



National Transportation Safety Board Aviation Accident Final Report

Location:	Homer, AK	Accident Number:	ANC16LA034
Date & Time:	06/19/2016, 1525 AKD	Registration:	N104BM
Aircraft:	DE HAVILLAND DHC3	Aircraft Damage:	Substantial
Defining Event:	Birdstrike	Injuries:	2 None
Flight Conducted Under:	Part 91: General Aviation - Instructional		

Analysis

The operator reported that the airplane was flying straight and level at an altitude about 2,500 ft when the flight crew saw what they believed to be a bald eagle immediately before hearing and feeling an impact to the left wing. After the impact, they noted that the leading edge of the wing was damaged and deformed. Although the airplane continued to perform normally, the crew elected to return to their base and land. The first landing attempt was aborted due to an uncontrollable aileron roll to the left when the airspeed dropped below 75 mph. During the subsequent landing, the flight crew maintained the airspeed above 75 mph until just above the landing surface. The landing was accomplished without any further control issues.

Postaccident examination revealed substantial damage to the left wing. Portions of the bird remains were retrieved from inside the left wing and sent to the Smithsonian Institution Feather Identification Laboratory in Washington, D.C. The remains were positively identified as bald eagle (*Haliaeetus leucocephalus*). The damage due to bird's impact with the left wing negatively affected the airplane's aerodynamic performance while operating at a slow airspeed, which necessitated the high speed landing.

The pilot reported there were no preimpact mechanical failures or malfunctions with the airframe or engine that would have precluded normal operation.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be:

An in-flight collision with a bald eagle, which resulted in substantial damage to the left wing.

Findings

Aircraft	Flight surfaces (wing) - Damaged/degraded (Cause) Lateral/bank control - Attain/maintain not possible
Environmental issues	Animal(s)/bird(s) - Effect on equipment (Cause)

Factual Information

On June 19, 2016, about 1525 Alaska daylight time, a single-engine, turbine-powered, float-equipped de Havilland DHC-3T (Otter) airplane, N104BM, struck a Bald Eagle while en route about 2,500 feet and 10 miles northeast of the Homer-Beluga Lake Seaplane Base (5BL), Homer, Alaska. The two airline transport pilots sustained no injuries, and the airplane sustained substantial damage. The airplane was registered to a private individual, and operated by Bald Mountain Air Services, Inc., Homer, as a visual flight rules (VFR) flight under the provisions of 14 Code of Federal Regulations Part 91 as a training flight. Visual meteorological conditions prevailed at the time of the accident, and company flight following procedures were in effect. The flight originated from 5BL, about 1520.

The operator reported in a written statement submitted to the National Transportation Safety Board investigator-in-charge on June 20, that while on a company training flight, the flight crew observed what they believed to be a Bald Eagle immediately before hearing and feeling an impact to the left wing, and noted that the leading edge was damaged and deformed. The operator reported that the airplane was flying straight and level on a northeasterly heading, about 120 miles per hour (mph), and at an altitude of about 2,500 feet at the time of the impact. The flight crew notified the Homer Flight Service Station of the Bald Eagle strike and their intentions to return to 5BL. The operator reported that at this time, the airplane was flying normal with no control issues. However, the first attempt at landing was aborted due to an uncontrollable aileron roll to the left when the airspeed decayed below 75 mph. The flight crew declared an emergency and requested emergency services at 5BL. During the subsequent landing, the flight crew maintained the airspeed above 75 mph until an altitude that was just above the surface of the water. The landing was accomplished without any further control issues.

The airplane sustained substantial damage to the left wing. Portions of the Bald Eagle remains were retrieved from inside the left wing and sent to the Smithsonian Institution Feather Identification Laboratory in Washington, D.C.

The pilot reported there were no preimpact mechanical failures or malfunctions with the airframe or engine that would have precluded normal operation.

METEOROLOGICAL INFORMATION

The closest official weather observation station is located at the Homer Airport (HOM), Homer, about 10 miles southwest of the accident site. At 1453, an Aviation Routine Weather Report (METAR) was reporting, and stated in part: wind 6 knots at 220 degrees; visibility 10 statute miles; clouds and sky condition, scattered clouds at 4,500 feet, overcast clouds at 6,000 feet; temperature 57 degrees F; dew point 48 degrees F; altimeter 29.92 inHg.

