

What counts? Volunteers and their organisations in the recording and monitoring of biodiversity

Sandra Bell · Mariella Marzano · Joanna Cent · Hanna Kobierska · Dan Podjed · Deivida Vandzinskaite · Hugo Reinert · Ausrine Armaitiene · Malgorzata Grodzińska-Jurczak · Rajko Muršič

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Abstract There is a pressing need for volunteer amateur naturalists to participate in data collection for biodiversity monitoring programmes in Europe. It is being addressed in some countries, but less so in others. This paper discusses the results from qualitative research using semi-structured interviews, focus groups and participant observation within nine Participatory Monitoring Network (PMN) organisations in six European countries. The paper examines the features that facilitate recruitment, retention and motivations of volunteers to participate in biodiversity monitoring, including the social and cultural milieus in which they operate. The paper concludes that volunteers place a high degree of significance on their social experience within PMNs. Successful creation and management of PMNs thus requires that similar levels of attention be paid to social aspects of the organisation as are paid to the generation and management of data.

Keywords Amateur naturalists · Biodiversity · Monitoring · Participation · Volunteers

Introduction

Demands for data on biodiversity are escalating, in the wake of international environmental agreements and “out of concern to understand the impact of planning and development on the natural environment” (PAMEB 2003). The pressure is mounting to

S. Bell (✉) · M. Marzano · H. Reinert
Durham University, Durham, UK
e-mail: sandra.bell@durham.ac.uk

J. Cent · H. Kobierska · M. Grodzińska-Jurczak
Jagiellonian University, Krakow, Poland

D. Podjed · R. Muršič
University of Ljubljana, Ljubljana, Slovenia

D. Vandzinskaite · A. Armaitiene
Klaipeda University, Klaipeda, Lithuania

develop time- and cost-effective inventory methods and techniques for assessing the abundance, distribution and conservation status of species and habitat types, particularly in relation to the 2010 target of the European Union (Danielsen et al. 2005; see this volume). The pressure creates a demand that far outstrips the capacity of professional scientists. To meet it even partially, large numbers of volunteer naturalists are required; even with sufficient professionals, the financial costs would be prohibitive. Battersby and Greenwood estimate the input of volunteering to bird monitoring in the United Kingdom at “well over 90%” (2004:19). Volunteers also contribute to meeting the cost of employing professionals, through subscriptions and donations, and represent a core group of citizens who contribute to wildlife management and conservation.

The urgency of the situation prompted the inclusion of research into volunteer participation within the overall scope of the EuMon project. This paper is based on the ethnographic social science element of the resulting investigation into nature-based monitoring organisations that utilise volunteers to collect records and assist with surveys. We refer to these organisations as participatory monitoring networks (PMNs): a broad term that includes various forms of collaboration between ‘nature specialists’, both professional and amateur. Although these organisations are self-contained institutions, we describe them as networks because of the way in which information – primarily in the form of raw or processed biological records – is circulated within them, between individuals and groups, and is channelled to partner organisations. Forming networks with partner organisations is particularly important in countries where there are many small- and medium-sized PMNs rather than larger national organisations. Participation in such collaborative networks enables PMNs to more efficiently improve public awareness of their work and—in the case of conservation-oriented organizations—influence policy-makers.

PMNs are complex formations. Their success or failure depends on culturally and historically specific conditions that vary from region to region, country to country. To comprehend fully the underlying factors that enable—or prevent—the contribution of PMNs and their volunteers to bio-monitoring programmes, it is necessary to understand their ‘inner workings’. In our efforts to explain PMNs ‘from the inside’, we use comparative ethnographic data from nine organisations, located in six different European countries (Denmark, Italy, Lithuania, Poland, Slovenia and United Kingdom), to explore their organisational structures and activities. Our discussion here concentrates on social interactions that occur within and between PMNs, focusing specifically on features that facilitate the recruitment, retention and motivation of volunteers that participate in organised biodiversity monitoring.

