springs the clam's valves widely apart (Fig. 2B). As the valves spread apart, the uppermost umbone is displaced to one side, which unbalances the clam and causes it to roll over to its normal upright position (Fig. 2C).

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Nocturnal Songbird Migration

WE would like to comment on Evans's criticisms¹ of our recent article² concerning the influence of wind on the direction of nocturnal songbird migration. We pointed out that problems in identifying bird types from radar echoes may have contributed to the controversy about passerine nocturnal migrants compensating for wind drift. Evans claims that there is no difficulty in distinguishing between radar echoes from small land birds and those from waders and waterfowl in England. But his own radar work in Northumberland clearly demonstrates that this is not the case. In 1963 he attributed radar echoes of migrants in October and November to songbirds (wheatears, icelandic redwings, robins and song thrushes) and used these data to support his hypothesis that birds fly on fixed tracks, thus correcting completely for the drifting effects of the wind³. In a later article⁴, there is the following statement (pages 54-55): "However, records from October and November are excluded from this paper, because echoes from waders are difficult to distinguish from those from larger passerines, for example migrant thrushes, whose movements often overlap in timing, area of departure and direction with those of waders".

Evans implies that we selected the data in our article to support the hypothesis that passerine nocturnal migrants selectively fly downwind. We selected the nights to represent a broad spectrum of wind directions during each season. As Table 1 in our article shows, all four quarters of the compass are represented in each season. Our report was a preliminary analysis, but the data therein are representative of more than 300 nights of similar data we have collected to date.

We were remiss in failing to specify where the observations were made in the two seasons. The autumn data were collected at Lake Charles, Louisiana; the spring data at Athens, Georgia. Thus, Evans's comments concerning the wind shift in spring do not apply. The birds involved in the migrations, before and after the wind shifts, may have belonged to different populations. They were, nevertheless, flying downward in the air mass in which they were migrating, and the change in migration direction often occurred rapidly (within half an hour, or less) when the wind shift was abrupt.

Evans is correct in that our data cannot resolve the question of whether birds fly on chosen tracks or chosen headings. In downwind flight, track and heading are the same, and the question of drift by wind, or correction for drift, does not arise. This was precisely the point of our article; that is, that many passerine nocturnal migrants selectively fly downwind, regardless of the direction of the wind. We have since shown⁵ that

waders and waterfowl probably use a different method of flight orientation because they frequently correct for drift in winds of moderate speed.

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First Record in Scotland of the Leopard-spotted Goby, *Thorogobius ephippiatus*

THE leopard-spotted goby was first discovered by G. R. Forster of the Plymouth laboratory of the Marine Biological Association in 1955, and was described as a new species, *Gobius forsteri*, by Corbin¹. It is interesting that the original record was made while aqualung diving, and that subsequent evidence of the occurrence of the fish around British coasts has continued to be provided largely by divers' sightings and photographs. The apparent restriction of this locally common fish to crevices in rocky sublittoral areas had evidently prevented its discovery by conventional means of collection such as dredges and trawls, which are notoriously inefficient at sampling this type of substrate.

G. forsteri has subsequently been identified with *G. ephippiatus*, Lowe 1839, by Miller², who proposed the inclusion of the species in a new genus, *Thorogobius*. Miller described the distribution of the fish as warm temperate Atlantic-Mediterranean, extending as far north as the Isle of Man and the north coast of Ireland. By analogy with related gobies of similar distribution, he forecast the occurrence of *T. ephippiatus* along the west coast of Scotland, or even as far as the south-west coast of Norway.

The prediction for Scotland has now been confirmed by the sighting of a single specimen (Fig. 1) which extends the known range by more than 350 miles. It was discovered on August 15 during a dive 1 mile south of Wick, Caithness. In this area the Caithness flagstone series of the Old Red Sandstone is almost level bedded and, by differential weathering both above and below sea level, these sandstones are eroded into deep horizontal ledges which provide an ideal habitat for the

Fig. 1 The leopard-spotted goby, *Thorogobius ephippiatus*, recorded off Caithness, Scotland.