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INTENSE NATURAL SELECTION IN A POPULATION OF CLIFF SWALLOWS

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In the afternoon of 29 May 1992, we salvaged 35 dead adult Cliff Swallows (*Hirundo pyrrhonota*) from beneath a bridge eight kilometers south of Sitka, Clark County, Kansas. The Cliff Swallow uses this bridge annually for nesting (pers. obs.). The dead adults were weighed, wing chord measured, sex determined, and checked for obvious parasites. The specimens were preserved as skeletons in the Royal Ontario Museum.

The weather in May 1992 was unseasonably cold in the Great Plains for several days with night temperatures dropping to below freezing locally in western Kansas just a few days prior to the discovery of the dead swallows. The dead swallows averaged 14.8 g (range 13.5-17.5 g) in mass (there was no significant difference between sexes [$F= 1.6$, $p> 0.05$]). This average compares to 21.6 g (range 17.5-26.7 g) of 88 Cliff Swallows from a population in California (Dunning 1993). The birds in California are of the same subspecies as Kansas and have approximately the same wing length (Behle 1976), and are probably about the same size. The pectoral muscle mass of the birds we salvaged seemed substantially reduced, and there was little if any food in the stomachs. The low weights, reduced muscle mass, and lack of food indicate they died of starvation. The ground beneath the bridge was littered with the eggs and newly-hatched nestlings of this species, apparently jettisoned from nests. This indicated widespread nesting failure and is an additional evidence of stress on the adults.

We found that, of the 35 birds collected, 24 were females and only 11 were males. There is no reason to suppose the sex ratio of the population nesting under the bridge was biased to females. This indicates that mortality was particularly intense against females, perhaps because they were under relatively greater stress having just completed egg laying activity. Since hatching had just commenced, males had not yet been stressed by feeding young.

It has previously been found that such bouts of intense natural mortality have resulted in selection in wild populations of birds (Boag and Grant 1981, Bumpus 1899, Johnston et al. 1972). To test for this, we measured the wing lengths of 26 (16 female; 10 male) museum specimens that had been collected in Kansas (specimens in The University of Kansas Museum of Natural History). We assume that most or all of these specimens had been from random sampling of the wild populations; 15 had been collected in Clark Co., five from Barber Co., four from Douglas Co., one from Anderson Co., and one from Labette Co.

Our results showed that there were no significant differences in average

wing length either between sexes or between the birds found dead and those previously collected. The interaction between sex and sample likewise was not significant. The wing length did not vary either between sexes ($F=1.05$, $p > 0.05$) or samples ($F=1.42$, $p > 0.05$), and they are small (2.9 - 5.9). A power analysis indicates that given the averages and variances in these samples, a sample of more than 600 males would have been required to show that the observed mean difference was significant ($P, < 0.05$). We have no evidence either of directional or stabilizing selection.

Five of the 35 birds that we salvaged had large parasitic cestodes in their guts. The number infested may be an underestimate as we did not examine the specimens closely until we were impressed with the frequency of parasitized individuals. We do not know what levels of parasitism are to be expected in this population, but such a high rate of conspicuous infestation in natural populations of songbirds is, in our experience, unusual.

We feel that this "negative" result is based on sufficient evidence to be of biological significance. We suggest that such bouts of selection against swallows are sufficiently frequent to have selected for all swallows to be the optimal size. When there are extreme conditions, it is swallows that are under some additional stress such as egg production or high parasite loads, that puts them at a disadvantage, rather than ones that are of a suboptimal size (perhaps because they are all effectively the same size), that perish.

We would like to thank Charles Brown and Richard Johnston for their comments.

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A Late Fall Flock of Mountain Plovers in Kearny County, Kansas.

About mid-afternoon on 24 October 1993, we noticed a flock of shorebirds flying over a wheat field, near U. S. Highway 50, four miles east of the Kearny/Hamilton County line, in Kearny County. While observing the flock through a 30X spotting scope, two more flocks were seen flying 30 to 50 feet above the wheat field. The flocks ranged from 15 to 40 birds each. We were able to positively identify them as Mountain Plovers (*Charadrius montanus*). After all the flocks settled we obtained a count of 122 plovers.

Thompson and Ely (Thompson, Max C. and C. Ely. 1989. *Birds in Kansas, Vol. I*. Univ. Kansas Mus. Nat. Hist. Pub. Educ. Series No. 11, 404 pp), report the latest fall date for the species was 16 September, but indicated that the species probably leaves the state much later. Andrews

and Righter (Andrews, Robert and Robert Righter. 1992. Colorado Birds: A reference to their distribution and habitat. Denver Mus. Nat. Hist., 442 pp) show the plover is still in good numbers in Colorado until the last weekend in September with the latest record occurring during the last week of October. Baumgartner et al. (Baumgartner, Frederick M. and A. Marguerite Baumgartner 1992. Oklahoma Bird Life. Univ. Oklahoma Press, 443 pp) list two late records for Oklahoma: 31 October 1958 in Woodward County; and 5 October 1986 near Boise City, Cimarron County. Thomas G. Shane and Sara J. Shane, 1706 Belmont Place, Garden City, Kansas 67846.

