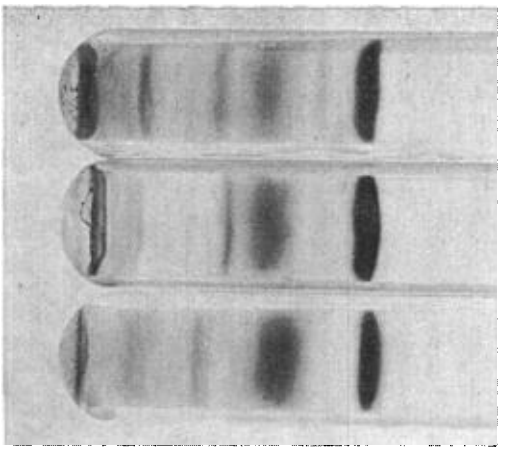

FIGURE 1. Acrylamide gel electrophoresis patterns of: *Catharus aurantiirostris* (1), *Zeledonia coronata* (2), and *Myioborus torquatus* (3).

In both suboscines (Feduccia, Wilson Bull., in press) and the oscines (see fig. 1) there is an overall similar pattern, but a great deal of variation in minor bands, which may be due to such factors as polymorphisms, age, sex, health, etc. In general, the plasma protein electrophoretic profiles appear to be of little use to the systematist interested in the evolution of the higher categories of birds.

An example which justifies the above conclusion is seen in figure 1. There has long been dispute as to the exact systematic position of the Wren-thrush (*Zeledonia coronata*). It has generally been placed either in the Turdidae or in a separate family, Zeledoniidae, near the thrushes. Sibley (Postilla 125:1, 1968) has shown that the egg-white proteins tend to negate turdid affinities of the Wren-thrush, and advocates its placement within the "nine-primaried" assemblage, possibly with the wood warblers. The plasma protein electrophoretic patterns of *Catharus* (a thrush), *Zeledonia*, and *Myioborus* (a wood warbler) are shown in figure 1. They are amazingly similar and reveal nothing about the relationships among these birds.

Disc acrylamide electrophoresis of avian plasma proteins confirms earlier results from starch gel electrophoresis (Sibley and Hendrickson, op. cit.). Although the plasma proteins may be of little use in resolving relationships among the higher categories of birds, they may prove to be of great use at the species level.

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SOCIAL STIMULATION MODIFIES THE FEEDING BEHAVIOR OF THE AMERICAN ROBIN

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Little attention has been given to the details of feeding behavior which generates omnivory in animals. It should be of interest to determine the way in which environmental stimuli act, within the context of genetically determined morphological and behavioral attributes, to produce a varied diet in one species and a monotonous diet in another. Toward this end, the following observation is offered.

The characteristic foraging style of the American Robin, *Turdus migratorius*, is one of the most familiar animal behavior patterns. Robins feed on insects, earthworms, and fallen fruits at the surface of the ground, on insects gleaned from bushes and trees, and on fruits in bushes and trees where these can be reached from convenient perches. Robins which overwinter on the campus of the University of California, Berkeley, are frequently observed using all of these foraging methods, with ground foraging (as described by Heppner, Condor 67:247, 1965) most conspicuous.

Each January and February, flocks of Cedar Waxwings, *Bombycilla cedrorum*, become common in coastal central California. One such flock of about 50 birds was first seen on the University of California campus on 18 January 1968. At that time the birds were actively feeding on the berries of an ornamental juniper tree. Individual waxwings would leave a perch, hover by the tree to remove a berry, and then fly to a perch to swallow the berry. The close flock formation and active feeding made the waxwings quite conspicuous. At this time I noticed two robins fly to the same juniper tree and begin to feed in a manner identical to the waxwings; berries were taken while the robins attempted to hover in front of the tree. After taking a number of berries in this manner, the robins flew to another tree and perched with part of the waxwing flock.

I had observed robins using this feeding method on two prior occasions in early 1967, once on juniper berries and once on the fruit of toyon, *Heteromeles arbutifolia*. Similar behavior was subsequently observed on 24, 25, and 26 January 1968 on toyon. In each case it occured in the midst of a flock of feeding Cedar Waxwings. Thus, it appeared that this behavior was initiated by interspecific contagion or social stimulation.

Recently Paulson (Auk 86:759, 1969) described several cases of commensal feeding in grebes in which the feeding efficiency of the grebes was enhanced by association with feeding ducks. In the present case the waxwings called attention to the food but did not contribute directly to the efficiency of feeding by robins. It is advantageous for an omnivorous species such as the robin to remain flexible in feeding behavior. The ability to respond to social stimulation allows the robins to exploit temporarily abundant food sources that are discovered by other species, and thus eliminate the need to sample continually all parts of the habitat. It would be maximally advantageous for the robins to continue to exploit the newly discovered food source after the species that initiated its utilization had left the area (as do the migratory waxwings). I have never seen robins remove berries

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while on the wing except when in the presence of waxwings; however, they remove berries in a more conventional manner after the waxwings have departed. Only a detailed study of the feeding behavior and diet of robins before and after the passage of waxwings would indicate if this contact results in persisting modification of the behavior of the robins.

