

CO-ORDINATED RESEARCH OVERSEAS

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Why co-operate? Why, indeed?

Lots of ornithologists get their pleasure in any case from watching birds on their own and leave it quite simply at that. They do not particularly wish to publish what they see, either because of modesty or because they do not believe their records add significantly to existing knowledge or even because they are overawed by the process of publication. Most, however, want to know of the new facts that come to light about birds, and this must surely be the main reason why you read EMU.

Such curiosity leads some ornithologists to pose questions to which the answers are still unknown or inadequate—the first and most important step leading to any research. As this vital phase really precedes the subject of this article it will not be expanded here, but newcomers to research (and old-timers!) will find it most helpfully discussed by David Lack (1960). Those who wish to answer the questions they have posed can engage in research either on their own or with others with the same interest. Many of these questions concern the distribution and movements of particular species of birds and, especially if threatened, changes in their abundance. Questions of these kinds can only be satisfactorily answered by many observations over a wide area, sometimes for a long period. One of the best ways of achieving this is by many observers scattered over a wide area voluntarily gathering data in a standardized way. That is a co-ordinated enquiry. For ornithology as a whole it provides information otherwise unavailable. For those who take part, its results provide a comprehensive picture, which is much more significant than the bits of information that they individually feed in. In other words it pays an excellent dividend.

One of the best examples of a co-ordinated enquiry is a bird-banding scheme—a permanent enquiry into the movements of an avifauna, which also helps to produce other information about individuals, such as longevity, behaviour and moult. It operates both as an ever-accumulating data-bank on all species and as a valuable tool available to particular investigations when they arise. As such, its scope is wider and more generalized than the enquiries about to be considered and it will not be discussed here. However, it should be emphasized that it remains one of the most important enquiries and one of the most rewarding to the co-operative ornithologist (Purchase 1972).

These remarks are equally true of nest record schemes (Thomas 1971; Marchant 1973).

Co-ordinated enquiries have been used extensively for many years in Britain and the United States, both of which have large ornithological fraternities from which to draw participants. However, they are also being successfully employed in countries with quite a low density of ornithologists, such as New Zealand (Bull 1971).

The editor has asked me to review the methods and achievements of such research carried out by bodies overseas. I shall leave it to the reader himself to judge the relevance of their experience to Australian ornithology in 1973. In the next article Stephen Davies (1973) describes how co-ordinated enquiries have been used in Australia and discusses their future here.

SCOPE

The aims and methods of co-ordinated enquiries are made clear and simple. Because of great blanks in the knowledge of distribution, abundance and movements, even in densely inhabited countries, it is in these fields, to which they are so well suited, that co-ordinated enquiries have been chiefly used. Generally speaking they concern either common, easily observed, species in situations that are widespread near where most observers live (e.g. estuaries or woodland), or particularly striking, though less common, species. However important they may be, very rare species or unusual situations have been regarded as generally unsuitable for investigation by a method that depends for its success on the ease with which fair numbers of ornithologists can sample them with some hope of more than one observation.

There have been a few successful enquiries on uncommon species which have either been conspicuous or restricted to distinctive but scarce habitats. The distribution of the rare and striking Black Redstart *Phoenicurus ochrurus* in Britain has been well documented by a BTO (British Trust for Ornithology) enquiry (Fitter 1946). This species breeds in rocky places, ruins and towns, and the enquiry showed how it had spread into such areas in recent times in southern England including bombed areas, particularly in London. Its appearance and tameness made it an easy subject for the many city-dwelling ornithologists. The Little Ringed Plover *Charadrius dubius* is a scarce breeding species in Britain, being

restricted to gravelly and muddy shores of fresh water and similar situations. A co-ordinated investigation showed that it was being favoured by the extensive excavation for gravel in southern Britain, because the pits soon flooded and provided more habitat for it (Parrinder 1948). Excellent coverage was possible because there are rather few such waters and pits and their locations are well known to local ornithologists.

