No. 1586 Polish Special Duty Flight



126 German aeroplanes shot down by the 303 squadron during the Battle of Britain. Painted on a Hurricane.

## Aircraft shot down by Polish squadrons in the West during World War II <sup>[36][37]</sup>

	1940	1941	1942	1943	1944	1945	total
<b>destroyed</b>	266 1/6	202	90	114¾	103	38½	769 5/12
<b>probable</b>	38	52	36	42	10	2	177
<b>damaged</b>	43⅔ + 3/5	60½	43	66	27	18	252 1/6

## Navy



Just on the eve of war, three destroyers—representing most of the major Polish Navy ships—had been sent for safety to the United Kingdom (Operation Peking). There they fought alongside the Royal Navy. At various stages of the war, the Polish Navy comprised two cruisers and a large number of smaller ships. The Polish navy was given a number of British ships and submarines which would otherwise have been unused due to the lack of trained British crews. The Polish Navy fought with great distinction alongside the other Allied navies in many important and successful operations, including those conducted against the German battleship, *Bismarck*.<sup>[38]</sup> During the war the Polish Navy, which comprised a total of 27 ships (2 cruisers, 9 destroyers, 5 submarines and 11 torpedo boats), sailed a total of 1.2 million nautical miles, escorted 787 convoys, conducted 1,162 patrols and combat operations, sank 12 enemy ships (including 5 submarines) and 41 merchant vessels, damaged 24 more (including 8 submarines) and shot down 20 aircraft. 450 seamen out of the over 4,000 who served with the Navy lost their lives in action.<sup>[39][40]</sup>

- Cruisers:
  - ORP *Dragon*– Dragoon (British *Danae* class)
  - ORP *Conrad* (British *Danae* class)
- Destroyers:
  - ORP *Wicher*– Gale (*Wicher* class) sunk September 1939
  - ORP *Burza*– Storm (*Wicher* class)
  - ORP *Grom*– Thunder (*Grom* class) sunk 1940
  - ORP *Błyskawica*– Lightning (*Grom* class)
  - ORP *Garland* (British G class)
  - ORP *Orkan* (British M-class destroyer *Myrmidion*) sunk 1943
  - ORP *Ouragan*, sometimes called *Huragan*– Hurricane (French *Bourrasque* class)
  - ORP *Piorun*– Thunderbolt (British N class)
- Escort destroyers:
  - ORP *Krakowiak*– Cracovian (British Hunt class) 1941–1946
  - ORP *Kujawiak*– Kujawian (British Hunt class)
  - ORP *Ślązak*– Silesian (British Hunt class)
- Submarines:
  - ORP *Orzeł* – Eagle (*Orzeł* class) lost 1940
  - ORP *Sęp* – Vulture (*Orzeł* class) interned Sweden
  - ORP *Jastrząb* – Hawk (British S class)
  - ORP *Wilk* – Wolf (*Wilk* class) to reserve 1942
  - ORP *Ryś* – Lynx (*Wilk* class) interned Sweden
  - ORP *Żbik* – Wildcat (*Wilk* class) interned Sweden
  - ORP *Dzik* – Boar (British U class) 1942–1946
  - ORP *Sokół* – Falcon (British U class) 1941–1945



*ORP Grom* destroyer in the Polish Navy

- Heavy minelayers:
  - ORP *Gryf*– Griffin sunk 1939
- Light minelayers ("*ptaszki*"– "Birds"):
  - ORP *Jaskółka* – Swallow, sunk 1939
  - ORP *Mewa* – Seagull
  - ORP *Rybitwa* – Tern
  - ORP *Czajka* – Lapwing
  - ORP *Żuraw* – Crane
  - ORP *Czapla* – Heron
- Polish River Fleet

This does not include a number of minor ships, transports, merchant-marine auxiliary vessels, and patrol boats. Polish Merchant Navy contributed about 137,000 BRT to Allied shipping; losing 18 ships (with capacity of 76,000 BRT) and over 200 sailors during the war.<sup>[41]</sup>

## Polish Forces (East)

Broadly speaking, there were two formations among the Polish Armed Forces in the East. First was the Polish government-in-exile-loyal *Anders Army*, created in the second half of 1941 after German invasion of the USSR. In 1943 this formation was transferred to the Western Allies and became known as the Polish II Corps. Additionally, remaining Polish forces in USSR were reorganized into the Soviet-controlled Polish I Corps in the Soviet Union, which in turn was reorganized in 1944 into the Polish First Army (*Berling Army*) and Polish Second Army, both part of Polish People's Army (*Ludowe Wojsko Polskie*, LWP). In 1944, following the takeover of Poland by Soviets from Nazi Germany, the Polish People's Army was reorganized into a Poland-based military formation.

