

*Auriparus flaviceps flaviceps*. Verdin. Found commonly everywhere on the floor of the canyon. On May 20 a fully-feathered young being fed by its parent was observed, and on the same day a pair of these birds was seen engaged in nest building.

*Regulus calendula*. Ruby-crowned Kinglet. Seen very commonly during March and April, the last being noted on May 3.

*Polioptila caerulea obscura*. Western Gnatcatcher. Met with rather commonly everywhere on the floor of the canyon during March, but disappeared early in April.

*Polioptila plumbea*. Plumbeous Gnatcatcher. Seen regularly, and not uncommonly, from March 18 up to the time of my departure.

*Myadestes townsendi*. Townsend Solitaire. Noted on March 18, 22 and 28, and on April 14. It would appear to be a winter visitor, and not uncommon.

*Hylocichla guttata*, subsp.? Hermit Thrush. Fairly common up to about the middle of April. The last straggler was seen on May 22. More than one subspecies was apparently represented among the birds seen.

*Planesticus migratorius propinquus*. Western Robin. Observed irregularly in small numbers up to April 24.

*Santiago de Las Vegas, Cuba, July 27, 1925.*

## FROM FIELD AND STUDY

**What is a Water Bird?**—To answer this question is not quite such a simple matter as it may at first seem. A true definition must, of course, define, by elimination, a "land bird" as well. Almost all bird students know pretty well by a kind of instinct to which group a given species belongs. But some of those whose judgment in that regard may be unfailing would, I take it, have to do some thinking if suddenly called on for a hard and fast explanation of the terms. Among real bird-loving enthusiasts I have not infrequently noted a great lack of discrimination between land and water birds; nor are instances wanting of field-going professors of biology showing the same failure, if one may judge from such a classification as "herons, marsh wrens and other water birds". So it would seem worth while to really define the terms "land bird" and "water bird".

Such forms as swallows, swifts, hummingbirds and nighthawks are sometimes made to form a third group: "aerial" birds. This group does not seem to be so well-defined as the two larger ones under consideration, when one thinks of the kites, for example. Be that as it may, this group may fairly be regarded as a subdivision of land birds for the present purpose. Yet I believe one has only to substitute "aerial" or "land" (or "terrestrial"), as the case may be, to make the definition given beyond applicable to all species; and, in that case, we should certainly not find the "aerial" group unrepresented.

It is true that, but for a comparatively few exceptions, no definition would be necessary, the habitats and habits of the birds being usually so decided as to leave no room for doubt on the point. Yet, in checking over a complete list of American birds, we discover that the question by no means answers itself or hinges on the extent to which a given species is or is not aquatic in actual practice.

Take the case of the water ouzel for example. Now, I think it can be shown that, if the term "water bird" (and by fair inference "land bird") is to mean anything definite, we must eliminate the wonderfully aquatic ouzel from the group; and I believe this has, indeed, generally or always been done whenever a distinction has been made in this case. On the other hand we have, for example, the woodcock, a bird quite largely given to rather dry woodlands and merely moist bogs, yet properly classed as a water bird. Some definition can not well be indefinitely avoided and, as a working basis, I offer the following.

*A water bird is any species of bird primarily and anatomically adapted to live continuously where aquatic conditions predominate. And, it may be added, a land bird is any species of bird not so adapted.*

That definition, it will be observed, embraces not only birds which are actually aquatic in practice, but all species essentially related by structure to the water, regardless of their haunts and habits as a species. Now let us see if the definition will "hold

water", to use that expression in a somewhat literal sense. We easily find that the definition agrees with the actual practice of writers generally who attempt any division of the birds as land and water species, respectively. Even the land-loving woodcock and upland plover show, by their typical snipe and sandpiper structures, according to the case, an underlying affinity for the water as unmistakable as that of a grebe or a loon. Let us attack the definition from the land bird side.

Where shall we put the water ouzel, water-thrushes, kingfishers, fish hawk, marsh wrens and swamp sparrow, not to mention the marsh hawk and the red-winged black-bird? Is there in any of these a real primary anatomical adaptation to the water? Certainly there is none as obvious as the bill and legs of the woodcock or of the upland plover. It may be said that the straight bill of the kingfisher is adapted to his fishing; that the spicules on the toes of the osprey are specially related to his taking live fish from the water. Admitting both contentions, still the times of actual contact with the water are in both cases occasional and brief, not "continuous", as called for in our definition. Moreover, the structures in question do not directly relate to the water (and it is the environment which we are considering) but to the fish on which these birds feed. Our kingfishers are represented in some other parts of the world by forms which inhabit the woods and feed chiefly on insects. The osprey is obviously a real hawk and no one will contend that the hawks, as a group, show anything comparable with grebe-like or even snipe-like affinities. The marsh hawk, marsh wren, swamp sparrow and water-thrushes may be dismissed, as species which seek merely the vicinity of water, and whose actual contacts with it are only incidental. One of these is no more to be considered a water bird than is the tree swallow which loves to nest in a stump surrounded by water, and to bathe and skim the surface and dip so continually.

Rather peculiar is the case of the water ouzel. Indeed, it seems not quite certain that he must not be put in a class by himself, an intermediate class, just as he occupies a family of his own, Cinclidae. His general aquatic habits are too well known to need reviewing here. He puts even the ducks to shame by habitually walking on the bottom of a swift stream. I can testify from observation that the young ouzels, even before they are quite ready to leave the nest, can fall into a rushing torrent and be borne along as buoyantly, as nonchalantly, and as safely as you please. But, is he structurally adapted? Not, apparently, in the sense that even the woodcock is. However, it may be held that the plumage itself and the superficial appearance of the wings and tail are somewhat rail-like and may be related to the bird's aquatic habits; also, that the plumage is supplied with an extra amount of oil. Nevertheless, as between the two groups, I believe most of us would say the land birds should claim the ouzel.

The "teetering" habit is one so common among shore-birds and so comparatively rare among others that, on first glance, it might promise to be diagnostic of water birds. But what about the titlark? Certainly his teetering does not suggest a water bird status. I think we may omit the habit from serious consideration in the present discussion. However, there does seem to be some strange relation between a teetering propensity and the water; note the water ouzel and the water thrushes. Here is a possible subject for separate discussion.

To conclude, water birds are usually distinguishable from land birds simply by their haunts and habits. But there are, all together, many exceptions to the rule. Since a water bird may be less aquatic actually in haunts and habits than are certain land birds, haunts and habits alone can not be held a reliable criterion in determining a bird's status as of "land" or "water". When a form, like the water ouzel, which seems to be doubtful or truly intermediate, is closely examined, its adaptation to the water is (always?) found to be superficial or secondary or both, superficial in the case of the ouzel's plumage, secondary in the cases of the kingfisher's bill and the osprey's spicules. The least aquatic and most doubtful of true waterbirds are nevertheless closely related to forms whose habits as well as structures leave no room for doubt of their "water" status; so that the species stands for the family and the family for the species in this connection. Indeed, there is no need of other definition for the person who is quite satisfied to know merely that a water-bird "is any member of a water-bird family". However, the definition, as at first proposed, "primarily and anatomically adapted to live continuously where aquatic conditions predominate", would seem to be more direct and complete. It has this advantage, that it can be applied by the layman who might not have the knowledge on which application of the other definition is dependent.—EDMUND J. SAWYER, *Park Naturalist, Yellowstone Park, Wyoming, March 29, 1926.*