Some of the most successful co-ordinated enquiries have been those carried out by the British Trust for Ornithology in Britain. Many have concerned single species that are easy to identify and count. Brief details are given below of three of the most successful of these enquiries on single species (two of which also occur in Australia).

An annual census of the numbers of occupied nests in heronries of the Grey Heron *Ardea cinerea* in Britain has been carried out co-operatively since 1928 (Stafford 1971). The counts have clearly shown the decreases in population associated with severe winters and the period taken to return to normal. They have also been an indicator of the effects of toxic pesticides which concentrate in herons because they stand at the top of a food-pyramid in which insects stand near the base. A co-ordinated census of breeding Peregrine Falcons *Falco peregrinus* (Ratcliffe 1963, 1972), which also stands at the top of a food-chain, has acted similarly as a valuable alarm signal for the toxic effects of pesticides in Britain. This enquiry gave one of the first field indications of the hazards to wildlife of the chlorinated hydrocarbon insecticides, and was partly responsible for major restrictions in their use being introduced in Britain. The Great Crested Grebe *Podiceps cristatus* has been another species that has been regularly censused by BTO observers (Hollom 1959). This has shown that a significant part of its population now depends on man-made aquatic habitats such as flooded quarries and reservoirs. This species too stands at the top of a food-chain and moves have recently been made for it to be censused throughout continental Europe and Britain in 1973. Such long-term studies of single species have revealed changes in status of considerable significance in an environment very subject to human influence. In Australia their greatest value might be in investigating the influence of a climate that varies so greatly from year to year.

In all three enquiries the organizer appointed experienced regional organizers who, from their local knowledge, knew the existing and potential heronries, Peregrine eyries or breeding waters of the Grebe in their areas. Each visited some of the sites themselves and persuaded other local ornithologists to visit all the rest during the period chosen for the counts. Thus it was possible for pre-arranged counts of breeding pairs at every likely site to take place

practically simultaneously throughout the country. It would have been physically impossible for a small professional group (e.g. from a university), however well organized and well financed, to have accomplished this on its own. Without the network of amateurs the information simply could not have been gathered. From a practical point of view the biggest single difficulty such enquiries present is that of ensuring continuity of observations at the same points over a long period. Here again the existence of local ornithologists has been made use of, so that when one falls out someone else has been found who is prepared to visit the area at counting time, even if he has to travel to do so.

The BTO has in progress two surveys of the avifauna. The presence or absence of species breeding within each 10-km grid-square in the United Kingdom has been recorded over the last five years and will form the basis of an atlas of the avifauna (Anon. 1971). A more intensive sampling in selected representative habitats, called the Common Bird Census, forms a quantitative monitor of bird populations and thereby of the ecosystems to which they belong (Bailey 1967; Batten 1972). A network of observers throughout Britain pays several visits to selected sample areas of agricultural land or woodland in their districts during the breeding season, and maps all breeding territories of each species present. This census has been repeated at many of the same sites for ten years. It has shown up some striking increases and declines of common species both nationally and regionally.

In the United States, with its much greater area, an elaborate road-transect system using a large network of observers in cars has been used (Robbins and van Velzen 1967, 1969). The country was divided into blocks of approximately 3,000 km² each, and 1,174 routes were selected giving all blocks some coverage. Each route was followed for 4-4½ hours from first light in June, the observer stopping for three minutes every 800 m till he completed fifty stops. All birds heard or seen at each stop were noted. The data have been used to produce maps of breeding density throughout the country for several common species and to measure changes between years.

When one realizes that the Atlas project in Britain alone involves over 8,000 observers and will comprise about a quarter of a million records it is obvious that co-ordinated enquiries in Australia, with far fewer observers and practically all of them concentrated in a narrow belt along a quarter of its huge coastline, would have to be on a different scale. But, even observer-scale aside, a large dry continent with an erratic climate poses unique problems as regards the distribution of its avifauna, and the type of enquiry would have to be tailored differently.