In the aftermath of the Operation Barbarossa, Stalin agreed (Sikorski-Mayski Agreement) to release tens of thousands of Polish prisoners-of-war held in Soviet camps from whom a military force was formed. The Anders Army, as the formation became known, was loyal to the Polish government in exile, and as such its formation was obstructed by the Soviets. Eventually, with about 40 000 combatants and 70 000 civilians, it was transferred to the British command in the Middle East in Egypt, becoming the Polish II Corps and part of the Polish Armed Forces in the West.



The "Piast eagle" (specimen 43) worn by the soldiers of the Polish 1st Tadeusz Kościuszko Infantry Division of the Polish Armed Forces of the East.

To utilize the potential of the remaining Polish soldiers in USSR, without actually allowing them to become independent from Soviet control, a fact which allowed Anders Army to leave USSR, the Soviet Union created a Union of Polish Patriots (ZPP) in 1943 as communist puppet counter-government<sup>[14][42]</sup> to the Polish government in exile. At the same time a parallel army (Polish People's Army or LWP) was created which, by the end of the war, numbered about 200,000 soldiers.<sup>[42]</sup> The Soviet-created guerilla force called Armia Ludowa was integrated with the Polish People's Army at the end of the war. These Soviet controlled units on the Eastern Front included the First, the Second and the Third Polish Armies (the latter was later merged with the second), and Air Force of the Polish Army with 10 infantry divisions, 5 armored brigades and 4 divisions of air force.

The Polish First Army was integrated in the 1st Belorussian Front with which it entered Poland from Soviet territory in 1944. Ordered to hold its position by the Soviet leadership, it did not advance towards Warsaw as Germans suppressed the Warsaw Uprising. It took part in battles for Bydgoszcz, Kolobrzeg (Kolberg), Gdańsk (Danzig) and Gdynia losing 20,000 fighters in the winter of 1944–45, in the process, liberating Polish lands alongside the Soviets.<sup>[42]</sup> In April–May 1945 the 1st Army fought in the final capture of Berlin. The Polish Second Army fought as part of the Soviet 1st Ukrainian Front and took part in the Prague Offensive. In the final operations of the war the losses of the two armies of the LWP amounted to 32,000.

## Poles in German forces

Before the outbreak of the war, Poland was a multi-nation state with ethnic Poles comprising about 68% of the population. Around 500,000 people who were citizens of Poland before 1939 were drafted into the German armed forces during the war.<sup>[43]</sup> These were mostly members of the German minority in Poland who were considered by the Nazi authorities to be ethnically German (Volksdeutsche). In 1939 during the Invasion of Poland they created the paramilitary organisation Volksdeutscher Selbstschutz, and actively supported German forces in occupied Poland.<sup>[44]</sup>

The German armed forces also included ethnic Poles (assimilated to various degree into German society) who were citizens of the Third Reich before the outbreak of war in September 1939 as part of the Polish minority in Germany, mostly concentrated in Silesia, Pomerania and East Prussia. These people were subject to conscription like other German citizens at the time. The degree of loyalty of these soldiers to the Nazi cause varied; tens of thousands of them volunteered to join Polish formations after being taken prisoner by the Allies (15,000 joined in 1944 alone during fighting in Western Europe).<sup>[43]</sup>

