M. Sallaberry A., *Seccion Zoologia, Museo Nacional de Historia Natural Casilla 787, Santiago, Chile.* Present address: *The Academy of Natural Sciences, 19th and the Parkway, Philadelphia, Pennsylvania 19103;* J. Valencia D., *Facultad de Ciencias Basicas y Farmaceuticas, Universidad de Chile, Casilla 653, Santiago, Chile.* Received 1 July 1984; accepted 16 June 1985.

American Black Duck Record from Korea.—On 18 June 1977, two American servicemen stationed at Kwang Ju Air Base in Korea found a dead bird, carrying a U.S. Fish and Wildlife Service band, in rice paddies 3 mi (4.8 km) west of Kwang Ju, and sent the band, number 767-65352, to the FWS.

According to the records of the FWS Bird Banding Laboratory, the band had been placed on an American Black Duck (*Anas rubripes*) at the Elm Hill Game Management Area 1 mi (1.6 km) east of Kerr Dam, Mecklenberg Co., Virginia, on 11 February 1969. The bird had been identified as an after-hatching-year male by the bander, D. B. Duffer, of the Virginia Commission of Game and Inland Fisheries. It was one of 15 American Black Ducks banded at that location on that day.

This appears to be the first report of the American Black Duck in Asia. The species is a casual migrant or visitant as far northwest in North America as central Alaska (Kessel and Gibson, Studies in Avian Biology no. 1, 1978; American Ornithologists' Union, Check-list of North American Birds, 6th ed., 1983). A bird in central Alaska might join a flock of Mallards (*Anas platyrhynchos*) or another species that migrates to Asia with some frequency. American Black Ducks have been reported as vagrants in northern Europe (A.O.U., op. cit.), so flights of some distance are not unprecedented.

I thank Kathleen Klimkiewicz of the Bird Banding Laboratory for making information about this band recovery available to me, and the Virginia Commission of Game and Inland Fisheries for permission to publish this report of its band recovery.—Richard C. Banks, *Denver Wildlife Research Center, U.S. Fish and Wildlife Service, National Museum of Natural History, Washington, D.C. 20560.* Received 17 Feb. 1985; accepted 29 May 1985.

Comments on Preparing Owl Pellets by Boiling in NaOH.—I have used Schueler's (Bird Banding 43:142, 1972) NaOH-boiling method to prepare approximately 20 kg of owl pellets and find it superior in speed and accuracy to manual sorting. In my experience a few slight modifications of Schueler's recommended procedure are desirable. Schueler recommends decanting the NaOH solution off pellet material "as soon as all of the hair and feathers are dissolved." This is a critical point. Hair and feathers are separated from bones within 5 min after the solution begins to boil, and further boiling often damages bones. I have found that it is best to use a 2% rather than a 3% solution and to pour it off before all hair and feathers are dissolved when preparing pellets containing very small bones. Even such a short boiling period in a dilute solution loosens hair and feathers enough that they can be removed by washing with water. This modification has another virtue: it does not corrode aluminum band numbers enough to make them illegible, so that one does not need to sort pellets manually to detect aluminum bands. Detecting bands by manual sorting defeats the time-saving quality of Schueler's method. I recovered 30 aluminum ear tags from my pellets, 14 after they went through the boiling process, and all identification numbers were still readily legible when the NaOH treatment was restricted to the short time periods encouraged here. Boiling longer, however, would indeed necessitate prior removal of metal tags.—William S. Longland, *Department of Biology, University of California, Riverside, California 92521.* Received 8 Jan. 1985; accepted 30 Apr. 1985.

Water Loss from Pipped Eggs of Two Species of Noddies.—Rahn et al. (1976) reported that water loss from eggs of two congeneric noddies (Black Noddy, *Anous minutus* and Brown Noddy, *A. stolidus*), over the incubation period, represented 16% and 14% of the mass of the freshly-laid eggs. These values likely underestimate water loss from the eggs because they did not include the accelerated water loss that occurs from pipped eggs.

