

To the Editor of the Wilson Bulletin:

Now that fourteen of my Bulletins on the "Life Histories of North American Birds" have been published, your readers may be interested to know what progress is being made on future volumes.

The manuscript for the fifteenth, on the Corvidae and Paridae, has long since been completed and is in the hands of the publishers in Washington.

My work on the sixteenth, containing the birds on the 1931 Checklist from the nuthatches to the thrashers inclusive, is practically done, except for a few minor details.

I am now starting work on the seventeenth volume, which is planned to include the birds on the 1931 Check-list from the thrushes to the vireos inclusive.

It is planned to accumulate manuscript in advance of publication, which may be retarded under the present war conditions.

I wish to take this opportunity to thank all those who have contributed material for previous volumes, to remind them that this is a co-operative work, and to ask them to send me, as soon as possible, contributions of notes, data and photographs relating to birds to be included in the seventeenth volume; the sooner these are received, the easier it will be for me to use them.

140 High Street,  
Taunton, Mass.

Sincerely yours,

A. C. BENT

## FLIGHT AND RUNNING SPEEDS OF BIRDS

BY CLARENCE COTTAM, CECIL S. WILLIAMS AND CLARENCE A. SOOTER

ONE of the chief characteristics and most fascinating accomplishments of birds is their remarkable degree of mobility. This quality undoubtedly has had high survival value in their evolution. Obviously, there is great variation among individuals of a species or even within the same flock or covey. As might also be expected, there is a vast difference between the normal cruising and feeding speed and the maximum speed; each of these probably varies under a wide range of conditions. In addition to the will for speed at any particular moment, wind direction and velocity, angle of flight in relation to the earth, the age and physical condition of the bird, the state of its plumage, and other factors modify the speed of the bird.

The topics of flight speed, altitude attained, and the mechanics or aeronautics of flight have already been the subject of considerable conjecture and observation. Specific data on flight and running speeds may prove of value to the investigator of predator-prey relationships. The subject of flight speed is best summarized by May Thacher Cooke in U. S. Department of Agriculture Circular No. 428, entitled "Flight Speed of Birds", issued in May, 1937. Relatively few running speeds have been recorded.

In the course of field work in various parts of the West, we have been able to time a number of birds whose flight or running speeds have never been recorded and to add to the rather limited data on record for others. All records were made by automobile, from which two or more observers usually checked the speeds. Our data are summarized in Tables 1 and 2. The bird names used are those of the A.O.U. Checklist (1931).

TABLE 1  
FLYING SPEED OF BIRDS

| Species                   | Miles per hour | Place                           | Date       | Distance covered | Observer                      | Remarks                                  |
|---------------------------|----------------|---------------------------------|------------|------------------|-------------------------------|--|
| Double-crested Cormorant  | 22             | Malheur Refuge, Oregon          | 6/29/41    | 200 yds.         | C. C.<br>C. S. W.<br>C. A. S. | Cruising                                 |
| Great Blue Heron          | 18, 24, 25, 29 | Bear River Bird Refuge, Utah    | 7/21-24/41 | 200 yds.         | C. C.                         | Cruising                                 |
| Great Blue Heron          | 36             | Bear River Bird Refuge, Utah    | 7/26/41    | 200 yds.         | C. C. W.<br>C. C. W.          | No favoring wind, bird pressed           |
| Great Blue Heron          | 20             | Malheur Refuge, Oregon          | 7/21/41    |                  | C. C.<br>C. S. W.<br>C. A. S. | Cruising                                 |
| Black-crowned Night Heron | 20             | Malheur Refuge Oregon           | 6/29/41    | 200 yds.         | C. C.<br>C. S. W.<br>C. A. S. | Cruising                                 |
| Black-crowned Night Heron | 18             | Malheur Refuge, Oregon          | 10/13/41   | 450 yds.         | C. A. S.                      | No wind; 3 juveniles                     |
| Black-crowned Night Heron | 35             | Bear River Bird Refuge, Utah    | 7/23/41    |                  | C. C.<br>C. S. W.             | Paralleling car; being pressed some      |
| Snowy Egret               | 30             | Bear River Bird Refuge, Utah    | 7/23/41    |                  | C. C.<br>C. S. W.             | Bird pressed                             |
| White-faced Glossy Ibis   | 30, 33         | Bear River Bird Refuge, Utah    | 7/21/41    |                  | C. C.<br>C. S. W.             | Cruising                                 |
| Whistling Swan            | 25             | Currituck Sound, North Carolina | Nov. 1933  | 450 yds.         | C. C.                         | Six birds flying 18 to 25 miles per hour |