## Battles

## Major battles and campaigns in which Polish regular forces took part:

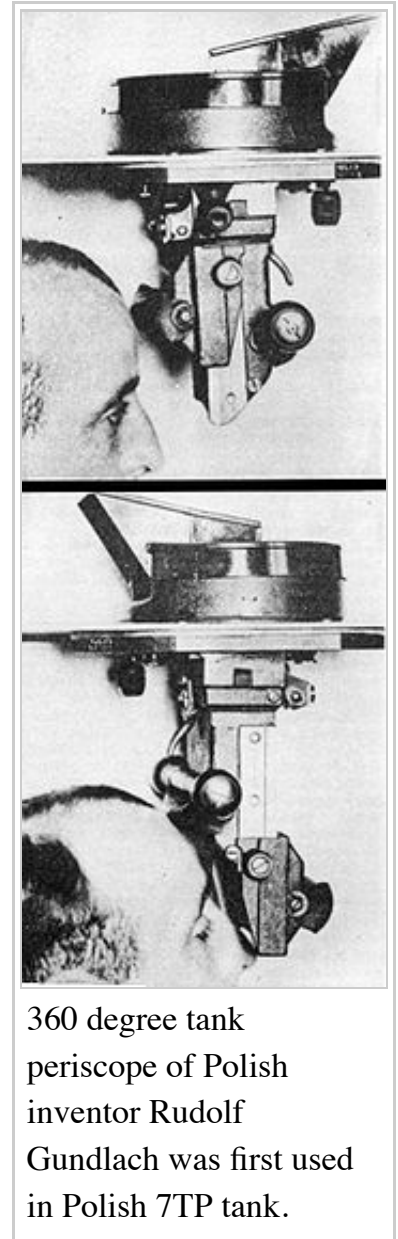
- Invasion of Poland (1939)
  - Battle of Kock (1939)
  - Battle of Mokra
  - Battle of the Bzura River
  - Battle of Tomaszów Lubelski
  - Battle of Warsaw (1939)
  - Battle of Wizna
- West forces 1940-1945
  - British campaign in Norway (Battle of Narvik)
  - French Campaign
  - Battle of Britain
  - Battle of the Atlantic
  - Battle of Tobruk
  - Operation Jubilee (Battle of Dieppe)
  - Battle of Normandy (D-Day)
  - Battle of Monte Cassino
  - Battle of Falaise
  - Battle of Arnhem (part of Operation Market Garden)
  - Battle of Ancona
  - Battle of Bologna
- East forces 1943-1945
  - Battle of Lenino
  - Battle of Bydgoszcz
  - Battle of Kolobrzeg,
  - Battle of Gdańsk (Danzig)
  - Battle of Gdynia
  - Battle of Berlin
  - Prague Offensive
- Polish underground actions:
  - Zamość Uprising 1942-1944
  - Operacja Główni 1943-1944
  - Operation Tempest (*Burza*) 1944
    - Operation Ostra Brama
    - Lwów Uprising
    - Warsaw Uprising



Polish infantry, 1939

# Technology

- Józef Kosacki invented the Polish mine detector, which would be used by the Allies throughout the war.
- The Vickers Tank Periscope MK.IV was invented by engineer Rudolf Gundlach and patented in 1936 as the *Gundlach Peryskop obrotowy*.<sup>[45]</sup> Initially it was mounted in Polish tanks such as the 7TP and TKS. Subsequently the design patent was bought by the British and used in most tanks of World War II, including the Soviet *T-34*, the British Crusader, Churchill, Valentine and Cromwell tanks, and the American M4 Sherman. The main advantage of the periscope was that the tank commander no longer had to turn his head in order to look backwards. The design was also later used extensively by the Germans.
- *pistolet wz. 35 Vis*, often simply called the "Radom" in English sources, is a 9 mm caliber, single-action, semi-automatic pistol. It was adopted in 1935 as the standard handgun of the Polish Army. The design was appropriated by the Germans and from 1939 to 1945, 312,000–380,000 VIS pistols were produced and used by the German paratroopers and police as the 9 mm *Pistole 35(p)*.
- PZL.37 Łoś was a Polish twin-engine medium bomber designed in the mid-1930s at the PZL factory in Warsaw by Jerzy Dąbrowski, and used operationally in the Invasion of Poland in 1939. Thanks to the laminar-flow wing it was one of the most modern bombers in the world before World War II.
- *Świątecki bomb slip*, a bomb-release system was invented by Władysław Świątecki in 1925 and patented in the 1926 in Poland and abroad.<sup>[46][47]</sup> Some components was used in the pre-war Polish PZL.37 Łoś (*Elk*) bomber. In 1940 Świątecki's invention was taken over by the British, who used it in the Avro Lancaster bomber. In 1943, an updated version was created by Jerzy Rudlicki for the American B-17 Flying Fortress.<sup>[48]</sup>
- *Wz. 35 anti-tank rifle*, 7.92 mm anti-tank rifle developed in secret and used by the Polish Army during the Invasion of Poland invented by Józef Maroszek. The rifle was development of the Mauser rifle with its own special 7.92 mm cartridge with a muzzle velocity of over 1,000 meters per second. With a range of 300 metres it was very effective against all German tanks of the period (the Panzer I, II and III, as well as the Czech-made LT-35 and LT-38) at 100 meters.



