

support for the programme came from the Canadian Wildlife Service and from the Natural Sciences and Engineering Research Council of Canada. Peter Blancher kindly commented on the manuscript.

#### LITERATURE CITED

- BIRKHEAD, T. R., J. D. BIGGINS, AND D. N. NETTLESHIP. 1980. Non-random, intra-colony distribution of bridled Guillemot *Uria aalge*. *J. Zool. Lond.* 192: 9-16.
- BIRKHEAD, T. R., AND D. N. NETTLESHIP. 1984. Allo-parental care in the Common Murre (*Uria aalge*). *Can. J. Zool.* 62:2121-2124.
- GASTON, A. J., L. N. DE FOREST, AND D. G. NOBLE. 1993. Egg recognition and egg-stealing in Thick-billed Murres *Uria lomvia*. *Anim. Behav.* 45:301-306.
- GASTON, A. J., AND D. N. NETTLESHIP. 1981. The Thick-billed Murres of Prince Leopold Island. *Can. Wildl. Serv. Monogr.* 6.
- HARRIS, M. P., AND T. R. BIRKHEAD. 1985. Breeding ecology of the Atlantic Alcidae. Pages 155-204 in *The Atlantic Alcidae* (D. N. Nettleship and T. R. Birkhead, Eds.). Academic Press, London.
- PERRY, R. 1940. Lundy, isle of puffins. Lindsay Drummond, London.
- SCOTT, J. M. 1990. Offshore distribution patterns, feeding habits, and adult-chick interactions of the Common Murre in Oregon. *Stud. Avian Biol.* 14:103-108.
- TSCHANZ, B. 1959. Zur Brutbiologie der Trottellumme (*Uria aalge aalge*, Pont.). *Behaviour* 14:1-100.
- TSCHANZ, B. 1979. Helfer-Beziehungen bei Trottellummen. *Z. Tierpsychol.* 49:10-34.
- WANLESS, S., AND M. P. HARRIS. 1985. Two cases of Guillemots *Uria aalge* helping to rear neighbor's chicks on the Isle of May. *Seabird* 8:5-8.

Received 2 November 1993, accepted 27 May 1994.

*The Auk* 112(2):510-511, 1995

### Reinterpretation of the Probable Parentage of a Hybrid Wood-warbler (*Seiurus* × *Dendroica*)

KENNETH C. PARKES

Carnegie Museum of Natural History, 4400 Forbes Avenue,  
Pittsburgh, Pennsylvania 15213, USA

An immature male wood-warbler netted north of Ocean City, Maryland, on 17 September 1965 was described by Short and Robbins (1967), and identified by them as "an apparent hybrid Northern Waterthrush (*Seiurus noveboracensis*) × Blackpoll Warbler (*Dendroica striata*)."<sup>1</sup> I have examined this specimen (U.S. National Museum no. 481595) and agree that one of the parents was undoubtedly a Northern Waterthrush. However, I believe that the characters displayed by the hybrid agree more with a hypothesis of parentage by a Cape May Warbler (*Dendroica tigrina*) rather than a Blackpoll Warbler.

Short and Robbins (1967) briefly considered two species of *Dendroica* other than *D. striata* as possible parents of the hybrid, namely the Palm Warbler (*D. palmarum*) and Cape May Warbler. They stated that the hybrid "resembles an immature Cape May Warbler in breast streaking and breast color, but the hybrid's larger size, differently shaped bill, lack of neck markings, and absence of any indication of a yellow rump patch seem to rule out that species as one of the parents." I see no reason to invoke the size of the hybrid as an indication of the *Dendroica* parentage; although the Blackpoll Warbler is indeed larger than the Cape May Warbler, there is no reason not to attribute the large size of the hybrid to the waterthrush

parent. I would consider the bill shape of an intergeneric hybrid to be unpredictable, as nothing is known about the heritability of bill characters. As for the rump patch, there is no assurance that any such character would necessarily be inherited in a hybrid and, in fact, in many Cape May Warblers in first basic plumage the rump patch is not yellow, but a yellow-green only slightly brighter than the back color.

In all plumages, Cape May Warblers have at least a hint of a yellow or yellowish area just posterior to the ear coverts (well illustrated in plate 6 of Curson et al. 1994). This is presumably the area of the bird to which Short and Robbins (1967) referred in stating that the hybrid lacked "neck markings," but in fact there is a distinct yellowish area at the sides of the neck in the hybrid specimen, contrary to the statement by Short and Robbins. I regard this as one of the arguments in favor of the *Dendroica* parent having been *D. tigrina*.

