

AA2023-5

**AIRCRAFT ACCIDENT  
INVESTIGATION REPORT**

**Okayama Air Service Co., Ltd. (OAS)  
J A 1 2 3 R**

**August 31, 2023**



The objective of the investigation conducted by the Japan Transport Safety Board in accordance with the Act for Establishment of the Japan Transport Safety Board and with Annex 13 to the Convention on International Civil Aviation is to determine the causes of an accident and damage incidental to such an accident, thereby preventing future accidents and reducing damage. It is not the purpose of the investigation to apportion blame or liability.

TAKEDA Nobuo  
Chairperson  
Japan Transport Safety Board

Note:

This report is a translation of the Japanese original investigation report. The text in Japanese shall prevail in the interpretation of the report.

《Reference》

The terms used to describe the results of the analysis in "3. ANALYSIS" of this report are as follows.

- i) In case of being able to determine, the term "certain" or "certainly" is used.
- ii) In case of being unable to determine but being almost certain, the term "highly probable" or "most likely" is used.
- iii) In case of higher possibility, the term "probable" or "more likely" is used.
- iv) In a case that there is a possibility, the term "likely" or "possible" is used.

# AIRCRAFT ACCIDENT INVESTIGATION REPORT



July 21, 2023

Adopted by the Japan Transport Safety Board

Chairperson TAKEDA Nobuo  
 Member SHIMAMURA Atsushi  
 Member MARUI Yuichi  
 Member SODA Hisako  
 Member NAKANISHI Miwa  
 Member TSUDA Hiroka

<b>Company</b>	Okayama Air Service Co., Ltd. (OAS)
<b>Type, Registration Mark</b>	Cessna 172R, JA123R
<b>Accident Class</b>	Aircraft damage due to bird strike
<b>Date and Time of the Occurrence</b>	At about 17:43 Japan Standard Time (JST: UTC+9 hours), December 10, 2022
<b>Site of the Accident</b>	At an altitude of about 150 ft (45 m) about 0.5 nm (900 m) west of Kohnan Aerodrome, Okayama City, Okayama Prefecture (34°35'N, 133° 55'E)

## 1. PROCESS AND PROGRESS OF THE ACCIDENT INVESTIGATION

<b>Summary of the Accident</b>	<p>On December 10 (Saturday), 2022, the Aircraft sustained damage due to bird strike when making a landing approach to the Aerodrome.</p> <p>There were four people on board, consisting of the captain and other three passengers. No one was injured.</p>
<b>Outline of the Accident Investigation</b>	<p>The Japan Transport Safety Board (JTSB) designated an investigator-in-charge and an investigator on December 11, 2022 to investigate this accident.</p> <p>Comments were invited from the parties relevant to the cause of the accident the Japan Civil Aviation Bureau of the Ministry of Land, Infrastructures, Transport and Tourism and the Relevant State.</p>

## 2. FACTUAL INFORMATION

<b>Aircraft Information</b>	
Aircraft type:	Cessna 172R
Serial number: 17280962	Date of manufacture: November 6, 2001
Airworthiness certificate: No.Dai-2022-317	Validity: August 29, 2023
<b>Personnel Information</b>	
Captain: Age: 47	
Commercial pilot certificate (Airplane)	June 4, 1998
Pilot competency assessment	
Confirmation expiration date of piloting capable period:	February 23, 2023
Restrictions: Single-engine land	January 7, 2022
Class 1 Aviation Medical Certificate	Validity: September 21, 2023

## Meteorological Information

The aviation routine weather report data for the Aerodrome at 18:00 on the day were as follows:

