

LONGEVITY RECORDS FOR THE WAVED ALBATROSS *PHOEBASTRIA IRRORATA*

GUSTAVO JIMÉNEZ-UZCÁTEGUI¹, MICHAEL P. HARRIS², CHRISTIAN R. SEVILLA³ & KATHRYN P. HUYVAERT⁴

¹Department of Sciences, Charles Darwin Foundation, Puerto Ayora, Galápagos, Ecuador (gustavo.jimenez@fcdarwin.org.ec)

²Centre for Ecology & Hydrology, Penicuik, Midlothian EH26 0QB, UK

³Galápagos National Park Directorate, Puerto Ayora, Galápagos, Ecuador

⁴Department of Fish, Wildlife and Conservation Biology, Colorado State University, Fort Collins, Colorado 80523-1474, USA

Received 18 February 2016, accepted 28 March 2016

The Waved (Galápagos) Albatross *Phoebastria irrorata* is endemic to Ecuador. Virtually the entire population of adults breeds on Española Island, Galápagos, Ecuador, and only a few pairs nest on La Plata Island, off the coast of mainland Ecuador (Anderson *et al.* 2008, Awkerman *et al.* 2014). When not breeding, the species occurs in the waters of the Humboldt Current off the west coast of South America, extending at least from El Chocó (Colombia) southward to the extreme north of Chile (Granizo 2002, Awkerman *et al.* 2014). It is considered critically endangered because the population appears to be declining owing to increasing mortality as bycatch in longline fisheries (Awkerman *et al.* 2006, Jiménez-Uzcátegui *et al.* 2006, BirdLife International 2014, IUCN 2015).

The Waved Albatross is also vulnerable to (i) the effects of El Niño-Southern Oscillation (ENSO) events—during which breeding success is reduced to virtually nil—, (ii) the occurrence of virulent pathogens and (iii) the introduction of other species to the breeding grounds (Rechten 1986, Anderson & Fortner 1988, Padilla *et al.* 2003, Jiménez-Uzcátegui *et al.* 2007).

On 19 June 2015, a total of 296 previously banded Waved Albatrosses were caught in the colony at Punta Suárez, Española Island (1°22.39'S, 89°44.41'W), as part of ongoing mark-recapture studies. At that time, breeding appeared to have failed almost completely at this colony, presumably owing to an ongoing ENSO event; as a result, the breeding status of these birds was unknown. The median age of 47 individuals banded as chicks was 13.7 years (Fig. 1), and the oldest bird was banded on 27 October 1974, a 40.8 year banding interval. This is the longest lifespan recorded for a Waved Albatross. This individual had previously been recaptured in 1994, 2001, 2007 (when it was re-banded), 2009 (when it was recorded as breeding), 2010 and 2013 (breeding). Three other older albatrosses of known ages were also caught that day (Table 1). The other 249 individuals had been banded in the colony as adults, so their true ages are unknown, and the maximum estimated age for this group was 38 years (Fig. 1).

The previous record for the oldest Waved Albatross was 38 years (Douglas & Fernández 1997). However, this age was probably overestimated because the individual had been banded at the nest as a breeder 33 years earlier. Five years were added to its age, based on the assumption that this was its first breeding attempt, but individuals may begin breeding from as early as three (Harris 1979) to six or more years of age (Street 2013).