TABLE 1. Fresh-egg mass (M), egg length (l), egg width (w), daily rate of water loss ($\dot{M}_{H_2O}$), egg temperature (T_{egg}), water-vapor pressure of the microclimate of the incubated egg ($P_{H_2O,nest}$), shell mass (M_{sh}), water-vapor conductance of the shell (G_{H_2O}), and the pore density of the shell (P_D), in the Black Noddy and Brown Noddy. $\bar{x}$ = mean; SD = standard deviation; n = number of eggs.

	Black Noddy			Brown Noddy		
	$\bar{x}$	SD	n	$\bar{x}$	SD	n
M, g	24.84	1.54	107	40.12	4.27	106
l, mm	45.18	1.43	109	53.35	2.05	106
w, mm	31.87	0.95	110	37.42	1.42	106
$\dot{M}_{H_2O}$, mg/day						
Unpipped eggs	105.5	18.6	22	139.1	20.5	19
Star-fractured eggs	352.2	89.7	42	466.4	99.3	14
Internally-pipped eggs	449.4	111.9	17	640.0	82.5	5
Eggs with a pip-hole	671.3	93.9	8	763.3	55.1	3
T_{egg}, °C						
Implanted thermistor	34.7	0.7	6	35.4	0.5	4
Needle thermistor	35.1	0.3	3	35.7	0.2	3
$P_{H_2O,nest}$, torr	23.2	2.1	10	21.7	1.7	6
M_{sh}, g	1.37	0.17	23	2.66	0.23	34
G_{H_2O}, mg/day torr	4.53	0.75	6	5.51	0.71	5
P_D, pores/cm^2	64.0	19.0	12	71.1	24.6	3

In two other tropical terns, water loss from pipped eggs amounted to 30.8% (Gray-backed Tern, *Sterna lunata*; Whittow et al. 1985) and 41.6% (White Tern, *Gygis alba*; Pettit et al. 1981) of the total water loss from the eggs. The aims of the work reported here were to determine (1) water loss from pipped eggs of the noddies, (2) the pore structure of their egg shells, which has a considerable bearing on the water loss from the egg (Rahn and Ar 1980), and (3) the egg temperature of the Brown Noddy during incubation.

Study area and methods.—The study was conducted on Tern Island (23°52′N, 166°17′W), French Frigate Shoals, Northwestern Hawaiian Islands. Water loss from naturally incubated pipped and unpipped eggs was measured by weighing the eggs on two or more occasions using a torsion balance. Central egg temperature was measured either by means of an implanted thermistor connected to a Yellow Springs Instrument Co. (YSI) Telethermometer (Model 46 TUC) or by the rapid insertion of a needle thermistor probe (Model 524) also connected to a Telethermometer. The greatest length and width of the eggs were measured by means of a dial caliper. Water-vapor conductance of the shell (G_{H_2O}) was measured by weighing eggs in a desiccator (Ar et al. 1974), and egg shell mass was determined after drying the shells in a desiccator. The numbers of pores in the shells were counted as described by Roudybush et al. (1980). Water-vapor pressure in the nest ($P_{H_2O,nest}$) was measured by diffusion hygrometry (Rahn et al. 1977).

Results and discussion.—The rate of water loss from pipped eggs was considerably greater than that from unpipped eggs in both species (Table 1). Highest rate of water loss was from eggs with pip-holes. Egg temperatures recorded instantaneously were slightly higher than those measured by means of implanted thermistors and temperature of the Brown Noddy's egg was somewhat higher than that of the Black Noddy.

