



Air traffic to Galapagos is increasing¹

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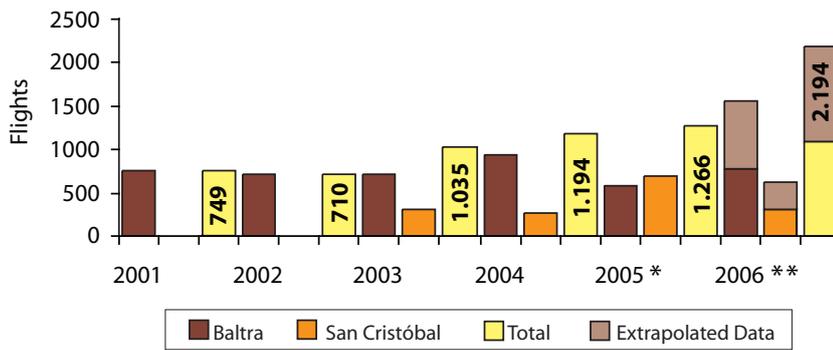
Charles Darwin Foundation

Flights to the Galapagos Islands began with the military air and naval base created on South Seymour (Baltra) in 1942. Then, in 1963, commercial flights began¹. Compiling and analyzing data on air traffic indicates that commercial and private flights to and among the islands have increased alarmingly over the last few years, resulting in an increase in the volume of passengers, luggage, and cargo. These are all proven means of introducing invasive species into the Galapagos Islands.

Regular commercial flights to the Galapagos Islands

From 2001 to 2006, the number of commercial flights to Galapagos increased by **193%**. From January to June 2006, there were **1097** commercial flights (Fig. 1). At the time this analysis was completed, there were no data available for the second half of 2006, but if the number of flights continued similarly to the first half of the year, there would be an increase of 73% in commercial flights from 2005 to 2006.

Figure 1: Commercial flights to the Galapagos Islands from 2001 to 2006



Source: Civil Aviation Authority (DAC).

Note

- * In 2005, the Baltra airport was closed for five months.
- ** Data from the first half of 2006 were doubled to extrapolate data for the second half.

Commercial flights by the domestic companies, TAME and AEROGAL, are the primary means of transport for the local community and for visitors to the islands. These flights, in addition to transporting passengers, carry both organic (of plant and animal origin) and inorganic cargo.

In 2006, there were a minimum of **136** flights per month, with a maximum of **170** flights per month during high tourism season. In 2006, TAME operated 2 flights per day to Baltra, Monday through Saturday, 3 on Sundays, and 2 flights per week to San Cristóbal. This gives a total of **17** regular flights per week and **68** flights per month, and a total of **78** flights per month during the high season.

In 2006, AEROGAL operated 7-9 flights per week (36 per month) to Baltra, plus 4 weekly flights to San Cristóbal (16 per month), for a total of **52** flights per month. ICARO began flying to the Galapagos Islands in December 2005, on the route Manta-Guayaquil-San Cristóbal. In 2006, ICARO only operated charter flights to Galapagos.

From 2001 to 2006, the number of commercial flights to Galapagos increased by 193%.

Private flights

From 2001 to 2006, a minimum of 343 private aircraft landed in Galapagos (Table 1 and Fig. 2). The information supplied by the Civil Aviation Authority (DAC) does not identify the port of origin for each flight nor its route prior to arrival in Galapagos; it only indicates the airplane's last port of departure. Nevertheless, the data show that at least 10 aircraft traveled directly to Galapagos from other countries (United States, Panama, Peru, Costa Rica, Curacao, Easter Island, and Mexico).

During that period, **69.4%** (240) of private aircraft entering the Galapagos Islands from mainland Ecuador

were registered in the United States, **13%** (45) in Ecuador, and the remainder in countries of Latin America, the Caribbean, Europe, and Australia. This suggests that the majority of private aircraft heading to Galapagos come from other countries, but fly first to mainland Ecuador.