Wind direction: Variable, Wind velocity: 1 kt, Prevailing visibility: 30 km

Clouds: Amount 1/8, Type Cumulus, Cloud base 2,500 ft

Clouds: Amount 5/8, Type Altocumulus, Cloud base 8,000 ft

Temperature 12°C, Dew point 6°C, Altimeter setting (QNH) 29.99 inHg

## Event Occurred and Relevant Information

### (1) History of the Flight

At 17:30, the Aircraft took off from Kohnan Aerodrome for a sightseeing. In the Aircraft, the captain sat in the left pilot seat, the three passengers sat in the right pilot seat and rear seats. The sunset was 16:54 so it was getting dark around the Aerodrome. After flying for about 10 minutes over Okayama City, the Aircraft commenced the approach to Runway 09 via the north side traffic pattern in order to return to the Aerodrome and land there. On the final approach course, when the Aircraft was approaching at an altitude of about 150 ft (45 m) about 0.5 nm (900 m) from the runway threshold with an airspeed of about 65 kt, something like a flock of white birds appeared for a moment in the illuminated range of the landing light ahead, and immediately after that, the captain heard a banging sound as if something collided with the fuselage and felt like the Aircraft having hit something. As there was no anomaly in the flight control of the Aircraft, the Aircraft continued to the approach and landed at 17:45.

Dents and bloodstains were confirmed on the leading edge of the left wing during the aircraft inspection conducted after the Aircraft landing.

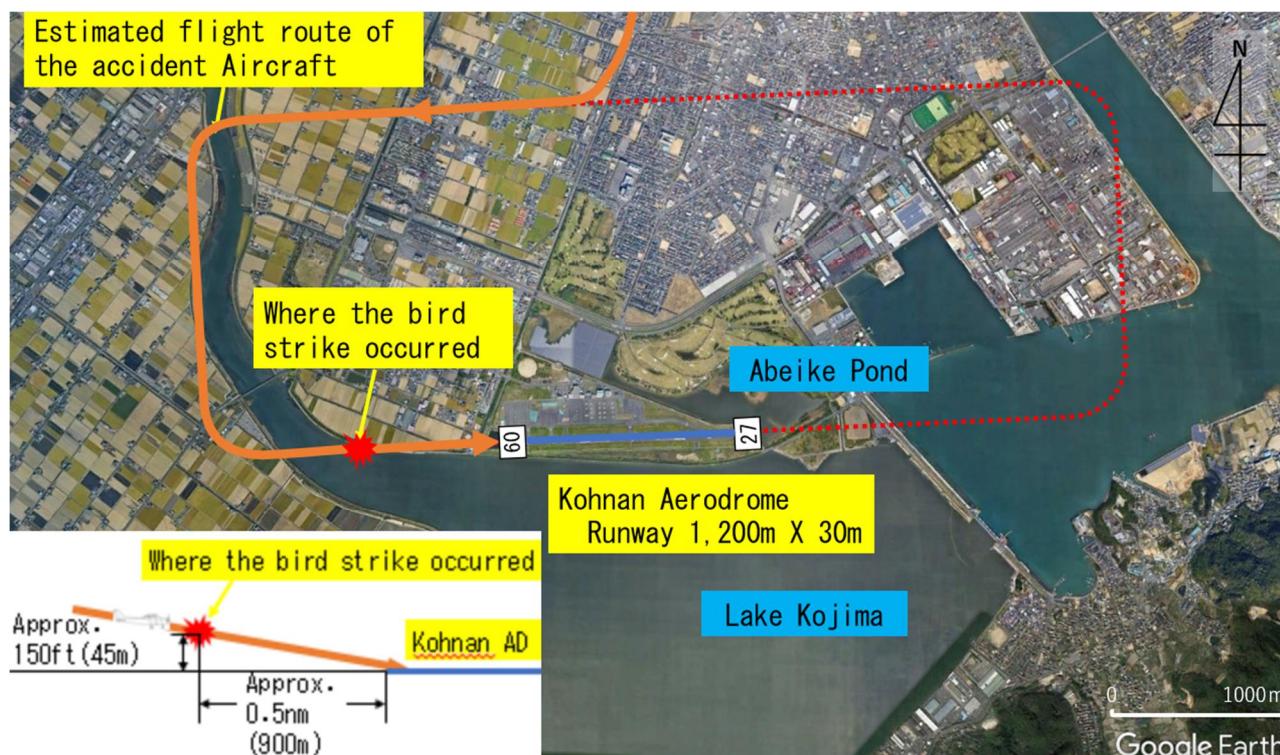


Figure 1: The Estimated Flight Route of the Accident Aircraft

### (2) Information on Damage to the Aircraft

Extent of Damage: Substantially damaged

- Deformation of the skin of leading edge of the left wing (a dent of about 15 cm long by about 155 cm wide with a depth of 7 cm)

