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CITIZEN SCIENCE AND THE GATHERING OF ORNITHOLOGICAL DATA IN SINGAPORE

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INTRODUCTION

Citizen science refers to the recruitment of the public to assist in the collection of scientific field data (Cohn, 2008). These volunteers, not necessarily scientists, are then known as citizen scientists. Working closely with scientists to help monitor wild animals and plants, they participate for the love of nature and the open outdoors. Such collaborations help to instill in the public an awareness of the nature around them and the wildlife in their local communities (Cooper et al., 2007). The data collected by citizen scientists can then be used in scientific reports and articles.

The Nature Society (Singapore) (NSS) has been a practitioner of citizen science long before the term became popular. As far back as the mid-1960s, a loose Bird Study Group that existed within the NSS, then known as the Malayan Nature Society (Singapore Branch), had members out in the field collecting an array of information on bird behaviour (Wang & Hails, 2007; Wee & Tsang, 2008). The same tradition prevailed when the current Bird Group (BG) was formally constituted in 1984 (Wee, 2006b). Citizen scientists then were members of the society, lay-people with a deep interest in nature. As members, they enjoyed guided nature walks and participated in bird races. Such recreational activities honed their skills in bird identification, skills that proved useful in the conduct of field surveys and other scientific activities. A good example was the major collaboration with the National Parks Board between 1992–1997 when a biodiversity survey of Singapore's nature reserves was conducted (Chan & Corlett, 1997).

PRE-1990: EARLY ATTEMPTS AT CITIZEN SCIENCE

The early years of the NSS were when citizen science was at its best. That was a time when the BG was led mainly by expatriate birdwatchers, practitioners who had exposures to a long tradition of birding and years of field experience in their home countries. Birdwatchers then were encouraged to report bird sightings when out in the field, especially the arrivals of migrants and vagrants. They were also urged to observe general bird behaviour like courtship rituals, nesting habits, brood care, food preferences and inter-species as well as intra-species interactions.

Such field observations were published in the in-house monthly newsletter, the Singapore Avifauna (SINGAV). Members responded enthusiastically and every issue had more than a couple of special features on bird behaviour. Examples include the courtship of the greater racket-tailed drongo (*Dicrurus paradises*) (Ho, 1987), fearlessness of the drongo (Lim, 1988), migrating sunbirds (Subaraj, 1988), presence of dollarbirds (*Eurystomus orientalis*) in a home garden (Sharp, 1989) and a race of the collared kingfisher (*Todiramphus chloris*) (Ho, 1990). Such articles made the newsletter interesting amidst a mass of monthly species listings.

The first four volumes of the SINGAV (1987–1990) were to prove a valuable database in the years to come when ornithologist D. R. Wells started writing his monographs on the birds of the Thai-Malay Peninsular (Wells, 1999; 2007).

1990–2005: BREAKDOWN OF CITIZEN SCIENCE

Around 1990, the leadership of the BG was revamped and enthusiastic locals took over running the group (Wee, 2006b). Flushed with enthusiasm, they continued with all the activities put earlier in place. Sadly there were personality clashes with some of the expatriate birdwatchers and many of the latter moved out of the group to birdwatch on their own. Prominent among them was R. F. Ollington, who has been keeping a privately circulated monthly newsletter, *Birdline*, documenting his personal sightings and observations (Wells, 1999; 2007). His inaugural 1992 issue has continued into more than 82 issues to date.

So citizen science continued under local leadership and members continued to make field observations. But enthusiasm cannot replace experience, especially when even the better locals eventually moved away. The situation is

understandable, as local birdwatchers then had no overseas exposure and only a few decades of such traditions picked up from expatriate members birding in the country. And in the absence of novel ideas, birdwatching remained recreational, devoid of much scientific content. This situation continued throughout the 1990s and into the early 2000s.

The monthly SINGAV continued to be published but from a monthly newsletter, it became an 'occasional quarterly', with some years seeing no issues at all (Wee, 2006b). Obviously there was a significant drop in the number of field observations and special features on bird behaviour appeared in dribs and drabs until 2000 (Sutari, 1994; Wong & Ong, 1995; Chia, 2000). Given the limited issues that saw print, such features were significantly reduced. Reports of activities and trips, heavily padded with long lists of bird species seen, began to dominate the few issues that were published. The quality of the newsletter had obviously deteriorated as compared to the earlier issues. Morale among the citizen scientists was obviously at an all time low.

As late as the second half of the 1990s, Sreedharan (1996: 33), an eminent Malaysian-based birder, commented that local (as well as regional) birdwatchers had a tendency "to learn more and more about less and less". He was of course referring to the obsessive indulgence in ticking and listing, activities that involve bird identification in the field and the ticking of checklists to record the species seen. But his comments were never taken seriously as birdwatchers were obliviously happy to continue "twitching".

Despite all these happenings, the SINGAV continued to be a valuable database to practising ornithologists, especially the 1987–1990 issues. Not so the subsequent issues. And Wells, writing from his base in the UK, had difficulties obtaining the post-1990 issues. This was despite his being listed as the newsletter's Honorary Advisor and his willingness to subscribe to it. However, he did succeed in obtaining isolated copies, surreptitiously sent by sympathetic local birdwatchers (D. H. Wells, pers. comm.). His two monographs (Wells, 1999, 2007) each had about 300 citations from the SINGAV. What is significant is that the 1987–90 issues contributed about 87% and 60%, respectively to his two volumes. The slightly better spread in the later volume can be owed to it being published eight years after the first, thus involving a significantly more volumes of SINGAV. In both volumes he had free access to all of Ollington's *Birdline* that he used to the fullest (Wells, 2007).