Background to research on participatory monitoring networks (PMNs)

Over the course of the project, nine organisations were studied using qualitative methods, including semi-structured interviews, focus groups and participant observation (DeWalt and DeWalt 2002; Emerson et al. 1995). These organisations were selected from among those that responded to a questionnaire deployed during an earlier stage of the research. Four of the organizations—based in Lithuania, Poland, Slovenia and the United Kingdom – were subjected to in-depth study, including a minimum of 19 interviews, one focus group and at least 14 days of participant observation. The other five organisations, based in Denmark, Italy, Poland and the UK, were studied through Rapid Assessment – a procedure involving a smaller number of interviews, focus groups and days of participant observation

(Harris et al. 1997). In addition, we also conducted literature surveys and internet research, using websites, discussion forums and weblogs.

The in-depth ethnographic studies were carried out with PMNs whose work concentrated on birds. A shared taxonomic group facilitated cross-cultural comparisons and, given the very large data-set, also helped screen out a range of potential additional variables. Birds are also among the most popular species studied by amateur naturalists in Europe (Battersby and Greenwood 2004) and, unlike in the case of fish or wild game, the relationship of volunteers to the birds they study is not complicated by factors such as the animals' use value or status as natural resources. The final selection of organisations also reflected the linguistic and geographical accessibility of PMNs, as well as the willingness of organisers and members to take part in the study.

While some of our conclusions about the organisation and motivation of volunteers are of a general character, others are linked to the specific organisational structure and character of particular PMNs. For example, the relationship of members to their PMN will differ between a small local bird club, a naturalist vacation camp and a national NGO with thousands of members. We have therefore classified the studied PMNs into four 'ideal types' (McKelvey 1975), according to their organisational design and formation.

1. *Participatory Environmental Tourism (PERT)*: "short-term travel by volunteers to undertake a hands-on role in flora or fauna field research" (Ellis 2003:76). Volunteers contribute financially to the research, and it is usual for a core group of professional experts to take charge of organisational management and research design. Examples include AfN WOLF, Akcja Carpatica and Tethys.
2. *Virtual Network Organisations*: multiple and geographically dispersed parties (persons and/or organisations) who, by uniting complementary activities and methods, endeavour to attain a core objective such as recording field data. The network depends on electronic communication. The example in this study is the UK Phenology Network.
3. *National Non-Governmental Organisations*. National NGOs are independent voluntary associations of people within a nation-state, acting together on a continuous basis for common purposes other than achieving government office or illegal activities. NGOs may receive grants from governmental organisations but ideally remain independent (Willets n.d.). Examples here are BTO, Lithuania Ornithological Society (LOD), Danish Ornithological Society (DOF) and Birdwatching and Bird Study Association of Slovenia (DOPPS).
4. *Local Associations*: Grass-root organisations run by volunteers. Autonomous non-profit groups, with membership based on a shared interest in nature (Kempton et al. 2001). The example in this study is the Northumberland and Tyneside Bird Club (NTBC).

Defining volunteers

The Oxford English Dictionary gives two relevant definitions of the English noun 'volunteer': "1. a person who freely offers to do something"; and "2. a person who works for an organization without being paid". In practice the term is used flexibly, however, and can refer to a host of different arrangements: the lines between paid members of staff and volunteers, for one, are often permeable. To give an example, officials within DOPPS often begin as volunteers for the organisation before progressing to paid members of staff, who

continue their voluntary activities by working longer hours than stipulated in their contracts. In some instances, particularly in the case of Local Associations, volunteers contribute both to monitoring and to the day-to-day administration and running of their organisations: in the NTBC, for example, voluntary members man an elected committee and two active sub-committees, as well as assisting with the publishing and editing of newsletters and other material. Volunteers in participatory environmental research tourism, on the other hand, pay the PMN to participate in activities. In the case of Tethys, a week-long research cruise between March and October costs up to 880€. Volunteers with Akcja Carpatica pay for the upkeep of the camp at Myscova, while organisers cover the cost of equipment, including the mist-nets used for capturing birds. AfN WOLF volunteers also pay for their own subsistence, during stays that routinely last up to two months. Volunteers thus donate both their time *and* their own resources: in many cases, the lack of either can be a bar to participation.