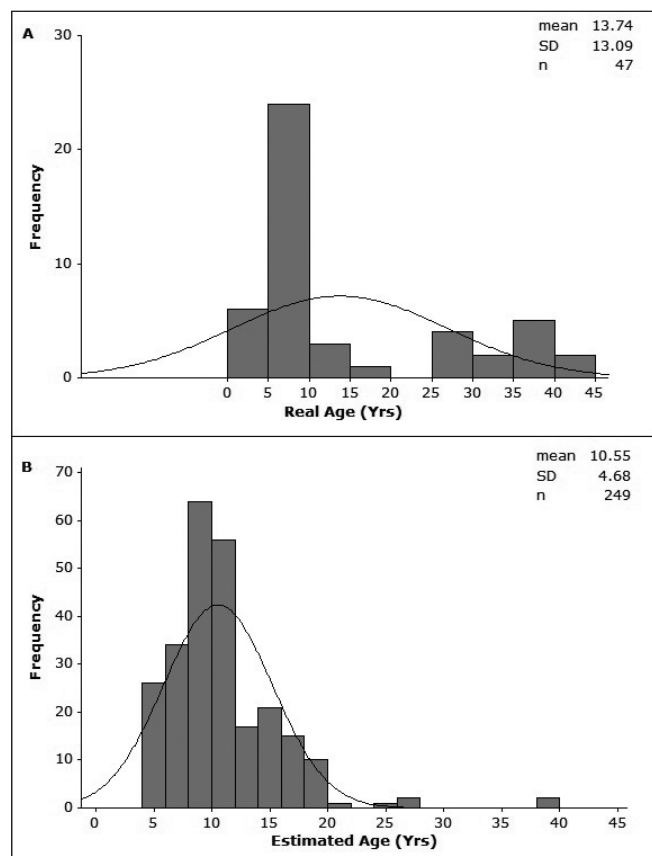


Fig 1. Banding interval of Waved Albatross banded at Punta Suárez, Española Island, Galápagos Archipelago, and recaptured in 2015. (A) Birds banded as chicks; (B) Birds banded when older.

TABLE 1
Longevity records of Waved Albatross *Phoebastria irrorata* banded as chicks (age 5–7 months) at Punta Suárez, Española Island, Galápagos Archipelago, and recaptured on 19 June 2015

Band No.	Sex ^a	Banded	Age (years)
84831119	Unknown	27 November 1974	40.8
1089251	Male	11 November 1975	39.7
9770	Female	13 November 1975	39.7
5235	Unknown	3 November 1977	37.7

^a Sexed by bill length, < 141.5 mm = female, > 152.9 mm = male (Awkerman *et al.* 2007).

Albatrosses of all species are considered long-lived. The oldest albatross we are aware of is currently 65 years old. It is a Laysan Albatross *Phoebastria immutabilis* called “Wisdom;” however, there are records of Black-footed Albatross *P. nigripes*, Campbell Albatross *Thalassarche impavida*, Grey-headed Albatross *T. chrysostoma*, Buller’s Albatross *T. bulleri*, Northern Royal Albatross *Diomedea sanfordi* and Wandering Albatross *D. exulans*, according to which all exceed 40 years of age (Robertson 1993, Sagar & Warham 1993, Cooper *et al.* 2003, Lutmerding & Love 2015, Paul Sagar, pers. comm.). Waved Albatrosses have been banded on Española Island for over 60 years; however, the bands used in the early years tended to become illegible after a few decades, and, presumably, many fell off. Now that bands are routinely replaced and birds are either identified with PIT tags or double-banded, we anticipate that many more old Waved Albatrosses will be identified in the years to come.

ACKNOWLEDGEMENTS

We thank the Galápagos National Park Service and the Charles Darwin Foundation for their assistance with data collection in the field and for the preparation of this article. We wish to thank the many sponsors that have supported Waved Albatross research since the 1960s. We are grateful to collaborators and volunteers who worked in the program. We thank C. Gallardo Nelson for correcting the grammar of an earlier version of this article, P. Sagar for sharing his information about the ages of other albatross species and D. Ainley, and L. Blight for helpful comments on this manuscript. This is contribution number 2132 of the Charles Darwin Foundation for the Galápagos Islands.

