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**Laysan Duck (*Anas laysanensis*) die-off event at Midway Atoll National Wildlife Refuge:
 Update August 22, 2008**

A total of 136 independent Laysan Ducks (*Anas laysanensis*) have been found dead at Midway Atoll National Wildlife Refuge from August 10-22, 2008, with at least 68% of them hatch year birds (Table 1, Figs. 1-3). This number excludes ducklings. A total of 17 ducklings have also been found dead (Table 1). The majority of the deaths (independent ducks) have occurred at the Catchment wetland, followed by the Sunset, Mauka/Makai and Parade and Communication wetlands (Table 1, Fig. 2). There is now a high degree of confidence that the Laysan Duck epizootic is due to botulism type C (T. Work, U.S. Geological Survey).

From the number of birds found dead and carcass state from August 10-21, T. Work (Veterinarian, U.S. Geological Survey) was able to construct an epidemic curve to help track this outbreak (Figs. 4, 5). T. Work estimates the epizootic began approximately 15 days ago.

On August 22, 2008, a total of 2 independent Laysan Ducks were found dead (Table 2). Both were fresh in terms of state of decomposition (Table 3). A total of 16 ducks are currently being held in the aviary (2 collected August 14, 1 collected August 15, 3 collected August 17, 1 collected August 19, 3 from August 20, and 6 from August 21). Birds collected from August 14-20 have improved – they are more alert and energetic.

There are currently 7 U.S. Fish and Wildlife Service staff (USFWS) and volunteers and 3 U.S. Geological Survey staff working at Midway Atoll to mitigate this epizootic. USFWS contractor, Chugach Industries Inc. and their sub-contractors provide additional support when requested.

Chugach is currently draining and cleaning the Catchment. Staff and volunteers are attempting to haze birds away from the Catchment during this process.

Tables

Table 1. Numbers of currently alive sick birds, dead young ducklings, older ducklings, unknown age and sex, hatch year (HY) unknown sex, after hatch year (AHY) females, AHY males, and all combined Laysan Duck deaths at Midway Atoll Aug 10-22, 2008. Total numbers do not include all previously alive sick birds or ducklings.

Wetland	Sick		Older Ducklings	Unknown Age/sex	HY		AHY females	AHY Male	Total Dead Birds
	Live Birds	Young Ducklings			Unknown Sex				
Catchment		5		7	40		7	1	55
Parade	3	2		1	6		6	1	14
Communication	1	2			11		2		13
Mauka/Makai				4	9			1	14
Tarmac				2	2		1		5
Radar Hill		2	2	1	1				2
Sunrise			2						0

Brackish					2	1	1	4
Sunset	1		1	2	12	2		16
Monument	10				10	2		12
Ball field			1					0
Rolando	1					1		1
All Combined	16	11	6	17	93	22	4	136

Table 2. Numbers of currently alive sick birds, dead young ducklings, older ducklings, unknown age and sex, hatch year (HY) unknown sex, after hatch year (AHY) females, AHY males, and all combined Laysan Duck deaths at Midway Atoll, August 22, 2008. Total numbers do not include all previously alive sick birds or ducklings.

Wetland	Sick				HY			Total Dead Birds
	Live Birds	Young Ducklings	Older Ducklings	Unknown Age/sex	Unknown Sex	AHY females	AHY Male	
Catchment					1			1
Parade								0
Communication								0
Mauka/Makai								0
Tarmac								0
Radar Hill								0
Sunrise								0
Brackish								0
Sunset					1			1
Monument								0
Ball field Makai								0
Rolando								0
All Combined	0	0	0	0	2	0	0	2

Table 3. Laysan Duck carcass state for August 22, 2008.

Carcass State	No. Independent Ducks
0-Fresh	2
2-Moderate decomposed (Some flesh but maggot ridden)	0
3-Severe decomposed (bone and feathers only)	0

Figures

Figure 1. Location of Laysan Island and the islands, wetlands, and 2004-2005 Laysan Duck release areas at Midway Atoll National Wildlife Refuge within the Hawaiian Archipelago (Reynolds et al. 2008).

Figure 2. All wetlands on Sand Island, Midway Atoll.

Figure 3. All wetlands on Eastern Island, Midway Atoll.

Figure 4. The number of Laysan Ducks affected by the current epizootic and Midway Atoll over time (T. Work, U.S. Geological Survey, unpub. data).

Figure 5. The number of Laysan Ducks affected by the current epizootic and Midway Atoll estimated from August 4 – August 21, 2008 (T. Work, U.S. Geological Survey, unpub. data).

Literature Cited

Reynolds, M. H., N. E. Seavy, M. S. Vekasy, J. L. Klavitter, L. P. Laniawe. 2008. Translocation and early post-release demography of endangered Laysan teal. *Animal Conservation* 11:160–168.

Work, T. M. 2008. Laysan duck die-off (Aug. 2008) laboratory findings update (8/16/08). August 16, 2008. Honolulu, Hawaii. U. S. Geological Survey, National Wildlife Health Center. 2 p.