Unpaid volunteer naturalists are commonly contrasted with their paid counterparts, professional scientists – to the point where the term ‘volunteer’ has become almost synonymous with ‘amateur’. For many volunteer naturalists, however, this opposition fails to reflect the measure of their expertise: dedicated amateurs who pursue their knowledge acquisition and activities systematically, as ‘serious leisure’ (Stebbins 1992:3, 2001), can achieve higher standards of expertise than their professional counterparts. Many members of the naturalist organisations we worked with fit this profile, or came close to it (Bell et al. in press).

Volunteering in context

Some European countries have very large numbers of citizens who participate in volunteer biodiversity monitoring. In 1995, the number of volunteers involved in biological data collection in the UK was estimated at 60,000 (Burnett et al. 1995:1)—a figure that has increased significantly since then. In the Netherlands, approximately 15,000 volunteers recorders collect data for Private Data Managing Organisations, each of which attends to a different taxonomic group (Lawrence and Turnhout 2005:6), while DOF counts 2,400 volunteers among its 13,000 members. Other countries, however, struggle to mobilize their citizenship.

Across Europe, the willingness of citizens to undertake voluntary activities must be considered in the specific cultural and socio-political context of the nation. A wide range of factors can support—or limit—the capacity for developing and sustaining a strong voluntary sector at the national level, and the interaction between these factors can be extremely complex. A country might sustain a voluntary sector vigorous in one sphere but not in another: the presence of strong religious institutions, for example, may create a strong culture of voluntarism in social welfare, but scarce or non-existent ecological voluntarism. Citizen and amateur participation in ecological voluntarism activities also depends strongly on the predominant narratives, meanings and cultural histories that are associated with—and define—‘nature’ in any given national context.

In pre-industrial Europe, knowledge of nature was an aspect of every day life, transmitted informally and put to practical use: a situation that prevailed, in remote corners, well into the twentieth century. With the rise of industrialisation and escalating urbanisation, however, knowledge of nature was gradually transformed into a more formal, specialised discourse. The early specialised study of nature and ‘natural history’ was carried out by gentleman savants, who banded together in academies and societies,

Table 1 Participatory Monitoring Networks and type of social science research

Name of PMN—in original language and English	Acronym or abbreviation	Country	Taxonomic group	Type of social science research
Stowarzyszenie dla Natury ‘WILK’ Association for Nature ‘WOLF’	Afn WOLF	Poland	Mammals—large carnivores and bats	Rapid appraisal
British Trust for Ornithology	BTO	UK	Birds	Rapid appraisal
Dansk Ornitologisk Forening Danish Ornithological Society	DOF	Denmark	Birds	Rapid appraisal
Tethys	–	Italy	Cetaceans	Rapid appraisal
UK Phenology Network	UKPN	UK	Varied	Rapid appraisal
Akcja Carpatica Operation Carpatica	–	Poland	Birds	In depth
Društvo za opazovanje in proučevanje ptic Birdwatching and Bird Study Association of Slovenia	DOPPS	Slovenia	Birds	In depth
Lietuvos ornitologu draugija Lithuanian Ornithological Society	LOD	Lithuania	Birds	In depth
Northumberland and Tyneside Bird Club	NTBC	UK	Birds	In depth

spawning the academic disciplines of the biological sciences (Jardine et al. 1996). Meanwhile, ordinary people—especially urban dwellers—began to pursue knowledge of nature on a hobbyist basis. In many countries, amateur associations for the pursuit of natural history were founded during the nineteenth century or earlier and survive to this day—others have more recent origins (Table 1).