|                 |        |                                    |           |          |                                  |   |
|-----------------|--------|------------------------------------|-----------|----------|----------------------------------|---|
| Canada Goose    | 20     | Currituck Sound,<br>North Carolina | Nov. 1933 | 200 yds. | C. C.                            | Cruising, easy flight                               |
| Canada Goose    | 26     | Bear River Bird<br>Refuge, Utah    | 7/21/41   | 200 yds. | C. C.<br>C. S. W.                | In front of car                                     |
| Mallard         | 40     | Bear River Bird<br>Refuge, Utah    | 7/21/41   | 200 yds. | C. C. W.                         | Bird being pressed                                  |
| Gadwall         | 29     | Malheur Refuge,<br>Oregon          | 6/29/41   | 200 yds. | C. C. W.<br>C. S. W.<br>C. A. S. | Cruising  |
| Baldpate        | 22     | Malheur Refuge,<br>Oregon          | 6/29/41   | 100 yds. | C. C. W.<br>C. A. S.             | Gliding to alight                                   |
| Pintail         | 49     | Bear River Bird<br>Refuge, Utah    | 7/26/41   | ½ mile   | C. C.<br>C. S. W.                | Juvenile, being pressed                             |
| Green-wing Teal | 30, 40 | Bear River Bird<br>Refuge, Utah    | 9/14/41   | ½ mile   | C. C. W.                         | Cruising and being<br>pressed, respectively         |
| Cinnamon Teal   | 50     | Bear River Bird<br>Refuge, Utah    | 7/23/41   | ½ mile   | C. C. W.                         | Male; being pressed                                 |
| Cinnamon Teal   | 33     | Malheur Refuge,<br>Oregon          | 6/29/41   | 200 yds. | C. C.<br>C. S. W.<br>C. A. S.    | Cruising  |
| Shoveller       | 25     | Malheur Refuge,<br>Oregon          | 6/29/41   | 200 yds. | C. C. W.<br>C. S. W.<br>C. A. S. | Not exerting itself                                 |
| Shoveller       | 50     | Bear River Bird<br>Refuge, Utah    | 9/17/41   | 200 yds. | C. C. W.                         | Pressed   |
| Redhead         | 45     | Bear River Bird<br>Refuge, Utah    | 9/14/41   | 200 yds. | C. C. W.                         | Pressed, but attempting to<br>light; erratic flight |
| Redhead         | 50, 55 | Bear River Bird<br>Refuge, Utah    | 7/23/41   | 200 yds. | C. C. W.<br>C. S. W.             | Pressed   |