REFERENCES

- ANDERSON, D.J., HUYVAERT, K.P., AWKERMANN, J.A., ET AL. 2008. Population status of the critically endangered waved albatross *Phoebastria irrorata*, 1999 to 2007. *Endangered Species Research* 5: 185-192.
- ANDERSON, D.J. & FORTNER, S. 1988. Waved albatross egg neglect and associated mosquito ectoparasitism. *Condor* 90: 727-729.
- AWKERMANN, J.A., HUYVAERT, K.P., MANGEL, J., ALFARO-SHIGUETO, J. & ANDERSON, D.J. 2006. Incidental and intentional catch threatens Galápagos waved albatross. *Biological Conservation* 33: 483-489.
- AWKERMANN, J.A., WESTBROCK, M.A., HUYVAERT, K.P. & ANDERSON, D.J. 2007. Female-biased sex ratio arises after parental care in the sexually dimorphic Waved Albatross (*Phoebastria irrorata*). *Auk* 124: 1336-1346.
- AWKERMANN, J.A., CRUZ, S., PROAÑO, C., ET AL. 2014. Small range and distinct distribution in a satellite breeding colony of the critically endangered Waved Albatross. *Journal of Ornithology* 155: 367-378.
- BIRDLIFE INTERNATIONAL 2014. *Phoebastria irrorata*. The IUCN Red List of Threatened Species. Version 2015.2. [Available online at: <http://www.iucnredlist.org>. Accessed 29 June 2015].
- COOPER, J., BATTAM, H., LOVES, C., MILBURN, P.J. & SMITH, L.E. 2003. The oldest known banded wandering albatross *Diomedea exulans* at the Prince Edward Islands. *African Journal of Marine Science* 25: 525-527.
- DOUGLAS, H.D. & FERNÁNDEZ, P. 1997. A longevity record for the waved albatross. *Field Ornithology* 18: 224-227.
- GRANIZO, T. 2002. Albatros de Galápagos. In: GRANIZO, T., PACHECO, C., RIVADENEIRA, M.B., GUERRERO, M. & SUÁREZ, L. (Eds.). *Libro Rojo de las Aves del Ecuador*. Serie Libros Rojos del Ecuador, Tomo 2. Quito, Ecuador: Simbioe/Conservation International/Ecociencia/Ministerio del Ambiente/UICN.
- HARRIS, M.P. 1979. Survival and ages of first breeding of Galapagos seabirds. *Bird-Banding* 50: 56-61.
- IUCN 2015. The IUCN Red List of Threatened Species. Version 2015.2. [Available online at: <http://www.iucnredlist.org>. Accessed 2 July 2015].
- JIMÉNEZ-UZCÁTEGUI, G., MANGEL, J., ALFARO-SHIGUETO, J. & ANDERSON, D.J. 2006. Fishery bycatch of the waved albatross *P. irrorata*, a need for implementation of agreements. *Galápagos Research* 64: 7-9.
- JIMÉNEZ-UZCÁTEGUI, G., CARRIÓN, V., ZABALA, J., BUITRÓN, P. & MILSTEAD, B. 2007. Status of introduced vertebrates in Galápagos. In: *Galápagos Report 2006-2007*. Puerto Ayora, Ecuador: FCD, PNG & INGALA.
- LUTMERDING, J.A. & LOVE, A.S. 2015. Longevity records of North American birds. Version 2015.1. Patuxent Wildlife Research Center. Bird Banding Laboratory. Laurel MD. [Available online at: http://www.pwrc.usgs.gov/bbl/longevity/longevity_main.cfm. Accessed 1 July 2015].
- PADILLA, L.R., HUYVAERT, K.P., MERKEL, J.F., MILLER, R.E. & PARKER, P.G. 2003. Hematology, plasma chemistry, serology, and Chlamydophila status of free ranging adult waved albatrosses (*Phoebastria irrorata*) on Española, Galapagos Islands. *Journal of Zoo and Wildlife Medicine* 34: 278-283.
- RECHTEN, C. 1986. Factors determining the laying date of the waved albatross (*Diomedea irrorata*). *Ibis* 128: 492-501.
- ROBERTSON, C.J.R. 1993. Survival and longevity of the northern royal albatross *Diomedea epomophora sanfordi* at Taiaroa Head 1937-1993. *Emu* 93: 269-276.
- SAGAR, P.M. & WARHAM, J. 1993. A long-lived Southern Buller’s Mollymawk (*Diomedea bulleri bulleri*) with a small egg. *Notornis* 40: 303-304.
- STREET, P.A. 2013. *Abundance, survival, and breeding probabilities of the critically endangered Waved Albatross*. MSc thesis. Colorado State University, Fort Collins, Colorado, USA.