Public interest in ornithology in the UK, for example, traces its roots back to the start of the twentieth century. A subsequent boom in the publication of books and broadcasts about birds (Moss 2004) led to the formation of bird groups outside the older, traditional natural history societies. In Slovenia, by contrast, birdwatching as a culturally approved activity has a relatively short history. During the early years of independence, the popularity and social acceptability of bird watching increased, to the point where Slovenian citizens came to view the biological diversity of their country as a badge of distinction that set it apart from other former Yugoslavian states. In 2001, the government launched a Biodiversity Conservation Strategy (MESP 2002) that stressed the contribution of ‘volunteer work’ to conservation. In the meantime, Slovenia’s accession to the EU and the need to comply with the requirements of the Natura 2000 programme inflated demand both for biological data and for those who were capable of producing it. DOPPS benefited hugely from this. The organisation had begun reinventing itself in the mid-nineties, establishing fruitful associations with foreign organisations such as BirdLife International; following independence, DOPPS was further invigorated by a new relationship with the government which, combined with access to EU funding, granted it a lively public profile. A new generation began to take notice. Birdwatching received a makeover, emerging as a ‘cool’ youthful pursuit that contrasted with traditional and ‘staid’ Slovenian outdoor pursuits such as hunting and fishing (Bell et al. in press).

The rising prestige of birdwatching in Slovenia illustrates how volunteer recording and monitoring activities are linked to the political status and significance of environmentalism. As well as producing scientific data, six of the nine PMNs in this study adopt an explicit conservation agenda, while the remaining three have significant, albeit less direct, links to conservation programmes. The rise of environmentalism since the middle of the twentieth century—and its permutations in various European countries—have greatly influenced the willingness of citizens to act as biological recorders.

In Lithuania, the case of the LOD clearly illustrates how the fortunes of PMNs are entwined with the development of national environmental movements. The organisation was founded in 1984, at a time when the popularity of the green movement in Lithuania was on the rise. From its beginning, the movement articulated, in ecological terms, a critique of the Soviet system. Accompanied by large and well-supported rallies, this served to raise awareness, build confidence and encourage belief in the possibility of openly criticising the system. One informant described this period in LOD's history as a “*boom time*”, followed by the further boom of the EU accession period, when funds became available to develop new projects. After independence, however, public participation in the environmental movement declined, green activists became increasingly professionalised and less ‘radical’ (Rinkevičius 2001); full EU membership for Lithuania also resulted in reduced funding opportunities. In short, the fortunes of LOD declined in proportion to the national environmental movement's loss of momentum.

The detailed examples of DOPPS and LOD demonstrate the impact of wider societal factors on the direction and development of PMNs, which must constantly adapt to shifting socio-cultural contexts—including shifting perceptions of the value of nature-based activities (Muršič and Podjed this volume). In the case of National NGOs, as symbols of national cohesion and differentiated environmental policies, their reach and status makes them particularly vulnerable. Where ‘green’ values are considered a matter of national pride, as in the case of Slovenia, National NGOS such as DOPPS benefit; on the other hand, where green politics become less popular or are disaggregated from patriotic or national values, as in the case of LOD, PMNs – and particularly NGOs—suffer.

Recruiting, retaining and motivating volunteers

While different types of PMNs require different volunteer recruitment strategies, all PMNs must be *visible* to potential recruits. Such visibility is achieved primarily through advertising, particularly via websites. Print and broadcasting advertising is costly and beyond the means of all but the wealthiest National NGOs; most PMNs therefore seek free publicity, through news columns or TV and radio magazine programmes. Local media are significant for regional organisations, and specialist nature journals also serve as recruitment vehicles. The UKPN achieved enormous success with a recruitment drive through a partnership with two popular British Broadcasting Corporation (BBC) nature programmes, *Springwatch* and *Autumnwatch*. In fact, high exposure created such a recruitment boom that UKPN now faces problems with retention. Retention is the twin of recruitment: in a sense, insofar as it reduces the need for recruitment and enables the PMN to build long-term expertise, it is even more significant. Successful retention requires a sensitive approach to volunteer motivation. Our material indicates that volunteer monitors are motivated by a combination of cognitive, social and emotional drivers. Rather than any single factor, it is the composite of motives that stirs the volunteer to action and sustains commitment. PMN coordinators

need to recognise this complex balance of motives when they design a managed volunteer programme.