Co-ordinated enquiries are not a means of providing some occupation for bird-watchers who lack one, nor are they the opportunity for others to rule the roost! They are a specific tool suitable for a limited range of research purposes. They are particularly suitable for gathering large quantities of quite simple facts over extensive regions, and sometimes for long periods.

ORGANIZATION

Experience shows that the organization of a piece of co-ordinated research is all-important. A co-ordinated enquiry, like a piece of research by one individual starts because somebody has posed a question and is deeply committed to finding the answer. The difference lies in the fact that in co-ordinated enquiry the enquirer has chosen to use the help of many other people. Thus, in addition to his primary motivation of enquiry, the organizer must also have the ability to persuade others of the interest of what he proposes and know how best to obtain the desired data from the efforts of many observers. This makes it even more essential than in individual research that all the ideas involved be very carefully thought out in the first place. He requires a combination of an advertising agent's ability to sell his product (i.e. his enquiry) to as many prospective helpers as possible, a manager's ability to keep the staff (helpers) contented and productive, and a clerk's ability to plan and handle the sheer mass of paperwork involved. Anybody proposing to recruit the help of others to solve a problem should ask themselves if they have these qualities sufficiently.

Data have been collected on printed forms, normally in the form of counts. If some are in the form of judgements these are generally defined as far as possible and given as a list of alternatives such as '1-10, 10-100, 100-1,000' and so on. Descriptions, for instance of habitats or situations, are also listed as a set of alternatives from which the observer has to choose the closest, instead of describing them in his own words. This classifies the data in a standard way and is also easier for the observer. The success of co-ordinated investigations depends not only on the data sought but also on the simplicity and ease with which the observer can provide it. Clear, easily used forms with simple instructions produce the best response. Although the form itself should leave as little description as possible to the observer, there should be an open section for comments of any kind on the data. Observers are not automata and their views and ideas on the significance of the data they have obtained are often helpful to the organizer when he comes to the final analysis.

Sometimes it has been possible to run a pilot enquiry first, among a small number of reliable and experienced observers known to the organizer. This

has not only helped to find out if this was really the best type of data to answer the question in hand, but also whether the form itself was properly suited to the amount and type of data to be obtained.

When enquiries cover a wide area the organizer often appoints observers to become regional organizers for him. They take some of the local load of distribution and persuasion off his back, and on his behalf they can prod the tardy for their returns. Their close knowledge of other ornithologists locally is often very valuable, as already pointed out. In fact the creation of a local organizer for one investigation often brings into being little groups which are interested in helping gather information for future investigations in their areas.

Co-ordinated investigations depend entirely upon the ornithologists who gather the data. The project stands or falls on their interest and enthusiasm, both of which depend largely on the feed-back they get from the organizer. Organizers have had greatest success when they have arranged interested and immediate acknowledgement of records received and, most important of all, have produced regular news for their network with preliminary impressions of results, even if they are brief, part-formed or even negative. Such reports can also describe difficulties encountered and unexpected features. A good example of feed-back is provided by Bull's (1971) report on progress of the New Zealand mapping scheme, in which he gives the totals of data received, shows the proportions of the two islands covered to date and by using data for one common species illustrates some of the difficulties encountered. The *BTO News* is a simple, easily read quarterly news-sheet that does these things for all BTO enquiries. The observer needs to know that his data are useful and leading somewhere, though he will naturally not expect a major analysis at this stage. Such reports also allow the organizer to point out places where recording standards need to be improved. If there has been a major pitfall in co-ordinated enquiries it has lain in a failure by some organizers to provide good feed-back to the observers. Reports should be at least yearly, preferably more frequent.

Finally, and most important of all, the results must in due course be published. Organizers have varied considerably in the speed with which they have published their final reports. The sooner people read what their efforts have shown the more likely they are to help future enquiries.

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