- Deformation of the ribs of leading edge of the left wing (inside the deformed skin)

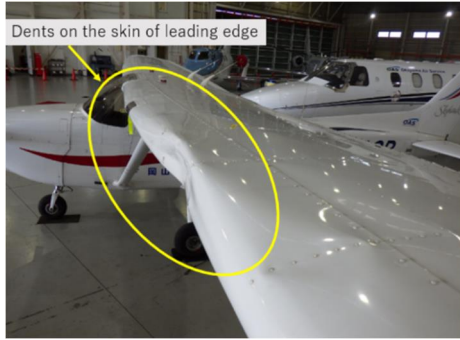


Figure 2: Location of Damage  
(Leading Edge Skin)



Figure 3: Location of Damage  
(Leading Edge Ribs)

(3) Information on the bird

The carcass of the bird that collided with the Aircraft was not found during the inspection for the runway and its vicinity conducted immediately after the accident. In addition, as the bloodstains attached on the left wing was not collected but washed away, the species of bird that collided with the Aircraft was unable to be determined.

(4) Information on the Airport

The Aerodrome located in the southern part of Okayama Prefecture is established and managed by the Okayama Prefecture. Without scheduled flights in service, it is the base aerodrome for small aircraft.

Runway 09/27 (1,200 m long, 30 m wide)

Traffic volume in 2022 (January to December)

Number of take-offs and landings: 10,314, Number of touch-and-goes: 5,322

Abeike Pond and Lake Kojima located around the Aerodrome are landing zone for migratory birds and the habitat for many wild birds.

(5) Measures for Bird Strike Prevention at the Aerodrome

At the Aerodrome, bird sweep is conducted in the Aerodrome by vehicles during regular checks three times a day, and based on the request from aircraft, temporary runway checks as well as bird sweep using pyrotechnics, sounds, distress calls and others are conducted. In addition, from July to October, lethal control using real bullets of shotguns is carried out.

Besides, bird strike prevention measures expected to be more effective have been considered in the Safety Management Committee of the Aerodrome.

Data for 2022 (from January to December)

Number of bird strikes: 3 cases (excluding this accident)

Occurrences of Bird Strikes

Month of occurrence	Place	Aircraft type	Species of birds	Areas damaged by bird strike
May	On runway (at landing)	Airplane	Swallow	Windshield
October	On runway (during touch-and-go)	Airplane	Black kite	Propellers Muffler
October	On runway (at landing)	Motor glider	Black kite	Center of left wing

Number of bird sweeps conducted during temporary runway checks based on the request from aircraft: 346

Number of uses of pyrotechnics: 116

In the case of a bird strike, the Aerodrome Administration Office would confirm the situation with the flight crewmembers of the relevant aircraft, but had not collected samples from the bird.

(6) Bird Strike Preventative Measures Taken by the Ministry of Land, Infrastructure, Transport and Tourism

For the purpose of reducing the number of the bird strikes, the Civil Aviation Bureau (CAB) of the Ministry of Land, Infrastructures, Transport and Tourism (MLIT) has been sharing the information the occurrence of bird strikes, notable cases of the bird strike, and the measures for Bird Strike prevention at each airport, and considering the future measures for Bird Strike prevention and others by having holding the "Committee to examine measures for Bird Strike prevention" 21 times so far. Among these efforts, the CAB, MLIT requests all the aircraft captains and operators to submit a report when a bird strike occurs in order to take more effective measures for Bird Strike prevention at mainly airports and their vicinity, thus this accident was also reported by the OAS.