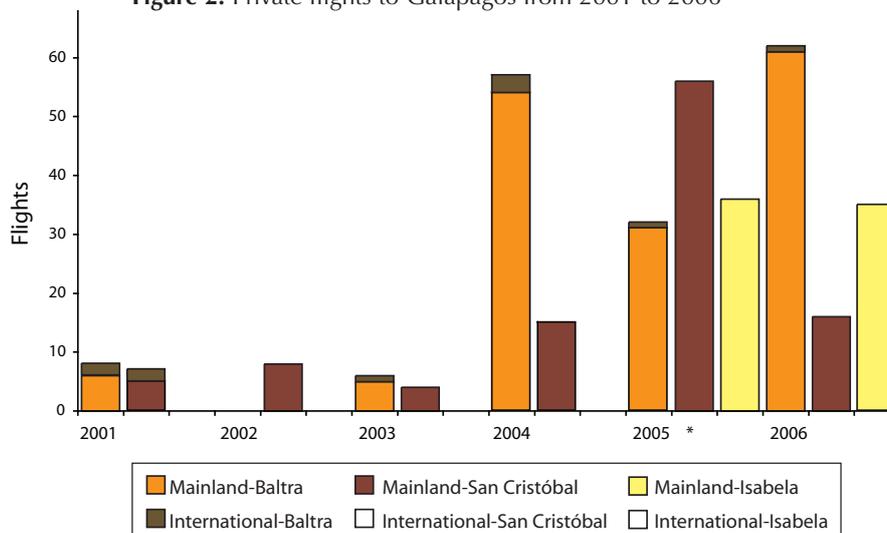
A minimum of **343** private flights arrived in the Galapagos Islands from 2001 to 2006, with at least **10** of them arriving directly to the islands from other countries.

Table 1. Last airport prior to arrival in the Galapagos Islands, private aircraft, 2001 to 2006.

Port of origin		No	%	
NATIONAL	Guayaquil	238	69.4	
	Manta	71	20.7	
	Quito	19	5.5	
	Salinas	4	1.2	96.8%
INTERNATIONAL	Panama	2	0.6	
	Easter Island	2	0.6	
	Mexico	2	0.6	
	United States	1	0.3	
	Costa Rica	1	0.3	
	Antilles	1	0.3	
	Peru	1	0.3	2.9 %
	Undetermined	1	0.3	0.3 %
Total		343	100	100 %

Source: Civil Aviation Authority (DAC).

Figure 2. Private flights to Galapagos from 2001 to 2006



Source: Civil Aviation Authority (DAC).

Note

* In 2005, the Baltra airport was closed for five months.

The data indicate that most private aircraft from Ecuador and other countries arrived first at the Baltra airport, except for five months in 2005 when that airport was closed for maintenance (Fig. 2). There are no data on flights arriving in Isabela for 2001, 2002, and 2004; DAC had no staff assigned to Isabela during those years. However, a substantial number of aircraft arrived there in 2005 and 2006. Records indicate that they came from mainland Ecuador.

Military flights

The Air Force of Ecuador (FAE) operates logistical flights to supply its personnel working in the Galapagos Islands. In the year 2000, the FAE normally flew to the Galapagos Islands every two weeks, via Quito, Guayaquil, San Cristóbal, Isabela, and Baltra. Currently, regular flights occur with the same frequency only to Isabela; there are no regular flights to Baltra or San Cristóbal. There are also logistical flights to transport personnel and cargo (including organic cargo) for the Navy, usually arriving twice a month at San Cristóbal.

The highest number of military flights was observed in 2002, with a total of **383** flights and with San Cristóbal as the most frequent destination. Since 2002, the frequency of military flights has decreased significantly. In 2006, the total was estimated at **60** flights.

Inter-island flights

Inter-island air service is provided by the EMETEBE Company's air taxis. Generally, this service transports passengers and, to a lesser degree, cargo (mainly inter-island airmail). The EMETEBE Company runs flights Monday through Saturday on the route: San Cristóbal – Baltra – Isabela – Baltra – San Cristóbal. The established schedule includes flights following this route once each day; sometimes there is more than one flight per day in response to demand. This company also makes charter flights on Sundays when required.