WRECKAGE AND IMPACT INFORMATION

The left wing sustained substantial damage to the leading edge, outboard of the landing light. The leading edge was damaged and deformed over a spanwise length of about 3 feet. The

leading edge, upper wing skin, and lower wing skin were also fractured at the impact point. The fracture in the upper wing skin extended aft about 2 to 3 feet. The resulting hole in the wing appeared to be about 1 foot square. The airplane sustained an aerodynamic performance degradation at a slow airspeed, which is likely due to the drag created by the fracture in the wing and the disruption of the air flow over the wing's surface. The operator reported that various skin panels along with 3 nose ribs were replaced to facilitate the repair of the left wing.

TESTS AND RESEARCH

The Smithsonian Institution Feather Identification Laboratory reported that the remains were positively identified as Bald Eagle (*Haliaeetus leucocephalus*). The identification was made using mtDNA (cytochrome oxidase 1) and confirmed with microscopic analysis. The Smithsonian Institution Feather Identification Laboratory further reported that the mass of the subspecies of Bald Eagle that occurs in Alaska ranges from 3637 grams to 4819 grams (mean 4130 grams) for adult males, and 4631 grams to 6400 grams (mean 5350 grams) for adult females.

ADDITIONAL INFORMATION

Bald Eagle Range and Habitat

The Alaska Department of Fish and Game has published the Bald Eagle Profile (2016). This document discusses the range and habitat of the Bald Eagle in Alaska and states in part:

Alaska has the largest population of Bald Eagles in the United States, about 30,000 birds. Bald Eagles are often found along Alaska's coast, offshore islands, and interior lakes and rivers. Most Bald Eagles winter in southern Alaska but some leave the state during cold months.

The highest nesting densities occur on the islands of Southeast Alaska where Bald Eagles usually nest in old-growth timber along saltwater shorelines and mainland rivers. Bald Eagles in Southcentral Alaska nest in old cottonwood trees near water.

Bird Strike Avoidance

The Aircraft Owners and Pilots Association (AOPA) Air Safety Institute has published *Heard About The Bird?* (2000). This document discusses guidance for avoiding bird strikes and states in part:

Avoid low altitude flight as much as feasible to reduce the risk of a strike.

Dawn and dusk are the times with the highest probability of a bird encounter.

Turn on landing or recognition lights. This helps birds see oncoming aircraft.

Plan to climb. Birds almost invariably dive away, but there are exceptions.

Slow down. This will allow birds more time to get out of your way and will lessen the impact force if you do hit one.

If a collision seems likely, duck below the glareshield to avoid being hit by the bird and flying plexiglass. Advise passengers to do the same. Protect your eyes and head.

If a collision occurs, fly the aircraft first. Assess the damage and decide whether you can make it to an airport or you should make an off-airport landing. Declare an emergency - it doesn't cost anything. Even if no damage is visible, divert to the nearest airport and have a mechanic look at the airplane.

History of Flight

Enroute	Birdstrike (Defining event)
Landing	Off-field or emergency landing Flight control sys malf/fail Miscellaneous/other

Pilot Information

Certificate:	Airline Transport	Age:	62, Male
Airplane Rating(s):	Multi-engine Land; Single-engine Land; Single-engine Sea	Seat Occupied:	Right
Other Aircraft Rating(s):	None	Restraint Used:	3-point
Instrument Rating(s):	Airplane	Second Pilot Present:	Yes
Instructor Rating(s):	None	Toxicology Performed:	No
Medical Certification:	Class 2 With Waivers/Limitations	Last Medical Exam:	06/01/2015
Occupational Pilot:	Yes	Last Flight Review or Equivalent:	06/17/2016
Flight Time:	(Estimated) 20000 hours (Total, all aircraft), 5000 hours (Total, this make and model), 20000 hours (Pilot In Command, all aircraft), 115 hours (Last 90 days, all aircraft), 36 hours (Last 30 days, all aircraft), 0.5 hours (Last 24 hours, all aircraft)		