The alternative world of nature-social bonding and trust

Across our material, two of the important emotional motivations for volunteer monitors appear, at least initially, to contradict each other. The first is the desire to be alone with nature; the second is the pleasure of socialising with like-minded people. Many of our informants stress the positive feelings associated with being alone “*with nature*”: a condition associated with removal from the structured, everyday world of work and family life, of production and consumption—variously described by our informants as a world with “*anxieties and troubles*”, of “*vicious circles and haste*”, associated with a consumerist life “*without any sense and values*”. Against this backdrop, many birdwatchers experienced their activities as a key to a “*richer*” quality of life, unavailable to people stuck in the harsh quotidian world of making and spending money.

The sense of slipping into a “*different world*”—a sort of alternate experience of reality, rooted in an unusually intimate and absorbing connection with nature—overcomes the potential for isolation inherent in wanting to be alone with nature, bringing naturalists into fellowship with others of a similar disposition (Lawrence 2005). Of all the organisations that we studied, the UKPN stands out as one with the greatest potential for social isolation between members—due to its dispersed membership, and the inherently solitary character of member activities such as recording seasonal events. But even this example furnishes evidence of a sociality focused around shared enthusiasm: one UKPN informant recruited other naturalists in her area to become involved in churchyard conservation projects, while another belonged to a small group of botanists who have recorded events at 20 plots in West Dean Woods in Sussex for over two decades.

Naturalists’ desire to share the meanings nature holds for them is connected to their sense of being permitted to inhabit a special and unique world. In this “*world apart*”, everyday social boundaries between people weaken. New boundaries may be erected, in this alternative world—through status gains associated with expertise, for example, or new distinctions between amateurs and professionals—but existing social roles and normative distinctions seem to matter less. As one NTBC member put it:

“the thing with birdwatching is it cuts boundaries. It doesn’t matter who you are, whether you are a lawyer, you’ve never had a job in your life, an ex-criminal – nobody cares what background you are from, what sex you are. You are there to birdwatch. That’s what you are there for.”

In the three Participatory Environmental Tourism organisations that we studied, people live together in close proximity for between two and four weeks, bonding through their shared passion for the animals they monitor. According to one of the Akcja Carpatica organisers, getting to know other people is the “*biggest motivation*” for volunteers. The degree of trust achieved in situations where volunteers rely on one another to supply basic needs for food, water and shelter in difficult conditions is a source of considerable satisfaction. New social bonds are further cemented by intense experiences that confer a sense of “*living authentically*”, in contrast with the “*artificial*” character of contemporary existence. Social trust and bonding are also crucial to organisational cohesion and member loyalty in the less socially intensive organisations: in LOD, for example, where social trust between members and organisers has been eroded, the level of volunteering is low.

Knowing nature

One important aspect of sociality in the alternative worlds of nature lovers is the pursuit of relationships based on mutual learning. Volunteer naturalists' ardour for nature is reflected in their zeal to acquire knowledge and skills. The will to learn is one of the hallmarks of a serious volunteer recorder: one thing is to admire and love nature, quite another is to give oneself over to learning subtle techniques of identification by sight and sound, memorising lists of Latin names or working out exactly when 10% of the leaves of a tree have changed colour in the Autumn. Embodied skills – such as the dexterity to disentangle birds from mist-nets, the correct use of optics or the quiet stillness required to observe animal behaviour – must also be acquired. The hunger for new skills and knowledge, and the ongoing development of existing skills—the pleasure of “*learn[ing] something every day*”—also forms an integral part of the satisfaction inherent in volunteer monitoring activities. In the words of one informant, “*I don't think that you can ever stop learning. That's the way I look at it, that's my philosophy. I have been birdwatching for 22 years. I class myself as a good birdwatcher but I am always learning.*”

On the basis of our material, it seems that this desire for knowledge and skills is best satisfied when linked to the desire for like-minded companionship—specifically, through systems of informal mentoring, where the most experienced teach the less experienced. Participation offers considerable opportunities for informal learning, and social learning is a strong feature across all the PMN types in our study. One informant from NTBC described how he served his “*apprenticeship*”, as a young adult, with a well-known and knowledgeable birdwatcher; another spoke of his training with a group of older birders: “*I was taken under the wing of certain people who, if you like, were mentors.... I was dead lucky that I met these guys. They trained me to become a ringer and I joined the bird club.*” In DOF, this kind of learning is harnessed to train new volunteers for monitoring tetrads—geographical areas of 2×2 km square, used as units in environmental monitoring. Beginners are assigned for a time to an experienced surveyor, before undertaking work alone.

