A NEW LONGEVITY RECORD FOR THE ANCIENT MURRELET *SYNTHLIBORAMPHUS ANTIQUUS*

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The Ancient Murrelet *Synthliboramphus antiquus* is a small member of the Alcidae widely distributed in the North Pacific temperate and subarctic zones during the breeding season. The species is completely nocturnal when coming and going from the colony and mainly nests in burrows or in cavities under tree roots (Sealy 1976, Gaston 1992). Chicks are precocial and the young are reared entirely at sea (Gaston 1992).

Seabirds generally exhibit low reproductive rates and high adult survival (Gaston 2004). However, although the survival and longevity of Ancient Murrelets are not well documented, these birds are thought to have a higher annual mortality than most other auks (Gaston 1990, Gaston & Jones 1998, Gaston 2004). The life expectancy of breeding Ancient Murrelets was estimated to be approximately 4.5 years, based on banding and re-trapping of adults and chicks at Reef Island, Haida Gwaii, British Columbia (52°52′N, 131°31′W) during the breeding seasons of 1984–1989 (see Gaston 1990 for details). This estimate of annual survival (77%) is relatively low compared with other Alcidae (Gaston & Jones 1998). Conversely, the average nest success (laying to departure) of 1.54 chicks per breeding pair per year is high compared with other auks (Gaston 1990).

TABLE 1
Details of banded birds trapped during the incubation period at Reef Island in 2007, divided by brood patch development[a]

Date	Maximum diameter of brood patch (mm)				
	No sign	1–20	>20	Unknown	Total
Newly banded (n)					
Before 30 April	3	3	0	0	6
1–31 May	0	24	44	41	109
After 31 May	0	0	0	5	5
TOTAL	3	27	44	46	120
Recaptured (n)[b]					
Before 30 April	0	0	0	0	0
1–31 May	0	2	6	2	10
After 31 May	0	0	1	0	1
TOTAL	0	2	7	2	11

[a] To reduce disturbance, brood patches of incubators were not inspected.
[b] Excluding those trapped in the same year at Reef Island.

Adult and nestling Ancient Murrelets were trapped at Reef Island in 1990–1995 and in 1997 and 1999, and banding of nestling and adult murrelets continued at the adjacent East Limestone Island from 1990 until 2003 (Charest & Epners 2004). In 2007, we resumed trapping adult Ancient Murrelets during their incubation period at Reef Island (April to June), using a plastic knock-down net [68 individuals (52%)] or taking birds from artificial nest boxes [63 individuals (48%)]. Of these 131 adult birds trapped, 11 had been banded in earlier years.

Most of the trapped adults were examined for the presence of brood patches (Table 1) to distinguish whether they were breeders (>20 mm maximum diameter), non-breeders (<10 mm) or unknown status (intermediate). Nine of the recaptured birds were banded at Reef Island, eight as adults and one as a departing chick. The other two were banded at East Limestone Island (the shortest distance between islands is 5.6 km), as chicks departing to sea (for capture methods see Gaston 1992).

TABLE 2
Ancient Murrelets *Synthliboramphus antiquus* banded in earlier years and recaptured on Reef Island in 2007

Banding				Re-trapping			
Band no.	Year	Date	Banded as	Location	Date in 2007	Status[a]	Est. age (years)
1103–56514	1987	26-May	Non-breeder	Reef I.	2-Jun	Breeder	22
1313–63130	1995	15-May	Breeder	Reef I.	21-May	Unknown	15
1313–63137	1995	15-May	Breeder	Reef I.	13-May	Unknown	15
1313–63498	1995	22-May	Non-breeder	Reef I.	6-May	Breeder	14
1313–64689	1996	30-May	Chick	Limestone I.	21-May	?	11
1313–66186	1997	8-Jun	Non-breeder	Reef I.	25-May	Breeder	12
1313–66290	1997	4-Jun	Non-breeder	Reef I.	25-May	Breeder	12
1313–66293	1997	5-Jun	Non-breeder	Reef I.	18-May	?	12
1313–84198	1999	15-May	Chick	Reef I.	18-May	Breeder	8
1313–84925	1999	13-May	Non-breeder	Reef I.	18-May	Breeder	10
1313–96483	2002	26-May	Chick	Limestone I.	19-May	Breeder	5

[a] Birds with brood patches >20 mm, or those removed from nest boxes, were considered to be breeders. Those with brood patches 16–20 mm were considered to be of unknown breeding status. None had brood patches <16 mm across. Two birds were not inspected ("?").

Among the recaptures, one bird, caught 2 June 2007, was originally banded as an adult on 26 May 1987 at Reef Island (Table 2). When this bird was originally banded it had no brood patch and the wing length was 139 mm. Breeders average 141.4 ± 0.7 mm (males) and 142.0 ± 1.0 mm (females); non-breeders average 139.0 ± 1.0 mm (males) and 138.5 ± 0.9 mm (females) (Sealy 1976). The absence of a brood patch and the short wing length mean that this bird was almost certainly a non-breeding prospector when originally banded.

Ancient Murrelets usually start to visit breeding colonies as pre-breeders at least a year before they actually breed, mainly at two or three years old (Gaston 1990). Assuming that the recaptured bird was a non-breeder when first trapped, it was most likely 22—possibly 23—years old when recaptured in 2007. This estimate makes it the oldest Ancient Murrelet so far reported. Previously, the record for oldest was of a bird banded as a breeder in 1990—hence at least three years old at banding—and recaptured as a breeder at East Limestone island in 2003 (Charest *et al.* 2004). That bird was a minimum of 16 years old. Assuming that birds originally banded as non-breeding adults were two years of age at banding and that those banded as breeders were a minimum of three years old, the ages of the other birds re-trapped in 2007 ranged from five years to 15 years (Table 2).

Our observations on the age of recaptured Ancient Murrelets in 2007 (mean 12 ± 4 [SD] years; Table 2) was older than we anticipated given the previously estimated survival rate (Gaston 1990), but this situation probably occurred because the banding effort was intermittent between 1990 and 2007. Because nest boxes were placed on the island only in 1997, and because occupancy in the early years was low, most boxes have been occupied for fewer than seven years. Many natural burrows in the same area have been occupied since the 1980s at least. Consequently, there seems to be no reason to expect that birds captured in nest boxes would be older than average for the population.

Gaston (1990) estimated that 44% of departing chicks survive to return to the colony at two years. If we assume that annual survival thereafter is constant at 77%, the chances of a bird surviving to age 22 are 0.0024, or just over two in one thousand. Moreover, mortality increases as birds age, through an increase in senescence effects (Ricklefs 2000). Hence, the survival of this particular individual appears to be a rather rare event. It serves to illustrate, however, that maximum longevity in birds may extend well beyond that attained by the majority of the population.

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