| Species              | Miles per hour | Place                        | Date       | Distance covered | Observer             | Remarks  |
|----------------------|----------------|------------------------------|------------|------------------|----------------------|--|
| Redhead              | 31             | Bear River Bird Refuge, Utah | 7/23/41    | "                | C. C. W.<br>C. S. W. | Cruising   |
| Redhead              | 50, 51         | Bear River Bird Refuge, Utah | 7/26-28/41 |                  | C. C.<br>C. S. W.    | Female; being pressed                              |
| Buffle-head          | 48             | Bear River Bird Refuge, Utah | 10/24/41   | 3 miles          | C. S. W.             | Three females                                      |
| Buffle-head          | 40             | Malheur Refuge, Oregon       | 12/12/41   |                  | C. A. S.             | Slight cross wind hindering flight (Blitzen River) |
| Sharp-shinned Hawk   | 28             | Malheur Refuge, Oregon       | 10/3/41    | 525 yds.         | C. A. S.             | No wind  |
| Cooper's Hawk        | 28             | Bear River Bird Refuge, Utah | 9/14/41    | 100 yds.         | C. C. W.             | Female   |
| Ferruginous Roughleg | 30-35          | Red Rock Refuge, Montana     | 9/16/41    | 450 yds.         | C. C. W.<br>C. S. W. |  |
| Prairie Falcon       | 30             | Malheur Refuge, Oregon       | 11/8/41    | 175 yds.         | C. A. S.             | No wind  |
| Osprey               | 25-27          | Parramore Island, Virginia   | 8/23/35    | 450 yds.         | C. C.                | Flying along beach                                 |
| Duck Hawk            | 40             | Bear River Bird Refuge, Utah | 7/21/41    |                  | C. C.<br>C. S. W.    | Cruising   |
| Sparrow Hawk         | 30-39          | Warner Valley, Oregon        | 6/30/41    | 200 yds.+        | C. C.<br>C. S. W.    | Cruising   |
| Sharp-tailed Grouse  | 28, 30,<br>33  | Des Lacs, North Dakota       | 7/28/41    | 50 yds.+         | C. C.<br>R. G.       |  |
| Sharp-tailed Grouse  | 22             | Faith, South Dakota          | 8/18/41    |                  | R. G.                |  |

|                      |               |                              |            |                 |                                  |                                 |
|----------------------|---------------|------------------------------|------------|-----------------|----------------------------------|---------------------------------|
| Sage Grouse          | 28            | Alturas, California          | 7/2/41     | 50 yds.         | C. C. W.<br>C. S. W.             | Flushed, flying in front of car |
| Sandhill Crane       | 31            | Malheur Refuge, Oregon       | 3/18/41    | 700 yds.        | C. A. S.                         | Fair breeze hindering flight    |
| Sandhill Crane       | 35            | Malheur Refuge, Oregon       | 8/22/41    |                 | C. A. S.                         | No wind                         |
| Western Snowy Plover | 30            | Bear River Bird Refuge, Utah | 7/21/41    |                 | C. C. W.<br>C. S. W.             | Apparently cruising speed       |
| Killdeer             | 25            | Malheur Refuge, Oregon       | 6/29/41    | 50 yds.         | C. C. W.<br>C. S. W.<br>C. A. S. | Flying zigzag                   |
| Long-billed Curlew   | 50            | Bear River Bird Refuge, Utah | 6/26/41    | 450 yds.        | C. C. W.<br>C. S. W.             | Flying in front of car          |
| Long-billed Curlew   | 35, 40,<br>45 | Malheur Refuge, Oregon       | 6/29/41    | 100 to 200 yds. | C. C. W.<br>C. S. W.<br>C. A. S. | No exertion in evidence         |
| Spotted Sandpiper    | 23            | Malheur Refuge, Oregon       | 6/29/41    | 50 yds.         | C. C. W.<br>C. S. W.<br>C. A. S. | Apparently cruising             |
| Spotted Sandpiper    | 21, 25,<br>30 | Bear River Bird Refuge, Utah | 7/21/41    |                 | C. C.<br>C. S. W.                | Apparently cruising             |
| Western Willet       | 35, 39,<br>40 | Bear River Bird Refuge, Utah | 7/21/41    | 50 to 200 yds.  | C. C. W.<br>C. S. W.             | Small flocks of 3 and 12 birds  |
| Western Willet       | 45, 47        | Bear River Bird Refuge, Utah | 7/23-24/41 | 200 yds.        | C. C. W.<br>C. S. W.             | Cruising                        |
| Forster's Tern       | 10            | Bear River Bird Refuge, Utah | 7/24/41    | 200 yds.        | C. C.<br>C. S. W.                | Cruising along ocean beach      |
| Common Tern          | 28            | Parramore Island, Virginia   | 8/23/35    |                 | C. C.                            |                                 |