In addition to inter-island flights via the air taxi service, there are occasional inter-island flights by other private airplanes or charter flights that come to Galapagos, and by the Galapagos National Park Service and other national and international authorities.

Increased flights to and among the Galapagos Islands during 2001-2006

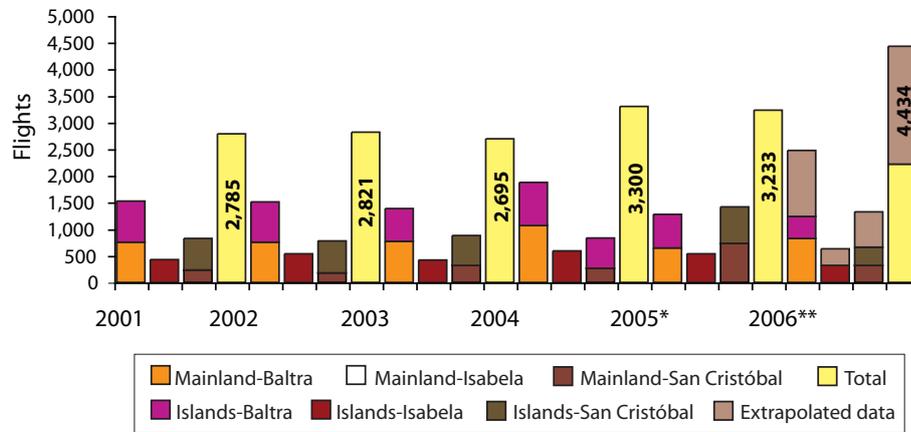
DAC data can be analyzed in terms of regular commercial domestic traffic (regular flights with fixed schedules and itineraries) and non-regular air traffic (no fixed schedules or itineraries) (Fig. 3). These data indicate that flights to and among the Galapagos Islands have increased by **59.2%** since 2001. In the first six months of 2006, the **2,217** flights to Galapagos were already equal to **67.8%** of the flights during 2004 and 2005. Assuming that the second half of 2006 had about the same number of flights, regular and non-regular domestic traffic to and within the islands would have risen by **37%** over 2005 figures. The Baltra airport had the most movement, except for five months in 2005, when it was closed for repair of its landing strip.

Passenger transport

The number of people transported on regular commercial flights to the Galapagos Islands from mainland Ecuador rose by **100%** from 2001 to 2006. In the first six months of 2006, **91,220** passengers arrived, **61%** of the figure for 2005 (**149,635**). Assuming that the same number of passengers traveled to the Galapagos Islands in the second half of 2006, the total number of passengers transported on those flights from the mainland would have increased by **22%** from 2005 to 2006.

Between 2001 and 2006, total air traffic (regular flights and others) increased by **59.2%** in number of flights, **58.5%** in number of passengers, and **94%** in air freight.

Figure 3. Regular and non-regular domestic flights to and among the Galapagos Islands, 2001-2006

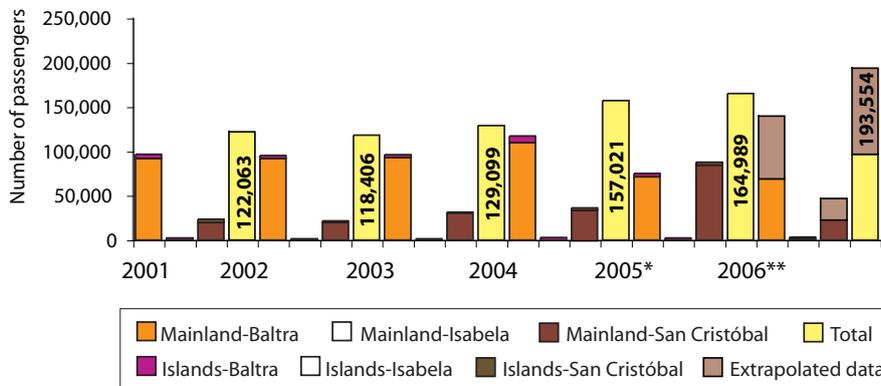


Source: Civil Aviation Authority (DAC).
 Notes: * In 2005, the Baltra airport was closed for five months.
 ** Data from the first half of 2006 were doubled to extrapolate data for the second half.