360 degree tank periscope of Polish inventor Rudolf Gundlach was first used in Polish 7TP tank.



- In World War II, there was an important need to take bearings on the high frequency radio transmissions used by the German Kriegsmarine. The engineering of such high frequency direction finding systems for operation on ships presented severe technical problems, mainly due to the effects of the superstructure on the wavefront of arriving radio signals. However, solutions to these problems were proposed by the Polish engineer Waclaw Struszynski, who also led the team which developed the first practical system at the Admiralty Signal Establishment, England. These systems were installed on convoy escort ships, and were very effective against the U-boats in the Battle of the Atlantic.<sup>[49]</sup> The father of Waclaw Struszyński was Professor Marcei Struszyński, a member of the Polish resistance, who analysed the fuel used in the V2 rocket, the formula being subsequently sent to England.
- A rubber windshield wiper was invented by the Polish pianist Józef Hofmann.
- Henryk Magnuski, a Polish engineer working for Motorola, co-designed the SCR-300 radio in 1940. It was the first small radio receiver/transmitter to have manually set frequencies. It was used extensively by the American Army and was nicknamed the *walkie-talkie*.



Polish mine detector of Józef Kosacki being used close to a Universal Carrier that has been destroyed by a mine, Tilly-sur-Seulles, France (June 1944)

## Weapons

Polish engineers who escaped German occupied Poland contributed to weapon developments during the war. A Polish/Czech/British team brought the 20 mm Polsten to fruition as a simpler and cheaper to produce but as effective derivative of the 20 mm Oerlikon gun.

The Polish Home Army was probably the only World War II resistance movement to manufacture large quantities of weaponry and munitions. In addition to production of pre-war designs they developed and produced during the war the Błyskawica submachine gun, Bechowiec, KIS and Polski Sten machine pistols as well as the filipinka and sidolówka hand grenades. During the Warsaw Uprising Polish engineers built several armoured cars, such as the Kubaś, which also took part in the fighting. The KIS was designed and made in the Jan Piwnik's "Ponury" ("Grim") guerrilla unit that was operating in Holy Cross Mountains region. It was probably the only kind of modern firearm that could be manufactured in the forest without the need for sophisticated tools and factory equipment during the Second World War.

## See also

- History of Poland (1939–1945)
- List of Polish armies in World War II
- List of Polish divisions in World War II
- Polish resistance movement in World War II
- Western betrayal

## Notes

**a** ^ Numerous sources state that Polish Army was the fourth biggest Allied fighting contingent. Steven J. Zaloga wrote that "by the war's end the Polish Army was the fourth largest contingent of the Allied coalition after the armed forces of the Soviet Union, the United States and Great Britain."<sup>[50]</sup> Jerzy Jan Lerski writes "All in all, the Polish units, although divided and controlled by different political orientation, constituted the fourth largest Allied force, after the American, British and Soviet Armies."<sup>[51]</sup> M. K. Dziewanowski has noted that "if Polish forces fighting in the east and west were added to the resistance fighters, Poland had the fourth largest Allied army in the war (after the USSR, the U.S. and Britain)".<sup>[52]</sup>

The claim of the fourth biggest Allied force needs to be taken in perspective. When the war begun in September 1939, the Polish Army was the second largest ally army (and the fourth largest in Europe), after the French, German and Soviet, but before the British.<sup>[53][54]</sup> Before the battle of France, the Polish Army in France numbered about 75,000 men.<sup>[26]</sup>