Other characters favoring *D. tigrina* over *D. striata* are as follows. The upper tail coverts have vague but obvious dark centers, positioned like the black feather centers of *D. tigrina*, but absent or rare in *D. striata*. The crown markings resemble those of *D. tigrina*; again, these are rare in *D. striata*. The vague marks on the back resemble the broader black marks of *D. tigrina*

rather than the linear (when present) back markings of *D. striata*. The general somewhat orangeish color of the bird seems more like an intermediate with the bright yellow of *D. tigrina* rather than the definitely greenish yellow of *D. striata*. Finally, Short and Robbins (1967) themselves called attention to the resemblance of the hybrid to Cape May Warblers in breast streaking, breast color, and spotting of the malar area and sides of throat.

Short and Robbins (1967) included a long discussion of white rectrix spots in wood-warblers, pointing out that such spots are present in a small minority of specimens of the genus *Seiurus*. As virtually all members of *Dendroica* have such spots, it seems unnecessary to link the fact that the hybrid has small white spots on the outer rectrices to the presence of these in a few Northern Waterthrushes. The caption of their figure 1, illustrating the patterns of the outer rectrices of 12 species of parulid plus the hybrid, does not specifically state that these were drawn from males in first basic plumage. The tail spots in *Dendroica* are variable in size and pattern, depending on both age and sex (smallest in immature females) and also individually variable, as mentioned in connection with Blackpoll Warblers by Short and Robbins (1967:540). In examining specimens of Cape May Warblers taken

at random from the large series in Carnegie Museum of Natural History, I found that definitively-plumaged males had significantly more white on their outer rectrices than shown in the example for this species in the figure in Short and Robbins (1967). Males in first basic plumage had less white, but in none was the shape of the basal edge of the white spot as shown in the figure. I judge the tail spots of the hybrid to be irrelevant to a consideration of its parentage.

Short and Robbins (1967) pointed out that the Blackpoll Warbler is widely sympatric with the Northern Waterthrush, but the same is true of the Cape May Warbler. I believe that the weight of the evidence favors *Dendroica tigrina* rather than *D. striata* as a parent of USNM 481595.

#### LITERATURE CITED

- CURSON, J., D. QUINN, AND D. BEADLE. 1994. Warblers of the Americas. Houghton Mifflin, Boston.  
 SHORT, L. L., JR., AND C. S. ROBBINS. 1967. An intergeneric hybrid wood warbler (*Seiurus* × *Dendroica*). *Auk* 84:534-543.

Received 7 November 1994, accepted 5 February 1995.

*The Auk* 112(2):511-514, 1995

## Mammalian Irritants as Chemical Stimuli for Birds: The Importance of Training

J. RUSSELL MASON AND LARRY CLARK

USDA/Animal and Plant Health Inspection Service, Animal Damage Control,  
 Denver Wildlife Research Center, % Monell Chemical Senses Center,  
 3500 Market Street, Philadelphia, Pennsylvania 19104, USA

Although the morphological organization of the peripheral trigeminal system in birds is not very different from that found in mammals (Dubbeldam and Veenman 1978), marked functional differences appear to exist (Kare and Mason 1986, Mason et al. 1989, Norman et al. 1992). For example, birds rarely avoid substances that are irritants for mammals, even though the avian trigeminal system is responsive to chemical stimuli (Walker et al. 1979, Mason and Silver 1983). Rock Doves (*Columba livia*), Red-winged Blackbirds (*Agelaius phoeniceus*), European Starlings (*Sturnus vulgaris*), and Gray Partridges (*Perdix perdix*) are indifferent to 10,000 ppm ammonia (Soudek 1929, Mason and Otis 1990). Parrots (*Amazona* spp.; Mason and Reidinger 1983a), Rock Doves (Szolcsanyi et al. 1986), Red-winged Blackbirds (Mason and Maruniak 1983), European Starlings (Mason et al. 1991a), House Finches (*Carpodacus mexicanus*; Norman et al. 1992), and Cedar Waxwings (*Bombycilla cedrorum*; Norman et al.

1992) are indifferent to 10,000 ppm or more of capsaicin, the pungent principle in *Capsicum* peppers. Red-winged Blackbirds and European Starlings are indifferent to 10,000 ppm gingerol and zingerone, the irritants present in ginger (*Zingiber officinale*), as well as piperine, the active ingredient in black pepper (*Piper nigrum*; Mason and Otis 1990).

The indifference that birds exhibit towards mammalian irritants might reflect insensitivity. Alternatively, indifference might indicate a relatively high tolerance for these substances independent of sensation. The present experiment was designed to address this issue by investigating whether birds could be trained to avoid mammalian irritants.

*Methods.*—European Starlings were decoy-trapped in May 1993 near Sandusky, Ohio, and air-shipped to the Monell Chemical Senses Center. Upon arrival, the birds were individually caged (61 × 36 × 41 cm) under a 11:13 h light : dark cycle (lights on 0700–2000