| Species             | Miles<br>per hour | Place                         | Date       | Distance<br>covered | Observer                         | Remarks                    |
|---------------------|-------------------|-------------------------------|------------|---------------------|----------------------------------|----------------------------|
| Black Tern          | 21, 23            | Malheur Refuge,<br>Oregon     | 6/29/41    | 100 yds.            | C. C. W.<br>C. S. W.<br>C. A. S. | Cruising                   |
| Black Tern          | 10                | Bear River Bird<br>Refuge     | 7/24/41    | 50 yds.             | C. C. W.<br>C. S. W.             | Cruising                   |
| Black Skimmer       | 10                | Parramore Island,<br>Virginia | 8/23/35    | 200 yds.            | C. C.                            | Cruising                   |
| Black Skimmer       | 30                | Parramore Island,<br>Virginia | 8/23/35    | 200 yds.            | C. C.                            | Flock of 12                |
| Great Horned Owl    | 40+               | Malheur Refuge,<br>Oregon     | 10/27/41   |                     | C. A. S.                         | Slight wind aiding flight  |
| Burrowing Owl       | 12                | Malheur Refuge,<br>Oregon     | 6/29/41    | 40 yds.             | C. C. W.<br>C. S. W.<br>C. A. S. | Cruising or feeding flight |
| Short-eared Owl     | 15, 19,<br>25     | Malheur Refuge,<br>Oregon     | 6/28-29/41 | 20 to<br>50 yds.    | C. C. W.<br>C. A. S.             | No wind                    |
| Short-eared Owl     | 26                | Malheur Refuge,<br>Oregon     | 10/7/41    |                     | C. A. S.                         | No wind                    |
| Red-shafted Flicker | 28                | Malheur Refuge,<br>Oregon     | 6/29/41    | 50 yds.             | C. C. W.<br>C. A. S.             | Cruising; no wind          |
| Red-shafted Flicker | 27                | Malheur Refuge,<br>Oregon     | 11/20/41   |                     | C. A. S.                         |                            |
| Red-shafted Flicker | 28                | Malheur Refuge,<br>Oregon     | 12/6/41    |                     | C. A. S.                         |                            |

|                      |        |                                 |          |          |                                  |   |
|----------------------|--------|---------------------------------|----------|----------|----------------------------------|---|
| Red-shafted Flicker  | 29     | Upper Souris,<br>North Dakota   | 7/28/41  | 400 yds. | C. C.                            | Cruising                                  |
| Violet-green Swallow | 28     | Malheur Refuge,<br>Oregon       | 6/29/41  | 50 yds.  | C. C. W.<br>C. A. S.             | Cruising in zigzag                        |
| Cliff Swallow        | 29     | Malheur Refuge,<br>Oregon       | 6/29/41  | 50 yds.  | C. C.<br>C. S. W.<br>C. A. S.    | Cruising in zigzag; 2<br>separate records |
| American Magpie      | 20     | Malheur Refuge,<br>Oregon       | 10/9/41  |          | C. A. S.                         | Favored by wind                           |
| American Magpie      | 22     | Malheur Refuge,<br>Oregon       | 10/13/41 | 250 yds. | C. A. S.                         | No wind                                   |
| American Magpie      | 22     | Malheur Refuge,<br>Oregon       | 11/7/41  | 175 yds. | C. A. S.                         | No wind                                   |
| Western Raven        | 35     | Malheur Refuge,<br>Oregon       | 7/23/41  | 100 yds. | C. C. W.<br>C. S. W.<br>C. A. S. | Flying along dike.                        |
| Western Raven        | 39     | Red Rock Refuge,<br>Montana     | 9/16/41  |          | C. C.<br>C. S. W.                |   |
| Crow                 | 30     | Red Rock Refuge,<br>Montana     | 9/16/41  |          | C. C. W.<br>C. S. W.             | Small flock                               |
| Sage Thrasher        | 29     | Bear River Bird<br>Refuge, Utah | 7/21/41  |          | C. C.<br>C. S. W.                | Cruising                                  |
| Sage Thrasher        | 22     | Warner Valley,<br>Oregon        | 6/30/41  | 100 yds. | C. C.<br>C. S. W.                |   |
| Sage Thrasher        | 25, 28 | Malheur Refuge,<br>Oregon       | 6/29/41  | 100 yds. | C. C. W.<br>C. S. W.<br>C. A. S. | Flying erratically in front<br>of car     |
| Western Robin        | 25     | Malheur Refuge,<br>Oregon       | 11/5/41  | 175 yds. | C. A. S.                         | No wind                                   |