After the fall of France in June 1940, the Free French had only a 3,000 strong contingent in Britain, growing to 7,000 by the end of the year,<sup>[55][56]</sup> Poland evacuated around 19,000<sup>[26]</sup> to 35,000.<sup>[25]</sup> By the end of 1940, Polish I Corps numbered about 14,000;<sup>[57]</sup> Polish forces in the Middle East, about 3,000;<sup>[58]</sup> this does not count the Polish air crews (numbering at least 4,000) and the Polish Navy personnel.<sup>[26]</sup> After the fall of France, the French forces lagged behind the Polish in numbers. It was only after D-Day and the liberation of the French mainland that French forces swelled to 550,000, outnumbering the Polish Army in the West, but not the combined West, East and partisan forces.<sup>[59]</sup> Until 1944, Polish forces also outnumbered the French. In 1942, the French resistance numbered about 10,000,<sup>[55]</sup> (the size of Polish resistance is discussed in note b below) and in 1943, the Free French numbered about 70,000.<sup>[56]</sup> With the entrance of Soviet Union into the war in June 1941, Poland returned to being the third biggest Ally again, and with the entry of United States in December '41, the fourth. However, the Japanese involvement also marked the connection of the European and African theaters to Second Sino-Japanese War, and estimates cited above ignore China, whose armies totaled about two million by the end of the war.<sup>[60]</sup> Thus for about a year,

Poland could be seen as the second biggest ally, after Britain. It was then superseded by China, the Soviet Union and the United States. Counting China, from the end of 1941, Poland was the 5th biggest ally. Near the end of the war, Polish contribution, in terms of numbers was matched or surpassed by that of France.

Total size of Polish armies in the West and in the East has been estimated at 700,000 strong (approximately half a million in the West<sup>[52]</sup> and 200,000 in the East<sup>[42]</sup>).<sup>[61]</sup> Polish resistance numbered over 400,000.<sup>[9]</sup> Therefore, with enrollment in the armies growing as the war progressed and numbers of resistance falling after Operation Tempest, the size of Polish armed contribution can be estimated, at its peak, as one million strong.

**b** ^ Sources vary with regards to what was the largest resistance movement during World War II. As the war progressed, some resistance movements grew larger - and others diminished. Polish territories were mostly freed from Nazi German control in the years 1944-1945, eliminating the need for their respective (anti-Nazi) partisan forces in Poland (although the cursed soldiers continued to fight against the Soviets). Several sources note that Polish Armia Krajowa was the largest resistance movement in Nazi-occupied Europe. For example, Norman Davies wrote "Armia Krajowa (Home Army), the AK, which could fairly claim to be the largest of European resistance";<sup>[62]</sup> Gregor Dallas wrote "Home Army (Armia Krajowa or AK) in late 1943 numbered around 400000, making it the largest resistance organization in Europe";<sup>[63]</sup> Mark Wyman wrote "Armia Krajowa was considered the largest underground resistance unit in wartime Europe".<sup>[64]</sup> Certainly, Polish resistance was the largest resistance until the German invasion of Yugoslavia and the invasion of the Soviet Union in 1941. After that point, the numbers of Soviet partisans and Yugoslav partisans grew rapidly. The number of Soviet partisans quickly caught up and were very similar to that of the Polish resistance.<sup>[65][66]</sup> The number of Tito's Yugoslav partisans were roughly similar to those of the Polish and Soviet partisans in the first years of the war (1941–1942), but grew rapidly in the latter years, outnumbering the Polish and Soviet partisans by 2:1 or more (estimates give Yugoslavian forces about 800,000 in 1945, to Polish and Soviet forces of 400,000 in 1944).<sup>[66][67]</sup>

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- The Poles on the Fronts of WW2 (<http://www.poland.gov.pl/ww2/>)
- Gilbert J. Mros: This V-E Day say 'dziekuje' to the Poles (<http://www.plav.org/veday.htm>)
- Listen to Lynn Olsen & Stanley Cloud, authors of "A Question of Honor", speak about the "Kościuszko" Squadron and Polish contribution to World War II here. (<http://www.engagingtheword.net/lynnolsenstanleycloud.m3u>)
- World War 2 in Poland - the September Campaign and Poles on the fronts of WW2 (<http://www.sww.w.szu.pl>)
- Polish contribution to World War II (Polish Underground State) Movie (<https://www.youtube.com/watch?v=Pre0NPW42tw>) on YouTube
- Polish contribution to World War II (Regular Forces) Movie (<https://www.youtube.com/watch?v=hNJc--dK-IE>) on YouTube
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- Personnel of the Polish Air Force in Great Britain 1940-1947 (<http://listakrzystka.pl>)

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