



FIG. 1. The one-eyed Tufted Titmouse picks up a crumb of nut.

These characteristics of behavior seem to depend on the relatively larger size and weight of body. The Tufted Titmouse cannot stop the inertia of motion so quickly as the Carolina Chickadee. More time and braking power are needed to either stop the motion or change its direction. Therefore the position of obstacles in the direction of movement should be accurately perceived from a greater distance than in the case of the Carolina Chickadee. This is hardly possible with one eye. To improve maneuverability in brushy habitat, the velocity of movement has to be reduced by fluffing the feathers. An additional gain for the titmouse is a silent owly flight which may increase its chances of survival.

The one-eyed Tufted Titmouse is a female. Both she and the chickadee were mated in the following spring and successfully raised their broods.—MARTIN A. SLESSERS, *Route 4, Box 146, Brandywine, Maryland 20613, 21 August 1970.*

**Range extension of the Golden-crowned Kinglet in New York.**—The Golden-crowned Kinglet (*Regulus satrapa*) has been found in New York state during the breeding season in a number of isolated locations outside of its usual breeding areas in the Adirondack and Catskill Mountains. There are a few such records in the late 19th and early 20th centuries, but since about 1949 the species has been discovered in summer in more new places. These occurrences have been largely coincident with the maturation of artificially planted spruce stands in the state.

During the past several years, particularly in the breeding seasons of 1969 and 1970,

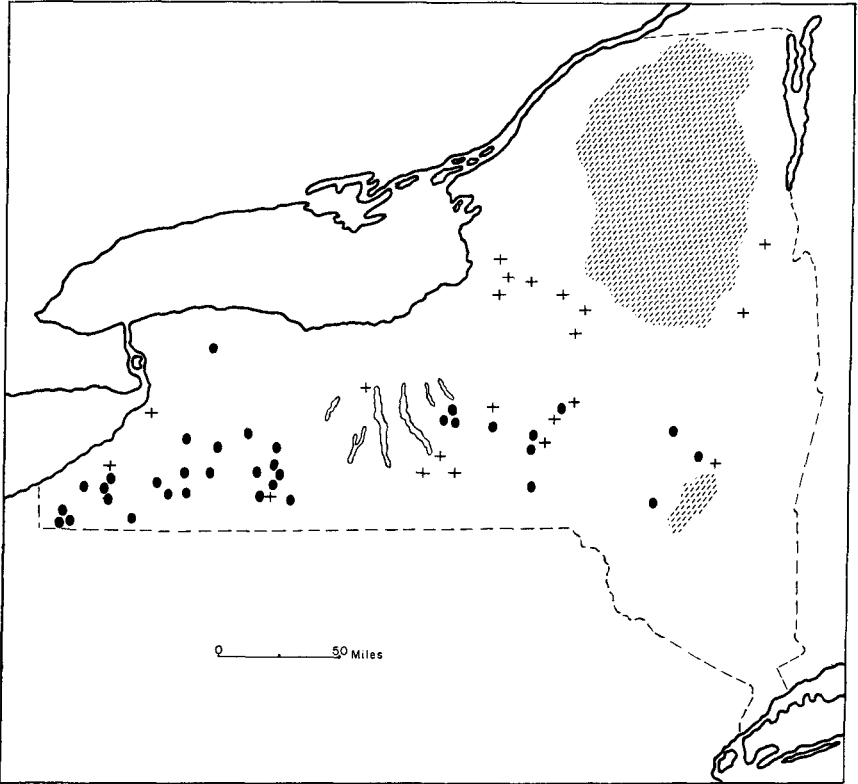


FIG. 1. Golden-crowned Kinglet breeding distribution in New York state showing isolated breeding locations examined by the author (black ovals) and reported by others (crosses) in relation to the species' general breeding range in the Adirondack and Catskill Mountains (slanted dashes).

I investigated spruce plantations mostly in state reforestation areas through southern New York west of the Catskills and found kinglets in 46 separate stands situated in 35 disjunct localities. Examination of state Division of Lands and Forests aerial photographs and data and selection of plantations of proper age with trees at least 15 cm DBH led in the field almost invariably to those containing kinglets.

Evidence of nesting in the plantations I checked has so far consisted in the observance of family groups and fledged young birds being fed in June and July. Kinglets have now been recorded in some tracts during several consecutive breeding seasons and I believe that they breed each year in most of the plantations I investigated. A few stands are known not to have contained kinglets regularly; several localities found by others have been cedar, balsam or spruce bogs and cemeteries with scattered large spruces. Kinglets have not established themselves permanently in the latter sites.

The map (Fig. 1) shows that the isolated kinglet breeding localities are scattered about the state; they cover an area which represents a large portion of the bird's eastern

continental range. The siting of most of them is determined by the location of reforested tracts established about 35 to 40 years ago. The disjunction of these new populations is similar to that existing in parts of the Adirondacks and Catskills and especially to that found southward in the Appalachians.

The Golden-crowned Kinglet is known to nest in pine, fir, spruce, and hemlock woods or groves in pure or sometimes mixed stands, occasionally with deciduous trees present, as well as in tamarack, spruce, balsam and cedar bogs (Bent, U.S. Natl. Mus. Bull., 196, 1949), but in the new places it is confined almost entirely to spruce in usually tall, dense stands. Most of these lie from 1200 to 2400 feet above sea level in the state's hilly, stream-dissected uplands in areas originally occupied by native deciduous or mixed forest and subsequently farm fields and orchards. Stands containing breeding kinglets were planted mostly from 1931 to 1936. Spruces in them usually vary from about 10 to 20 m in height, the trees forming a closed layer at middle levels. Exceptions to this height are the 25 to over 30 m tall spruces in Letchworth State Park and near Margaretville at the edge of the Catskills, which were planted over 50 years ago. Spruce stands range in area from two to about 60 acres; most are less than 30 and almost half of those in which I found kinglets are less than 10 acres in extent. They usually consist of pure Norway spruce (*Picea abies*), or white spruce (*Picea glauca*), but sometimes contain both species with the former predominating. In at least two places kinglets have been discovered in mixed red pine (*Pinus resinosa*)-spruce stands, and in two localities in banded spruce-pine plantings with bands 10 and 20 m wide.