| Species                 | Miles per hour | Place                         | Date     | Distance covered | Observer                      | Remarks                     |
|-------------------------|----------------|-------------------------------|----------|------------------|-------------------------------|-----------------------------|
| Mountain Bluebird       | 18             | Malheur Refuge, Oregon        | 12/6/41  | Short distance   | C. A. S.                      | Cross wind                  |
| Townsend's Solitaire    | 20             | Malheur Refuge, Oregon        | 3/9/41   | 350 yds.         | C. A. S.                      | No wind                     |
| Sprague's Pipit         | 28             | Des Lacs Refuge, North Dakota | 7/28/41  | 30 yds.          | C. C.                         | In front of car             |
| California Shrike       | 22             | Malheur Refuge, Oregon        | 11/30/41 |                  | C. A. S.                      |                             |
| Yellow Warbler          | 22             | Mud Lake Refuge, Minnesota    | 8/23/41  |                  | C. C.                         | Easy flight.                |
| Western Meadowlark      | 26             | Red Rock Refuge, Montana      | 9/16/41  |                  | C. C.<br>C. S. W.             |                             |
| Yellow-headed Blackbird | 29             | Upper Souris, North Dakota    | 7/29/41  |                  | C. C.<br>R. G.                | Single bird                 |
| Yellow-headed Blackbird | 25             | Bear River Bird Refuge, Utah  | 7/21/41  |                  | C. C.<br>C. S. W.             | Single bird                 |
| Yellow-headed Blackbird | 20             | Malheur Refuge, Oregon        | 6/29/41  | 75 yds.          | C. C.<br>C. S. W.<br>C. A. S. | Cruising                    |
| Yellow-headed Blackbird | 30, 35         | Bear River Bird Refuge, Utah  | 7/23/41  | 350 to 700 yds.  | C. C.<br>C. S. W.             | 75 birds in flock. Cruising |
| Brewer's Blackbird      | 29             | Bear River Bird Refuge, Utah  | 7/21/41  |                  | C. C.<br>C. S. W.             |                             |
| Brewer's Blackbird      | 28             | Warner Valley, Oregon         | 6/30/41  | 100 yds.         | C. C.<br>C. S. W.             | Cruising                    |
| Savannah Sparrow        | 23             | Bear River Bird Refuge, Utah  | 7/21/41  |                  | C. C.<br>C. S. W.             | Cruising                    |



|                    |       |                                    |            |                   |                               |                        |
|--------------------|-------|------------------------------------|------------|-------------------|-------------------------------|------------------------|
| Savannah Sparrow   | 27    | Malheur Refuge,<br>Oregon          | 6/29/41    | 100 yds..         | C. C.<br>C. S. W.<br>C. A. S. | In front of car        |
| Savannah Sparrow   | 21    | Malheur Refuge,<br>Oregon          | 6/28/41    | About<br>100 yds. | C. C.<br>C. S. W.<br>C. A. S. | Three separate records |
| Savannah Sparrow   | 20-21 | Currituck Sound,<br>North Carolina | Nov., 1935 |                   | C. C.                         | Cruising               |
| Shufeldt's Junco   | 26    | Malheur Refuge,<br>Oregon          | 12/3/41    | Short<br>distance | C. A. S.                      |                        |
| Modoc Song Sparrow | 30    | Malheur Refuge,<br>Oregon          | 10/3/41    |                   | C. A. S.                      | No wind                |