Here, citizen science broke down in the sense that information collected by citizen scientists was not made easily available to a practising ornithologist. After all, data collected by volunteers do not necessarily belong to an individual or group of individuals; and unless put to good use and made available to all, such data are of limited use.

The situation with SINAV only improved in mid-2006 when a young biologist was appointed to the editorial board. This breadth of fresh air saw the newsletter reverting to its original monthly issues, now published online. With this move, there should not be any future problems of issues not becoming available. The editorial committee is currently encouraging members to submit behavioural observations, after a lapse of more than a decade.

POST-2005: REVIVAL OF CITIZEN SCIENCE

Citizen science saw a revival around 2005 when two major players came onto the scene. Bird photography had by then became popular with the introduction of digital photography (Chan et al., 2007). New to the scene, a few photographers sought affiliation with the NSS, hoping to revitalise the dormant Photo Group. Unfortunately their initiative was spurned (G. Guy, pers. comm.). Birdwatchers were naturally suspicious of these new enthusiasts, having had the field to themselves for the last few years. A lost opportunity, no doubt, as such an alliance would have made a powerful impact on the birding scene.

Then there was the formation of the Bird Ecology Study Group (BESG) (Wee, 2006a; Wee & Subaraj, 2006a). Many local birdwatchers had by then lost enthusiasm as "twitchers", and were looking beyond plumage. This alternate bird group affiliated to the NSS had hopes of injecting some science back into birdwatching. Although its formation was initially opposed, both groups are now slowly complementing each other—BG being more recreational, and BESG taking on the more scientific role (Wee & Tsang, 2008).

From the start the BESG collaborated closely with photographers. Working with them is truly citizen science in action. Most of these photographers are not members of the NSS. Skilled in their craft, they have limited knowledge of bird behaviour but are fast learners, and they are also becoming proficient in bird identification. Photographers provide images of bird behaviour and the BESG helps them interpret their findings. These are regularly posted on the weblog (http://besgroup.talfrynature.com) where their contributions are fully acknowledged. Currently the BESG's weblog has posted nearly a thousand items of bird behaviour, and has seen more than half a million visitors worldwide. They regularly attract contributions from overseas birdwatchers.

The BESG is now consolidating the postings, and publishing items in scientific journals so as to formalise the observations and give proper recognition to the photographers concerned. These include accounts of breeding behaviour

(Cheah & Ng, 2008; Wee & Wang, 2008; Wee et al., 2008), aberrant behaviour of hornbills (Wee & Subaraj, 2006b; Chan et al., 2008) and the mobbing and use of vomit projectile by terns on an intruding heron (Deng et al., 2008). These papers are now in the public domain and PDF copies are available to whomsoever is interested.

DISCUSSION

The eminent field ornithologist and Honorary Bird Curator of the Sarawak Museum, Slim Sreedharan, has, for the last decade or so, been persuading amateur birdwatchers from the region to make observations and publish them, no matter how trivial, so that in time these notes can serve as a useful database on birds of the region (Sreedharan, 1996). The BESG has been working with photographers and birdwatchers to make his call a reality. Biologists are also beginning to work closely with photographers to publish the latter's observations and images (Lok & Lee, 2008). Similarly, birdwatchers are actively courting photographers for their sightings and images for use in their newsletters and weblogs.

The success of the BESG in encouraging the study of bird behaviour has spurred some birdwatchers to expand their activities to include studying bird, and not merely looking at them. This is fully reflected in the latest issues of SINGAV where images of bird behaviour, mostly obtained from photographers, accompany observations and new sightings. It is no surprise that many of the new sightings come not from birdwatchers but bird photographers.

With the close cooperation of the major players, namely the BG, the BESG and bird photographers, the future of citizen science among the birding fraternity is bright as these groups work to complement one another for the benefit of ornithology.

So citizen science has been revitalised. However, to ensure that it grows from strength to strength, the elected leaders of the NSS should play a proactive role in ensuring that Special Interest Groups leaders do not hijack the groups for their own selfish purposes. These leaders should not be allowed to hang on to power, year after year. New leaders should be brought in to infuse new ideas that are crucial to the dynamic running of the groups. After all, often, a group is only as good as its leaders and those that do not have the intellectual capacity or leadership quality to lead by example and enthuse members, should be replaced.

Furthermore, field observations, published in old as well as new media, should be accorded authorship to their contributors, not merely be acknowledged, either for the observations or images used. This will go a long way to encourage photographers, as well as birdwatchers to make further submissions, and others to start contributing.

We are happy to say that most of the above are being implemented, albeit slowly. At an earlier Annual General Meeting of the NSS, a resolution was passed to ensure that leaders of Special Interest Groups be changed at least once every three years. So we have the mechanism to improve the quality of leadership, but do we have the resolve and courage to implement them? Only then can the future of citizen science in the collection of ornithological data flourish.

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