Only once did I find kinglets in a recently thinned plantation where alternate rows of spruces had been removed for pulpwood and lower branches of the remaining trees trimmed. Such forestry practices are carried out in many stands and the trees that are left usually attain a closed condition after some years. This closed layer is most suitable for kinglets. It prevents sunlight from penetrating the lowest level so that frequently it is rather dark within the stand. The resulting shade is conducive to slightly cooler temperatures and more moisture than exist in surrounding pine and deciduous forest. Mosses, lichens, fungi, and mushrooms respond in abundance to these conditions. Some unthinned, unpruned, and almost impenetrable stands may be more suitable than old thinned ones for kinglet colonization if trees are sufficiently mature.

Most plantations contain from one to three pairs of kinglets each, a breeding density per acre that differs considerably among the stands owing to their wide variation in area. Breeding density in the new localities averages somewhat less than that determined by breeding censuses in spruce habitat in several places at slightly higher latitudes within the species' eastern range. It is considerably lower in general than densities found in some high altitude Appalachian native coniferous and mixed forests where as high as one pair per two acres has been reported. Sparse density might be expected in these new, relatively small and isolated tracts where initial establishment and perhaps the subsequent annual repopulation of breeding individuals may be derived from scattered migrants or a wandering late winter flock. Although kinglets occasionally enter pine plantations and native deciduous forest bordering the spruce tracts, they seldom stray far from the dense spruces.

Other breeding birds characteristic of these spruce plantations are Blackburnian, Black-throated Green, and Magnolia Warblers, Black-capped Chickadee, and Slate-colored Junco. Red-breasted Nuthatch and Myrtle Warbler have been found in them more frequently in recent years, and it appears that these two species are also undergoing some range expansion in New York in response to this new habitat.

I think that at this latitude elevation is not a significant factor affecting kinglet presence in the new localities. The mere existence of suitable habitat with its structural

and microclimatic conditions appears to be the major, if not only, requisite for kinglet colonization. Breeding kinglets in the Adirondacks, at only a slightly higher latitude than these new areas, occur through a wide range of elevations, some at considerably lower as well as higher altitudes than the new populations. The fact that kinglets do not breed lower than about 3000 feet in the Catskills is probably attributable only to the absence of suitable habitat there below that height. Farther south, in the Pocono Mountains of Pennsylvania, they nest as low as 1700 feet elevation. Altitude and related climatic conditions probably become more significant as influence factors in the disjunct populations of the Appalachians from West Virginia to North Carolina. There they usually occur from about 3000 feet elevation at generally increasing altitudes toward the south (G. A. Hall, in litt.).

Todd (Bird of western Pennsylvania, 1940) remarks on the absence (there is an old reference to the species being a "rare" or "casual" breeder near DuBois) of resident kinglets in the western Pennsylvania Canadian Zone despite the existence of some suitable habitat. Apparently they have not spread to these western areas because I have not been able to learn of any recent definite breeding locations in the state outside of the Poconos and North Mountain in its northeastern portion. Lycoming County and Warren in the central and northwestern parts are mentioned as breeding localities in the literature without supporting evidence. The diminution of native conifers by cutting and fire could be one factor which has affected kinglet breeding in Pennsylvania. Also, the lack of any extensive reforestation with spruces is one possible reason why kinglets have not colonized new localities as they have in New York.

There are probably several more breeding populations of kinglets in New York spruce plantations that have not yet been discovered; I did not check all possible habitat in some reforestation areas. A number of plantations that I examined were not suitable for kinglets either because of age or tree density and species composition, but some of the younger stands are potential future habitat when they attain sufficient size. If forest practices and commercial use permit enough spruce plantations suitable for kinglets to remain, the range extension outlined here will probably persist indefinitely.

I thank the many persons who provided assistance and information, and I am also indebted to New York State Department of Lands and Forests officials for aid, particularly, P. Carter, W. C. Craig, E. A. Karsch, R. Pigman, and G. H. Smith.—ROBERT F. ANDRLE, *Buffalo Museum of Science, Buffalo, New York, 6 November 1970.*

**Starling feeds young Robins.**—A female Robin (*Turdus migratorius*) built a nest in the crotch of a Hicks upright yew about fifteen feet from the ground. The yew was situated in a grove of evergreens on a property just off Highway 13 in Delaware, and the nest could be clearly seen from a second-story window of the house on the property. The female Robin laid and hatched two eggs. She was seen feeding the young and removing excrement from the nest until 27 May 1970. The male was not seen at the nest.

On 26 May a Starling (*Sturnus vulgaris*) appeared at the nest, and began feeding the young and removing excrement. The female Robin continued feeding and caring for the young along with the Starling. On 28 May the Robin stopped caring for the young, apparently driven away by the Starling.

On 29 May I saw the Starling feed the two young several times. We could not always discern what the Starling was carrying, but frequently we saw insects in its bill. The female Robin did not approach the nest, but three times I saw what appeared to be a Starling chasing a Robin around the roof above us. At this date the young Robins were beating their wings and creeping onto the edge of the nest.