Egg dimensions, water loss from unpipped eggs (M_{H_2O}), and water-vapor conductance values determined in this study were similar to those reported by Rahn et al. (1976). Mean egg temperature of the Black Noddy (34.7–35.1°C) reported here is considerably lower than that (37.4°C) obtained by Rahn et al. (1976), possibly reflecting the different conditions at Enewetak (Rahn et al. 1976) and the Northwestern Hawaiian Islands (present study). Water-vapor pressure of the microclimate of the incubated egg was slightly higher in the Black Noddy, which builds a substantial tree nest, than in the Brown Noddy which lays its eggs directly on the ground (Table 1). $P_{H_2O,nest}$ for the Black Noddy was somewhat lower than at Enewetak (25 torr; Rahn et al. 1976).

From pore densities (Table 1) and total egg surface area (calculated from the fresh-egg mass by the equation of Tullet and Board 1977), the total number of pores in the egg shell (n) can be estimated. Estimated numbers of pores for the Black and Brown noddies were 2246 and 3425. These figures are 42.7 and 51.2% respectively of the values predicted by Hoyt et al. (1979) for eggs with fresh-egg mass of the two noddies. Pore numbers were much closer (84.0%, Black Noddy and 91.4%, Brown Noddy) to predictions for seabirds made by Whittow (1984). From pipped chronology (Pettit and Whittow 1983), and measured rate of water loss from pipped eggs (Table 1), the total water loss from pipped eggs may be calculated. In the Black Noddy, cumulative water loss from pipped eggs (star-fracture to hatch) was 2300 mg. The cumulative water loss from unpipped eggs of the Black Noddy was 3081 mg. Thus, total water loss from the egg over the entire incubation period was 5381 mg—21.7% of the fresh-egg mass, a considerably higher figure (16%) than that reported earlier. Total water loss between star fracture of the shell and hatching (2300 mg) represented 42.7% of the total water loss from the egg over the entire incubation period (5381 mg), although this interval represented only 15.9% of the incubation time. In the Brown Noddy, total water loss from the egg represented 16.9% of the fresh egg mass, somewhat higher than that reported previously (Rahn et al. 1976). Total water loss from pipped eggs was 36.5% of the total water loss over the entire incubation period, while duration of the star-fracture to hatch interval was 12.9% of the incubation period.

Thus, inclusion of the augmented water loss from pipped eggs has resulted in a higher value for the water loss from the egg as a percentage of the fresh-egg mass, particularly in the Black Noddy.

Summary.—In the Black Noddy total water loss from the egg during incubation represented 21.7% of the mass of the freshly-laid egg, and 42.7% of the water loss occurred between the initial star-fracture of the shell and the hatching of the chick. In the Brown Noddy, the water loss was 16.9% of fresh-egg mass, the star-fracture to hatch interval accounting for 36.5% of the total.

Acknowledgments.—This work was supported by grants from the National Science Foundation (PCM 76-12351 A01) and the Sea Grant College Program (N1-R/14). Thanks are due to the U.S. Fish & Wildlife Service for granting permits and for assistance on Tern Island. We are grateful also to the Department of Land and Natural Resources, State of Hawaii, for permission to work at French Frigate Shoals.

LITERATURE CITED

Ar, A., C. V. Paganelli, R. B. Reeves, D. G. Greene, and H. Rahn. 1974. The avian egg: water vapor conductance, shell thickness, and functional pore area. Condor 76: 153–158.

Hoyt, D. F., R. G. Board, H. Rahn, and C. V. Paganelli. 1979. The eggs of the Anatidae: conductance, pore structure, and metabolism. Physiol. Zool. 52:438–450.

Pettit, T. N., and G. C. Whittow. 1983. Embryonic respiration and growth in two species of noddy terns. Physiol. Zool. 56:455–464.

———, G. S. Grant, G. C. Whitow, H. Rahn, and C. V. Paganelli. 1981. Respiratory gas exchange and growth of White Tern embryos. Condor 83:355–361.

Rahn, H., R. A. Ackerman, and C. V. Paganelli. 1977. Humidity in the avian nest and egg water loss during incubation. Physiol. Zool. 50:269–283.

———, and A. Ar. 1980. Gas exchange of the avian egg: time, structure and function. Am. Zool. 20:477–482.