If you sum the number of passengers arriving by non-regular flights and those on regular flights, the total

increased by **58.5%**, from 122,063 to 193,554, from 2001 to 2005 (Fig. 4).

Figure 4. Passengers on regular and non-regular domestic flights to and among the Galapagos Islands, 2001-2006



Source: Civil Aviation Authority (DAC).
 Notes: * In 2005, the Baltra airport was closed for five months.
 ** Data from the first half of 2006 were doubled to extrapolate data for the second half.

Information is lacking on the number of passengers transported on all flights registered by DAC. Data are particularly scarce on private aircraft, military flights, and inter-island flights. Private airplane records show a broad range in their size and capacity. For example, in 2002 four airplanes left Baltra for Easter Island with an average of **76** passengers and a maximum of **96** passengers per airplane. Historically, local residents

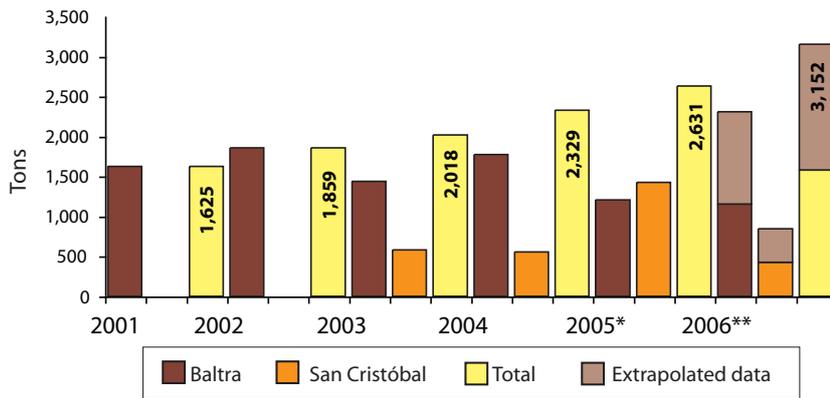
have used military flights to travel to and from the Galapagos Islands. In the case of small airplanes that do inter-island flights, we estimate that approximately 42 passengers are transported per day, or over **1,000** per month, given that EMETEBE has two airplanes with a mid-range capacity of 9 to 12 passengers and that these light planes normally fly 4 times per day.

Cargo transport

Cargo transported from mainland Ecuador to the Galapagos Islands has increased steadily over the last six years, with a total increase of **94%** (Fig. 5). Although records for 2006 cover only January through June, the **1,576 MT** of cargo transported by air during that time

was already over half (60%) of what had been transported during 2005. If this trend continued during the second half of the year, cargo transport would have increased nearly 20% from 2005 to 2006. Most cargo arrives from Guayaquil, Quito, Cuenca, and Esmeraldas.

Figure 5. Cargo transported on regular commercial flights to the Galapagos Islands, 2001-2006



Source: Civil Aviation Authority (DAC).

Notes

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The Baltra airport, followed by the San Cristóbal airport, received the majority of air cargo, except in 2005 when it was closed for five months. Approximately 20% of the air cargo to Baltra was organic products, with most of that pertaining to tourism companies. In 2005, over 570 tons of agricultural products entered by air.

Enforcement of SICGAL legislation and protocols

A legal framework exists to ensure the isolation of the Galapagos Islands and the enforcement of the Quarantine Inspection System of Galapagos (SICGAL) including the Special Law for Galapagos, Regulations for Total Control of Introduced Species, and several resolutions by the Agricultural Health

Committee and SICGAL. One important resolution, No. 43, establishes the protocol for insect extermination on aircraft. Another, No. 60, requires airports with flights to and from the Galapagos to have suitable health facilities and an adequate number of inspectors and inspection infrastructure. Table 2 summarizes the current status of compliance with this law and these protocols.