In addition, based on the policy for identifying the species of the collided bird and developing methods and plans for the bird control depending on the birdlife, which has been decided in the Committee to examine measures for Bird Strike prevention, the CAB, MLIT conducts the inspection to identify the species of the birds as at the time of the occurrence of bird strike the airport administration office sends a research institution the material residue collected from the runway and the aircraft. At present, the investigation subjects are the damages to aircraft at 77 airports (airfields) with scheduled flights, the bird strike accidents involving the change of planned flights, and bird strike accidents occurred on or around runways, but the Airport is not included in these investigation subjects.

### 3. ANALYSIS

The JTSB concludes that dents and bloodstains were confirmed on the leading edge of the left wing during the inspection conducted after the Aircraft landing, and when the Aircraft was flying at an altitude of about 150 ft (45 m) about 0.5 nm (900 m) from the runway threshold with an airspeed of about 65 kt, something like a flock of white birds appeared for a moment in the illumination range of the landing area floodlights ahead, and immediately after that, the captain heard a bang sound as if something collided with the fuselage and felt like something had hit the Aircraft, therefore the Aircraft most likely sustained damage due to bird strike on a final approach.

The captain was unable to spot the approaching birds due to the night flight, it was more likely difficult to avoid the birds in a short period of time between the captain's noticing the birds and the Aircraft's colliding with the birds.

However, as the bloodstains attached to the Aircraft was not collected, the species of bird that struck the Aircraft was unable to be determined. This is the accident that occurred due to the bird strike, resulting in damage to the aircraft operated by the OAS as its aircraft transport services (sightseeing flights) with passengers on board, therefore, it is important for a resident business operator at Kohnan Aerodrome to proceed initiatives for preventive actions. In order to proceed more effective measures for Bird Strike prevention according to the birdlife, it shall be recommended to appropriately handle the carcass and bloodstains of the birds collided with aircraft, such as collecting them as samples and identifying the species of the birds.

#### 4. PROBABLE CAUSES

The JTSCB concludes that the probable cause of this accident was that the Aircraft most likely sustained damage due to bird strike when making a landing approach. However, as the bloodstains attached to the Aircraft was not collected, the species of bird that struck the Aircraft was unable to be determined.

#### 5. SAFETY ACTIONS

##### (1) Safety Actions Required

As shown in the ANALYSIS, in order to proceed more effective measures for Bird Strike prevention according to the birdlife, it shall be recommended to appropriately handle the carcass and bloodstains of the birds collided with aircraft, such as collecting them as samples and identifying the species of the birds.

##### (2) Actions for Accident Prevention Taken after the Accident

- ① After this accident, the OAS informed people concerned about the proper preservation of bird species, bloodstains and others that had attached to aircraft at the time of the occurrence of the bird strike.

In addition, the OAS continuously takes the following measures for Bird Strike prevention.

- a When pilots obtain the information about the birds on and around the runway visually or by radio before the take-off and landing, pilots shall request the airport management office to conduct a bird sweep, and the aircraft shall take off or land after the bird sweep is over.
  - b The information on the birds shall be shared with aircraft in flight by the company radio.
  - c Education shall be provided to all the pilots and trainees about many birds that fly and inhabit around Kohnan Airport, the risks of bird strike during the flight, precautions for flight operations (such that an evasive action shall not be made at a low altitude and slow speed).
- ② The CAB, MLIT sent sample collection kits to Kohnan Aerodrome Administration Office and other airports with no scheduled flights in service but ATS facility exists, and requested them to collect samples and inform operators of it if the species of birds are not clear among the following accidents involving a bird strike.
    - a Aircraft damage
    - b Bird strike on or around a runway
  - ③ The Okayama Prefectural Kohnan Aerodrome Administration Office continuously examines the measures for Bird Strike prevention at the Aerodrome in the Safety Management Committee of the Aerodrome. In addition, in the event of a bird strike, they shall inform resident operators that they will collect samples using the sample collection kits sent by the MLIT to identify the species of the birds, and they put in place the system to consider more effective measures for Bird Strike prevention according to the birdlife.