———, C. V. Paganelli, I. C. T. Nisbet, and G. C. Whittow. 1976. Regulation of incubation water loss in eggs of seven species of terns. Physiol. Zool. 49:245–259.

Roudybush, T., L. Hoffman, and H. Rahn. 1980. Conductance, pore geometry and water loss of eggs of Cassin's Auklet. Condor 82:105–106.

Tullett, S. G., and R. G. Board. 1977. Determinants of avian eggshell porosity. J. Zool. (London) 183:203–211.

Whittow, G. C. 1984. Physiological ecology of incubation in tropical sea birds. Studies in Avian Biology, No. 8.

———, G. S. Grant, and E. N. Flint. 1985. Egg water loss, shell water-vapor conductance and the incubation period of the Gray-backed Tern (*Sterna lunata*). Condor. 87:269–272.

T. N. Pettit and G. C. Whittow, *Department of Physiology, John A. Burns School of Medicine, University of Hawaii, Honolulu, Hawaii 96822.* Received 20 Aug. 1984; accepted 17 Apr. 1985.

Responses of Neighboring Conspecifics to Typical and Atypical Songs of a Rufous-sided Towhee.—The songs of passerines may communicate several kinds of information including sex, reproductive status, and species of the singer. Specific recognition depends on song features that are relatively constant among individuals of a species. Occasionally, however, individuals of species not normally considered mimics may imitate the song of another species. Such apparent mistakes in song learning have been reported for a number of species, including the Rufous-sided Towhee (*Pipilo erythrophthalmus*) (Borror, Wilson Bull. 73:57–78, 1961; Borror, Wilson Bull. 89:477–480, 1977; Richards, Auk 96:688–693, 1979). The atypical songs that result from mistakes in song learning may not possess those features necessary for specific recognition and, therefore, conspecifics may not respond to them. If, however, conspecifics learn to associate these imitations with the

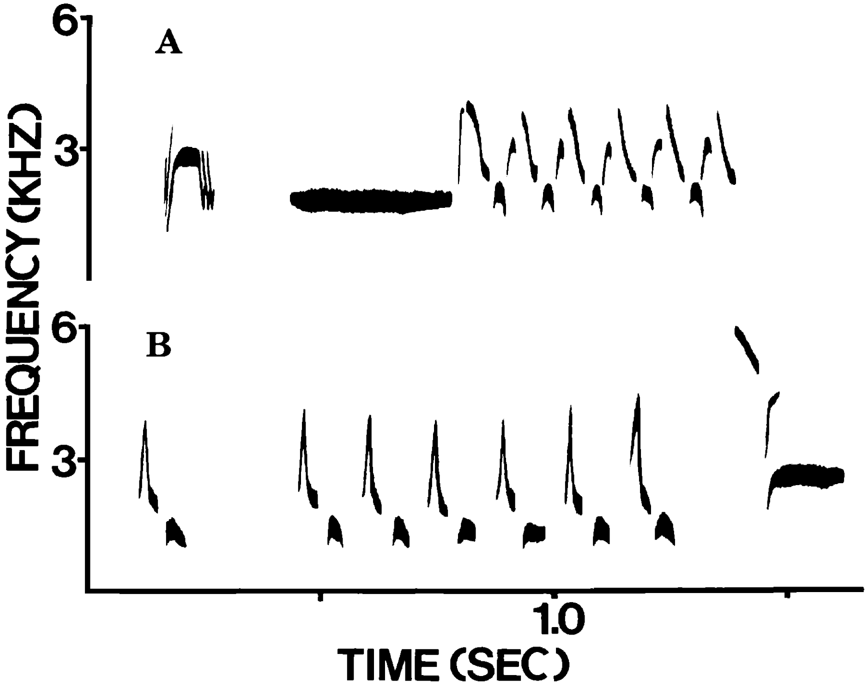

Figure 1. (A) Typical and (B) atypical songs of a Rufous-sided Towhee.