Due to the lack of airport inspectors, it is not possible to confirm that all airplanes have been fumigated nor to evaluate the effectiveness of fumigations.

Table 2. Compliance with current law and protocols on air activities.

Type of air transport	Current Situation
Commercial/ regular	TAME began fumigating its airplanes in November 2005, applying Permethrine at 2% for a 60-day period. ²
	AEROGAL began fumigations in January 2006. ³
	Commercial airlines do not give notification of their private or charter flights, schedule changes, or additional flights, making it difficult to coordinate proper inspection.
	It is impossible to confirm compliance with fumigation requirements or assess quality due to the lack of inspectors. However, live insects have been found, ¹ demonstrating that the processes are not working properly.
Private	Private aircraft are not inspected in Guayaquil or Quito due to SICGAL's lack of resources, and the lack of coordination with and support from authorities and companies. Moreover, in Manta and Salinas, the port of origin of 20.5% of the aircraft, SESA-SICGAL has no offices.
	52% of flights arrived outside inspectors' work hours. Supervisory institutions (SESA, GNPS, INGALA) were not notified in advance or in a timely fashion about the arrival of these flights. ^{4,5}
	At least 10 flights arrived directly from other countries.
Logistics/ military	Military flights are not inspected on the mainland or in the Galapagos Islands. SESA-SICGAL has no authorization to enter military facilities.
Inter-island	Only the luggage that passengers carry with them is inspected. The protocol for fumigations has not been implemented and the airplanes are not inspected.

Source: Cruz JD & Causton C (2007) ¹

New proposed routes

The airlines are interested in opening up new commercial routes between the mainland and Galapagos. These would include flights from Cuenca and/or Manta to Baltra and San Cristóbal and from Quito and Guayaquil to Isabela. It is important to ascertain whether any environmental impact studies have been conducted, as required by the Special Law for Galapagos, in order to analyze the risks that such flights may pose for Galapagos ecosystems.

Current infrastructure would allow for the authorization of commercial airlines to make night flights to the Baltra airport; its landing strip was equipped with lighting in 2006. However, at this time, SESA-SICGAL does not have sufficient staff to perform night inspections. INGALA and the GNPS are also short-handed to oversee or inspect passengers and aircraft at origin or destination airports.

A new airport terminal in Isabela was recently completed and could provide a new entry point into the Galapagos Islands from the Ecuadorian mainland.

So far, the existing landing strip has been used only for local flights (light airplanes), FAE military planes or emergency flights for logistical purposes, and charter and private flights. According to the risk analysis (see the article on *"Risks associated with current and proposed air routes to the Galapagos Islands"* in this report), opening up direct commercial flights to Isabela would significantly increase the risk of introducing species and therefore the rate of ecological degradation on that island.

Opening new commercial routes, night flights, and direct flights to Isabela involve significant risks of introducing species if there is no appropriate impact assessment or sufficient response capacity from SICGAL.

Overall conclusions and recommendations

Research results indicate that commercial and private flights to and among the islands have increased alarmingly in recent years, bringing an increased volume of passengers, luggage, and cargo. These are all proven means of introducing invasive species into the Galapagos Islands.

Occasional arrival in the Galapagos Islands of private flights directly from other countries and non-inspection of charter or private flights from mainland Ecuador increase the risk of transporting invasive species and diseases from other countries, which are not yet found in mainland Ecuador, e.g. the mosquito carrying West Nile virus.

In order to decrease the risk of introducing species into the Galapagos, it is recommended that SESA-SICGAL be strengthened and an improved insect extermination system for aircraft be implemented. Taking into account that no quarantine inspection system can be 100% effective, other prevention mechanisms are also needed, including minimizing routes and prohibiting direct flights from other countries to the Galapagos Islands.

Minimizing routes and prohibiting direct flights from other countries to the Galapagos Islands must be implemented since no quarantine inspection system can be 100% effective.