If responsiveness to social stimulation is, in fact, a regular feature of the biology of the robin, other observers should be able to cite additional cases in which the behavior of robins has been modified by contact with other species of birds.

I thank O. P. Pearson, F. A. Pitelka, and students in the ecology group of the University of California for comments on the significance of these observations.

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OCCURRENCE AND NESTING OF BLACK TERNS IN SOUTHWESTERN BRITISH COLUMBIA

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In early June 1963 Kurt-Eric Eiche and Bill Schmalz noticed a pair of Black Terns (*Chlidonias niger*) flying over a marshy area at the south end of Pitt Lake, about 22 mi. W of Stanley Park, Vancouver, British Columbia. In late June the same observers located an adult Black Tern sitting on a small nest among cattails there. Later the nest was checked and found to contain two eggs.

The same year, on 13 July, Werner and Hilde Hesse and Dr. Paul MacKenzie, using a 30× telescope, watched two adult Black Terns feeding young on a nest (presumably the same one) approximately 90 ft from the dyke. The nest, a low platform of marsh vegetation, was floating in about 2 ft of water among emergent marsh vegetation.

On 28 May 1964 Robert E. Luscher recorded two pairs of Black Terns in the same area at Pitt Lake and on 20 June two nests were located. One nest contained two eggs, the other, three. On 4 July one nest had two small young, the other still contained the complete clutch of three eggs. Color photographs of both nests were taken by Luscher on his visit, as well as by Eiche on 19 July 1964.

No nests were located in 1965 but Luscher observed two pairs of Black Terns in the Pitt Lake area on 5 June 1965.

There were no 1966 sightings for the Pitt Lake area but Black Terns (never more than three) were regularly reported at the Ladner sewage pond (about 15 mi. S of Stanley Park) by Gwen DeCamp, Jack Hustead, and Roy Phillips from late May to late July in 1966.

There were six reports of Black Terns in the Vancouver area in 1967. Madelon Schouten recorded a Black Tern at Iona Island just north of the Vancouver International Airport on 3 June and 3 September. Ian Yule also reported a Black Tern at Iona Island on 3 June and Phillips observed a bird there on 5 June. On 11 June DeCamp recorded Black Terns at Pitt Lake, and on 23 June I watched a Black Tern flying over Robertson's Slough in the George C. Reifel Waterfowl Refuge, just to the south of the airport.

William J. Anderson provides the only record for 1968, a Black Tern photographed in flight over the sewage ponds on Iona Island on 27 May.

In 1969 Phillips saw a Black Tern on Iona Island on 9 June and I watched a bird flying over the sewage ponds on 25 June.

Prior to the summer of 1963 there were no breeding records for the Black Tern in southwestern British Columbia. Munro and Cowan (British Columbia Prov. Mus. Spec. Publ. No. 2:121, 1947) furnish the only summer record for southwestern British Columbia: a specimen in the Provincial Museum in Victoria collected on 3 June 1929 at Chilliwack, about 50 mi. W of Vancouver. Godfrey (Natl. Mus. Can. Bull. 203:194, 1966) shows the breeding range of the Black Tern in western Canada as interior-central and southern British Columbia, east of the Coast Range.

From records over the past seven years the Black Tern presently should be considered a breeding species, but rare in summer, in the Vancouver area. Further nestings at Pitt Lake (1965–1969) may have been prevented by fluctuating water levels. The Black Tern may, in the future, be found nesting at Iona Island.

The earliest arrival date (27 May) for Black Tern in southwestern British Columbia was recorded by Anderson in 1968 at Iona Island. The latest date, also at Iona Island, was recorded as 3 September 1967 by Schouten.

I wish to thank the observers, members of the Vancouver Natural History Society, for communicating their observations to me.

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A RECORD OF CLUTCH SIZE AND BREEDING IN NEW MEXICO FOR THE BRONZED COWBIRD

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Although there is published information on the reproductive capacities, including clutch size, of the Brown-headed Cowbird, *Molothrus ater* (e. g., Payne 1965) and of the three South American cowbirds, *M. bonariensis, M. rufoaxillaris,* and *M. badius* (Davis 1942), there seems to be nothing in the literature concerning the clutch size of the Bronzed Cowbird, *Tangavius aeneus*. On 21 June 1968 I collected a laying adult female Bronzed Cowbird (preserved at the Museum of Southwestern Biology, University of New Mexico) at tree-shaded High Lonesome Wells in desert grassland (Sec. 22 of T33S, R17W) in Hidalgo County, New Mexico. The oviduct of this bird contained an unshelled egg, and macroscopic examination of the bird's ovary disclosed three collapsed post-ovulatory follicles and an enlarged follicle of approximately 9 mm diameter. The next largest unovulated follicle, at 4 mm diameter, probably would not have contributed to the present clutch (see Payne 1965). It thus seems likely that the clutch being produced when the cowbird was collected would have