Volunteers are strongly motivated by participating in cycles of knowledge exchange. Social learning in PMNs is characterised by the desire to learn, combined with the desire to teach and tutor others: volunteers described the excitement of learning in an atmosphere where supervisors are motivated to pass on what they know, and where knowledge is infused with enthusiasm. As we anticipated, on the basis of earlier research (Lawrence 2005; Ellis and Waterton 2005), volunteers narrated to us their enjoyment in being outdoors and feeling close to nature, but such pleasures are neither exclusive nor specific to volunteer monitoring. Rather, the particular intimacy with the natural world developed through such activities is closely associated with a growing understanding of how the natural world works—and such understanding is a goal sought through mutually supportive learning. With the exception of LOD, where adult members complain about the scarcity of learning opportunities, such learning was present across all the organizations that we studied, and constituted a key factor in ensuring member loyalty to their PMNs.

Recognition and feedback

Another key strategy for ensuring volunteer satisfaction—and retention—is demonstrating to volunteers the extent to which their data is valued and made use of by scientists and policy makers. Communicating to volunteers the ‘usefulness’ of their data is vital, because many people have a “strong sense of wanting to be in nature, wanting to go slow, wanting

to look in detail—but somehow needing a purpose, an excuse or permission” (Lawrence 2005:6). Websites and publications are useful in this regard, but our research suggests that the interpersonal interactions we have outlined here play a key role in the process.

Both DOF and BTO boost recruitment and retain volunteers by interacting as closely as possible with people at local levels. DOF runs a scheme known as The Caretaker Network, whereby two hundred areas designated as important bird habitats are managed by DOF through volunteers. Around 350 DOF volunteers carry out monitoring in these areas, run websites and act as advocates. The Caretaker Network incorporates 12 local branches of DOF, each of which is supervised and regularly visited by a professional project coordinator. Similarly, the BTO has divided the UK into a Regional Network of 125 areas that are managed by local volunteer representatives. These representatives are involved in activities such as recruiting new members, motivating existing volunteers to conduct survey work and liaising with local bird clubs and other regional organisations. The Regional Network appoints representatives to a committee that meets with BTO staff members twice a year, to raise issues, discuss problems and provide feedback to the central body of the organisation.

The two examples illustrate how personal interactions energise and stabilise volunteer activities, facilitating sensitive management of the volunteer/amateur/professional nexus that we turn to in the next section.

Managing relations between professionals and amateurs

Just as any general definition of the term ‘volunteer’ becomes ambiguous in practice, so do the terms ‘amateur’ and ‘professional’. For the noun ‘professional’, the OED gives the following definition: “A *person or persons: that engages in a specified occupation or activity for money or as a means to earning a living, rather than as a pastime. Contrasted with amateur*”. In practice, as Ellis and Waterton remark, the two categories represent ‘malleable rather than static structures’ (2005:673). Stebbins (1992) considers amateurs and professionals as colleagues in an interlocking system of relations that links them to their audiences, which in the present case includes environmentalists, conservationists, policy makers and ‘lay’ citizens who seek to inform themselves about nature. Relationships between amateurs and professionals can be “functional and dysfunctional, conflicting and harmonious” (Stebbins 1992:23). Our research suggests that the balance between amateurs and professionals is difficult to achieve, never mind maintain, and that it may swing back and forth over the history of an organisation. The most thoroughly ‘professionalised’ organisations in our study were the National NGOs: LOD, DOF, BTO and DOPPS. Two examples illustrate the variation in outcomes that may result from the specific history—and cultures—of amateur-professional relations within particular PMNs (Muršič and Podjed, this volume).