Pilot Information

Certificate:	Airline Transport	Age:	65, Male
Airplane Rating(s):	Multi-engine Land; Single-engine Land; Single-engine Sea	Seat Occupied:	Left
Other Aircraft Rating(s):	Glider; Helicopter	Restraint Used:	3-point
Instrument Rating(s):	Airplane	Second Pilot Present:	Yes
Instructor Rating(s):	Airplane Multi-engine; Airplane Single-engine; Glider; Helicopter; Instrument Airplane	Toxicology Performed:	No
Medical Certification:	Class 2 Without Waivers/Limitations	Last Medical Exam:	06/12/2015
Occupational Pilot:	Yes	Last Flight Review or Equivalent:	06/09/2015
Flight Time:	(Estimated) 10695 hours (Total, all aircraft), 15 hours (Total, this make and model), 10145 hours (Pilot In Command, all aircraft), 15 hours (Last 90 days, all aircraft), 15 hours (Last 30 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Manufacturer:	DE HAVILLAND	Registration:	N104BM
Model/Series:	DHC3 T	Aircraft Category:	Airplane
Year of Manufacture:	1956	Amateur Built:	No
Airworthiness Certificate:	Normal	Serial Number:	118
Landing Gear Type:	Float	Seats:	11
Date/Type of Last Inspection:	04/14/2016, Annual	Certified Max Gross Wt.:	8367 lbs
Time Since Last Inspection:		Engines:	1 Turbo Prop
Airframe Total Time:	18395.1 Hours	Engine Manufacturer:	Honeywell
ELT:	C91A installed, not activated	Engine Model/Series:	TPE-331-10
Registered Owner:	JEANNE G. PORTER	Rated Power:	900 hp
Operator:	On file	Air Carrier Operating Certificate:	On-demand Air Taxi (135)
Operator Does Business As:	BALD MOUNTAIN AIR SERVICE, INC.	Operator Designator Code:	YQPA

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	Condition of Light:	Day
Observation Facility, Elevation:	PAHO, 73 ft msl	Observation Time:	2253 UTC
Distance from Accident Site:	9 Nautical Miles	Direction from Accident Site:	215°
Lowest Cloud Condition:	Scattered / 4500 ft agl	Temperature/Dew Point:	14° C / 9° C
Lowest Ceiling:	Overcast / 6000 ft agl	Visibility	10 Miles
Wind Speed/Gusts, Direction:	6 knots, 220°	Visibility (RVR):	
Altimeter Setting:	29.92 inches Hg	Visibility (RVV):	
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	HOMER, AK (5BL)	Type of Flight Plan Filed:	Company VFR
Destination:	HOMER, AK (5BL)	Type of Clearance:	None
Departure Time:	1520 AKD	Type of Airspace:	Class E

Wreckage and Impact Information

Crew Injuries:	2 None	Aircraft Damage:	Substantial
Passenger Injuries:	N/A	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	2 None	Latitude, Longitude:	59.763611, -151.325000 (est)

Administrative Information

Investigator In Charge (IIC):	Michael J Hodges	Adopted Date:	10/06/2016
Additional Participating Persons:	Rich Peabody; FAA Juneau FSDO; Juneau, AK		
Publish Date:	10/06/2016		
Note:	The NTSB did not travel to the scene of this accident.		
Investigation Docket:	http://dms.nts.gov/pubdms/search/dockList.cfm?mKey=93430		

The National Transportation Safety Board (NTSB), established in 1967, is an independent federal agency mandated by Congress through the Independent Safety Board Act of 1974 to investigate transportation accidents, determine the probable causes of the accidents, issue safety recommendations, study transportation safety issues, and evaluate the safety effectiveness of government agencies involved in transportation. The NTSB makes public its actions and decisions through accident reports, safety studies, special investigation reports, safety recommendations, and statistical reviews.

The Independent Safety Board Act, as codified at 49 U.S.C. Section 1154(b), precludes the admission into evidence or use of any part of an NTSB report related to an incident or accident in a civil action for damages resulting from a matter mentioned in the report.