Evaluation of an Historical Egg Set of the Passenger Pigeon in Kansas.

D. W. Johnston (1991. Joseph Edward Gould (1866-1945). Early Virginia oologist and ornithologist. Raven 62:59-62) stated that J. E. Gould, an oologist, listed in his ledger that a fresh egg of the Passenger Pigeon (*Ectopistes migratorius*) was collected on 2 July 1889 in Franklin County, Kansas. The Gould Collection is now archived at the Charleston Museum (ChM). We have verified the egg (ChM 1991.13.016) is that of a Passenger Pigeon, which was also previously examined by D. Anderson and A. Wetmore (ChM Archives). Anderson took the following measurements: L x W, 3.93 cm x 2.8 cm; thickness, 0.22 mm; weight, 1.21 g; shape, subelliptical.

Gould spent the spring and early summer of 1889 collecting many egg sets in the vicinity of Columbus, Franklin County, Ohio (catalog, pers. exam.), before entering Ohio State University that September, when 23 years old (Johnston 1991). He collected egg sets at Columbus on 28 June and 21 July, the nearest dates to 2 July, when the Passenger Pigeon egg was collected in Kansas. It is possible that Gould could have been in Kansas on 2 July. Contradictory entries in his ledger suggest, however, that Gould did not collect this Passenger Pigeon egg. Gould also listed in his ledger that an egg set of a Western Kingbird (*Tyrannus verticalis*) was collected in Franklin County on 30 May 1889, the only other egg set collected in Kansas that year (Gould's catalog, pers. exam.). However, on the same date in Sugar Grove, Fairfield County, Ohio, Gould listed egg sets of the Cliff Swallow (*Hirundo pyrrhonota*), and Indigo Bunting (*Passerina cyanea*). Gould could not have been collecting egg sets in Kansas and Ohio on the same day. The individual who collected the Western Kingbird egg set, however, is unknown.

The egg-laying date for the Passenger Pigeon nest record is also late (Schorger Arlie W. 1955. The Passenger Pigeon; its natural history and evolution. Univ. Wisconsin Press, Madison 429 pp), though within the known range. We suspect that this Passenger Pigeon egg probably did come from Kansas, although Gould may have purchased it, without complete documentation from its previous owner.

The only other breeding record of the Passenger Pigeon for Kansas was reported by Goss in the Neosho Valley, Woodson County, which is near Franklin County. Goss stated a few Passenger Pigeons apparently bred occasionally in the middle of April sometime before 1886. He collected three specimens near Neosho Falls on 14 April 1876 (see Schorger. 1955; Thompson, Max C. and C. Ely. 1989:315. Birds in Kansas. Vol. 1, Univ. Kansas Mus. Nat. Hist. Pub. Educ. Series no. 13). We have located only one

specimen, a male (KU 72216), and no breeding data are associated with it. In our opinion, as Goss did not document any direct breeding evidence, e.g., an active nest, an unequivocal breeding record of the Passenger Pigeon from Kansas still does not exist.

We thank D. Anderson, University of Wisconsin, Madison, for taking measurements of the Passenger Pigeon egg. Dr. M. Robbins, Collections Manager, Ornithology, University of Kansas Museum of Natural History provided information about *Ectopistes* specimens in his care. We also thank J. L. Zimmerman for critical comments on the manuscript.

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Western Grebes Nesting at Cheyenne Bottoms Wildlife Area. On 5 September 1993, 1-2 Western Grebe (*Aechmophorus occidentalis*) young were observed riding on the back of one of a pair of adults at Cheyenne Bottoms Wildlife Area (CBWA) (Grzybowski, J. A. 1994. Southern Great Plains Region. American Birds 48: 124). This was the first record of Western Grebes nesting in Kansas. Western grebes have been recorded in midsummer in Kansas (Thompson, Max C. and C. Ely. 1989. Birds in Kansas, Volume 1. Univ. Kansas Mus. Nat. Hist. Pub. Educ. Series no. 11). However, until 1993, the species had never been known to nest in the state, although they have been recorded as nesting in Colorado (ibid.). On 6 July 1994, I observed 4 adults and 4 recently hatched Western Grebes at CBWA. After my initial sighting of these grebes, I and other CBWA personnel observed them approximately weekly through 4 October. I usually counted 4 adults and 4 young arranged as 2 pairs, each with a brood of 2. On 9 July, Charlie Swank, of the Kansas Department of Wildlife and Parks, and Mike Speers observed 3 pairs, a single adult, and broods of 2, 2, and 1 young. On 6 August, a group of bird watchers observed 11 adults, 2 small young and 2 young nearly grown. Two adults were observed calling and courting. After 20 September, I usually counted 5-6 individuals. All Western Grebes were seen in Pool 1B, in which water depths ranged from 45.7 to 76.2 cm during the observation period. A relatively narrow band of narrowleaf cattail (*Typha angustifolia*) paralleled the dike along the northern and western edges of Pool 1B, providing suitable nesting habitat.
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