We have already described the history of LOD’s funding decline, and the consequent decline in number and type of projects undertaken within the organisation. These circumstances provoked tension between the professional minority and the amateur majority within the organisation. LOD professionals considered amateurs to be capable of nothing but the simplest monitoring tasks. A LOD organiser remarked of amateurs that “*they only want to observe birds and are not interested in their feeding habits, biology or migration.*” Amateurs, on the other hand, expressed their discontent with LOD—particularly with the lack of activities and projects. The situation was exacerbated by an overall attitude of mistrust, within the Lithuanian government, towards data produced by voluntary monitoring projects. Tension and clashes between professionals

and amateurs within LOD have led to a state of institutional stagnation from which it may be difficult to recover, and which is disadvantageous to the overall state of ornithology in Lithuania.

The opposite situation obtains within the BTO, which as a National NGO in the UK has been dedicated to enabling and involving amateur ornithologists since its establishment more than 70 years ago. As the then director of BTO phrased it, “*it’s very much the amateurs coming together and then employing professionals to organise the work for them. And, of course, with the professionalisation of ornithology... the role of the professional has become more important in the organisation.*” Unlike in the case of LOD, however, with the BTO professionalisation has not led to tensions with amateurs. Rather, the opposite has occurred: emerging professionalism has been accompanied by an increase in the participation of expert amateurs (Stebbins 1992:9–13). This positive outcome results from an institutionalised attitude of trust towards non-professional practitioners within the BTO. Importantly, even though the administration is currently run by professionals, amateurs sit on the council that acts as BTO’s main decision making body. BTO staff also tends to downplay differences in skill, knowledge and expertise between amateurs and professionals, preferring to stress a philosophy of inclusiveness. As one employee declared, “*there is no difference in skill between the volunteers and professionals.*”

Clearly, managing relations between professionals and amateurs in a manner that favours amateurs is an important mechanism for PMNs to achieve institutional stability and continuity. If professionalisation results in status loss for amateurs, and the loss of opportunities for amateurs to build expertise through participation in monitoring projects, this will likely generate dissent within the organisation and may, in the longer term, lead to institutional decline.

Conclusion

PMNs must strike a dynamic balance between recruitment and retention, bringing in new volunteers while consolidating the existing membership; this requires effort and inventiveness. Volunteers in PMNs ascribe importance to both their data-gathering activities and their social experience. To be successful, PMNs must thus pay similar attention to both data generation and social management.

In Participatory Environmental Research Tourism, volunteer satisfaction involves a temporary escape from everyday life into an intense, “*authentic*” social world. Where these experiences are carefully managed, the need of volunteers to share food, shelter and resources in difficult conditions generates trust, social bonds and a sound environment for social learning, within which volunteers can increase their knowledge and skills. Such social ‘intensity’ is also a major characteristic of Local Associations—such as the NTBC, whose members prize the sociability of their organisation, with meetings, informal gatherings in the field, organised trips and close, long-standing friendships and groups within the wider membership (Bell et al in press).

At the opposite end of the scale, Virtual Network Organisations—represented in this study by the UK Phenology Network—draw on work that is usually carried out by solitary individuals, alone in nature. Even here, however, there is still a strong element of social cohesion. Our UKPN informants met face to face with fellow naturalists, but they also interacted via the UK Phenology on-line forum. In this sense they operated as a virtual

community, involving “a combination of physical and virtual interaction, social imagination and identity” (Shumar and Renninger: 2002: 1–2)

In the case of National NGOs, professionalisation can easily threaten volunteer aspirations towards participatory and egalitarian social relationships. The examples of DOF and BTO illustrate successful strategies to mitigate bureaucratic over-centralisation, through ongoing two-way centre-periphery interactions within the organisation. The example of LOD—and DOPPS (Muršič and Podjed this volume)—illustrates how alterations in external circumstances create constantly changing pressures to which national PMNs must adapt or risk stagnation and decline.

Across all the PMNs we studied—regardless of their type or national context—the most important driver for the expansion and sustainability of volunteer participation was enthusiasm. Our conclusion is therefore that PMN management efforts should be geared towards enlivening and motivating participants, by providing an inspiring environment where trust, respect, recognition, value and enjoyment can flourish.

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