C. C. —Clarence Cottam  
C. S. W.—Cecil S. Williams

C. A. S.—Clarence A. Sooter  
R. G. —Richard Griffith

TABLE 2  
RUNNING SPEED OF BIRDS

| Species   | Miles per hour | Place                        | Date      | Distance covered | Observer                      | Remarks   |
|---|----------------|------------------------------|-----------|------------------|-------------------------------|---|
| Sage Hen  | 2              | Near Alturas, California     | 7/2/41    | 30 ft.           | C. C.<br>C. S. W.             | In road, immediately front of car                       |
| European Partridge                              | 9              | Malheur Refuge, Oregon       | 6/29/41   | 30 yds.          | C. C.<br>C. S. W.<br>C. A. S. | On dike road, in front of car                           |
| Chukar Partridge<br>( <i>Alectoris graeca</i> ) | 12             | Lower Souris, North Dakota   | 8/2/41    | 20 yds.          | C. C.<br>R. G.                | In front of car   |
| Chukar Partridge                                | 18             | Missouri                     | June 1939 |                  | H. D.                         | Field report of Missouri Cooperative Unit               |
| Gambel's Quail                                  | 11             | Kofa Refuge, Arizona         | 7/10/41   | 30 yds.          | C. C.                         | In road in front of car, covey of 14, not quite grown   |
| Gambel's Quail                                  | 14             | Kofa Refuge, Arizona         | 7/10/41   | 20 yds.          | C. C.                         | Female adults, in road in front of car; pressed         |
| Ring-necked Pheasant                            | 8-10           | Malheur Refuge, Oregon       | 6/28/41   | 200 yds.         | C. C.<br>C. S. W.<br>C. A. S. | Two males, in weedy road on dike between ponds; pressed |
| Ring-necked Pheasant                            | 10             | Lake Bowdoin Refuge, Montana | 7/25/41   | 100 yds.         | C. C.<br>R. G.                | In soft dirt road; pressed but speed obviously impeded  |
| Ring-necked Pheasant                            | 10, 12, 15, 21 | Lower Souris, North Dakota   | 8/2/41    | 50 to 100 yds.   | C. C.<br>R. G.                | Single birds; in road in front of car; pressed          |
| Ring-necked Pheasant                            | 12             | Bear River Bird Refuge, Utah |           |                  | E. R. Q.                      | Immature, 2/3 grown                                     |

|                      |      |                                       |         |          |                   |   |
|----------------------|------|---------------------------------------|---------|----------|-------------------|---|
| Ring-necked Pheasant | 8-12 | Camas Refuge,<br>Idaho                | 9/16/41 | 30 yds.  | C. C.<br>C. S. W. | Immature, 2/3 grown; in<br>front of car                               |
| Killdeer             | 5    | Las Vegas, Nevada                     | 7/4/41  | 30 ft.   | C. C.             | On dike between two<br>ponds; in front of car                         |
| Long-billed Curlew   | 8    | Bear River Bird<br>Refuge, Utah       | 6/26/41 | 30 ft.   | C. C.<br>C. S. W. | Immature, bird of the<br>year; in front of car                        |
| Long-billed Curlew   | 8-10 | Bear River Bird<br>Refuge, Utah       | 6/29/41 | 75 yds.  | C. C.<br>C. S. W. | Adult, on dike between<br>two lake units; in front<br>of car, pressed |
| Avocet               | 8    | Bear River Bird<br>Refuge, Utah       | 6/29/41 | 50 ft.   | C. C.<br>C. S. W. | Adult, on dike between<br>two lake units; in front<br>of car, pressed |
| Road-runner          | 12   | 20 miles south of<br>Phoenix, Arizona | 7/11/41 | 50 yds.  | C. C.<br>J. A. N. | In very deep soft silt in<br>road in front of car;<br>pressed         |
| Road-runner          | 15   | Near St. George,<br>Utah              | 9/5/26  | 300 yds. | C. C.             | Up 3 per cent grade, dirt<br>road; pressed                            |

C. C. — Clarence Cottam  
 C. S. W. — Cecil S. Williams  
 C. A. S. — Clarence A. Sooter  
 R. G. — Richard Griffith

H. D. — Hugh Denney  
 E. R. Q. — Erling R. Quortrup  
 J. A. N. — Johnson A. Neff

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