

= Gareloi Volcano =

The Gareloi Volcano is a stratovolcano in the Aleutian Islands of Alaska , United States , about 1 @, @ 259 miles (2 @, @ 026 km) from Anchorage . Gareloi is located on Gareloi Island , and comprises most of its land mass . The island also has two small glaciers which protrude to the northwest and southeast .

The volcano is 6 miles (10 km) by 5 miles (8 km) at its base , possessing two summits . The southern crater is far greater in size , 984 feet (300 m) wide with fumaroles , which can be attributed to edifice failure in the southern wall , while Gareloi 's northern crater is enclosed .

= = Discovery and accessibility = =

Vitus Bering had been a prominent sailor in Russia . After successful expeditions in 1725 , 1728 , and 1730 , Bering was sent to explore what is now the Bering Sea area of the Pacific in 1740 . He soon settled on Kamchatka , where he started a settlement and built two additional vessels , dubbed St. Peter and St. Paul . In 1741 Bering and his company started towards North America , but were stalled by a storm and in being delayed were forced to take land . During the storm they could not make out the Alaskan coast . The storm proved too powerful so the ships turned around , along the way charting several of the Aleutians , including Gareloi . Since then , it has been barely studied , resulting in a fragmentary knowledge of its eruptions and possibly even unrecorded episodes .

Gareloi Island is uninhabited and is part of the Alaska Maritime National Wildlife Refuge managed by the U.S. Fish and Wildlife Service .

= = Geography and geology = =

Gareloi is the northernmost volcano of the Delarof Group , a subgroup of the Aleutian Islands . It is composed of two craters , the older of which is covered by lava flows running to the northwest and southern coasts . The northern crater is small , with a feature suggesting dome collapse in its northwest flank . The southern flank , higher up and considerably larger , contains fumarolic activity . A fissure created by Gareloi 's 1929 eruption runs along the southern summit of the volcano . Steep sea cliffs on the southwest side of the island cut into the older caldera . Three masses offshore of the island were produced by debris flows from the volcano .

Gareloi is of lava flows and pyroclastic origin . Two main episodes contributed to its creation . Lava deposits on the mountain vary from 3 feet (1 m) to 20 feet (6 m) in thickness . Some of them extend from external vents on the volcano , suggesting that activity during the Pleistocene took place .

There are two large lava valleys on the island 's southwest side which are u @-@ shaped . The oldest of these flows are of Pleistocene age composed of basaltic trachyandesite and basaltic andesite , with smaller amounts of plagioclase , clinopyroxene , olivine , and hornblende .

= = = Rock = = =

The rock that makes up Gareloi Island and its volcano is estimated to be of Pleistocene age . Several factors contribute to this inference , mainly the presence of glaciers and edifice failure (landslide) debris . The rock , which comprises dissected lava flows and pyroclastic masses , has been shaped by glacial retreat that began around 10 @, @ 000 years past and fleshed out newly formed rocks . Other landslides have been generated on the north and east flanks of the volcano .

= = = Mapping = = =

The Alaska Volcano Observatory proceeded to map the volcano and its surrounding area in 2003 , in addition to implementing seismic monitors in June .

= = Eruptive history = =

Gareloi has an extensive eruptive history , dating back to at least 1760 . At least 12 eruptions have occurred at the summit , accompanied by lava and pyroclastic flows . Typically they have been characterized by a central vent eruption followed by an explosive eruption , and sometimes a phreatic explosion . All have been of Volcanic Explosivity Index (VEI) of 1 to 3 . Such eruptions have occurred in 1790 , 1791 , 1792 , 1873 , 1922 , April 1929 , 1950 , January 17 , 1952 , August 7 , 1980 , January 15 , 1982 , September 4 , 1987 , and August 17 , 1989 . Uncertain eruptions occurred in 1760 , 1828 , 1927 , and 1996 .

= = = 1929 = = =

In 1929 Gareloi Volcano underwent a major explosive eruption where it generated four lava flows , andesitic tuff , volcanic glass , and scoria of red tone . Thirteen craters , all located in the fissure , contributed to this episode . All are most likely phreatic . During the eruption , pyroclastic flows convened with tephra , as suggested by deposits . Lahar also streamed from the summit .

= = = 1980s ? 1990s = = =

On August 8 , 1980 Gareloi erupted for the first time in records since 1929 , sending ash plumes over 35 @, @ 000 feet (10 @, @ 668 m) into the atmosphere . Precursor earthquakes occurred on August 8 and 9 , both west of the Adak seismic network . A similar episode took place in 1982 when an ash cloud exceeding 23 @, @ 000 feet (7 @, @ 010 m) appeared on satellite images on January 15 . 1987 marked a milestone in Gareloi 's eruptive history , when a flow , likely to be of volcanic origin , was observed by a commercial airplane pilot . The mass extended for 1 @, @ 312 feet (400 m) down the volcano . Steam reportedly emanated from the volcano , but volcanologists were unable to verify an eruption . In 1989 an employee of the US Fish and Wildlife Service spotted another ash plume covering the caldera and climbing 2 @, @ 300 feet (701 m) from the summit on August 17 . A minor eruption occurred on September 27 , 1996 was reported to the National Weather Service Aviation Weather Unit in nearby Anchorage . The plume , consisting of ash and steam , rose 5 @, @ 000 feet (1 @, @ 524 m) from the volcano 's summit .

= = Threat = =

Proximal volcanic hazards pose a significant threat to human life near Gareloi . If Gareloi were to erupt unexpectedly , ash clouds , falling volcanic ash , pyroclastic flows , and debris avalanches (such as lahars) could easily span deadly hazards such as tsunamis . As volcanic ash can induce engine failure , it puts commercial airplanes in particular at high risk . Inhalation of volcanic ash , also known as tephra , creates respiratory complexities and irritation of the eye .

Pyroclastic flows from an eruption would destroy much wildlife about the volcano . Gareloi has historically produced several pyroclastic flows , which can travel extremely fast . Future flows at Gareloi Volcano could travel off the island into the Pacific Ocean and , if large enough , could fall into the ocean and generate tsunamis , though unlikely .