



Swann's Crystal Ball: Seeking Species in the Sixties

Robin Stevenson looks back to the Norfolk bryophyte checklists of the 1960s and unravels the progression of new taxa recorded for the county

△Above. Bawsey Country Park, Norfolk. R. Stevenson

Before the 1967 Spring Field meeting in Norfolk attendees were presented by the organiser, the late Eric Swann, with a list of Desiderata, the preamble to which read as follows: *List of West Norfolk (VC28) bryophytes for which records are required. Members are invited to keep a look-out for any of the following, which, if found, would be either a new vice-county record or confirmation of an old record. Nomenclature follows the two Census Catalogues and species are listed in alphabetical order for ease of reference.*

There followed a list of 105 taxa. Of these, two varieties (*Cephalozia bicuspidata* var *lammersiana* and *Drepanocladus sendtneri* var *wilsonii*) are no longer recognised, and *Zygodon viridissimus* which was on the list, accompanied by the following comment: *Does this appear to be far from common now?* have been omitted from Table 1, leaving 102 species. (The meeting did stray into East Norfolk, VC27, but those records have been omitted from this account).

Discussion of Swann's choices

What we do not know is how Swann arrived at this list, nor which species were deemed to be possible new VCRs and which were old records needing confirmation.

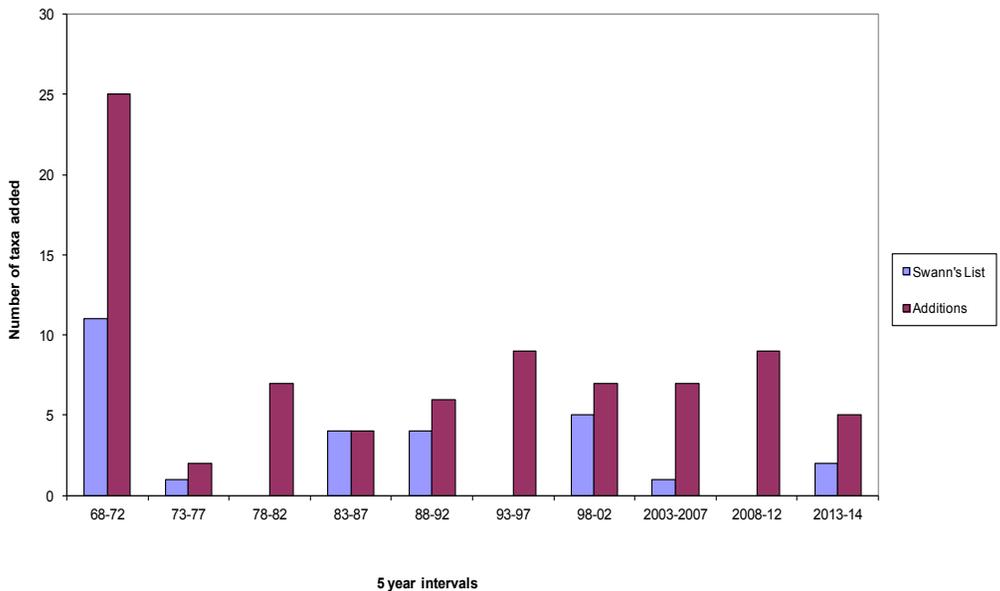
The most obvious way of trying to identify possible new VCRs at the time would have been to consult the available Census Catalogues (Warburg 1963; Paton 1965) and note species found in adjacent vice-counties, but absent from VC28. However, even examining only the list of 'desired' hepatics, it is obvious that other criteria also influenced his choices, as the list of hepatics includes several species which do not occur in adjacent vice-counties.

The distribution patterns indicated by the Census Catalogue (Paton 1965) must, even then, have indicated that *Cephalozia lunulifolia* and *Scapania scandica* were either unlikely or highly unlikely, so goodness knows why he chose them. His choices maybe reflect the fact that

Table 1. Swann's list of Desiderata. Names have, when necessary, been updated to those currently employed (Hill *et al.*, 2008). Emboldened species are yet to be recorded from VC28; species CAPITALISED are deemed to be highly unlikely to ever do so, whilst underlined species were seen in the course of the meeting, confirming old records.

Anthoceros punctatus	Ditrichum heteromallum
Calypogeia arguta	Entosthodon fascicularis; obtusus
Cephalozia lunulifolia; pleneiceps	Ephemerum recurvifolium; minutissimum
Cephaloziella elachista ; hampeana	<u>Eucladium verticillatum</u>
CHILOSCYPHUS POLYANTHOS	FISSIDENS CRISPUS ; exilis; incurvus; viridulus
Fossombronia foveolata; wondraczeckii	<u>Gyroweisia tenuis</u>
Frullania tamarisci	Herzogiella seligeri
Leiocolea badensis; turbinata	Hygroamblystegium humile; varium
Lejeunea cavifolia	Hygrohypnum luridum
Lophozia bicrenata; incisa; LONGIFLORA	Leptodontium flexifolium
Metzgeria violacea	Microbryum floerkeanum; rectum; starkeanum
Nowellia curvifolia	Neckera pumila
Odontoschisma denudatum	Orthotrichum cupulatum; lyellii; pumilum; striatum; tenellum
Plagiochila asplenioides var asplenioides	Oxyrhynchium schleicheri ; pumilum
Reboulia hemisphaerica	PHILONOTIS CAESPITOSA
Riccia glauca; subbifurca	Plagiothecium curvifolium
Scapania compacta; nemorea ; SCANDICA ; undulata	Pogonatum aloides; nanum ; urnigerum
Sphaerocarpos texanus	Pohlia annotina; ANDALUSICA
Tritomaria exsectiformis	Polytrichastrum longisetum
	<u>Pterygoneuron lamellatum</u> ; <u>ovatum</u>
Acaulon muticum	Rhynchostegiella tenella
Aloina aloides	<u>Rhynchostegium megapolitanum</u> ; murale
Bryum pallescens ; radiculosum; turbinatum	Sanionia uncinata
CALLIERGONELLA LINDBERGII	Sciuro-hypnum populeum
Campylopus fragilis	Scleropodium cespitans
Didymodon acutus ; ferrugineus; rigidulus; <u>luridus</u>	Syntrichia latifolia
Drepanocladus polygamus	Thuidium assimile
CERATODON CONICUS	Tortula marginata; truncata; vahliana , wilsonii
Cinclidotus fontinaloides	Trichostomum brachydontium ; crispulum
Dichodontium pellucidum	Ulota bruchii; coarctata ; phyllantha
Dicranella schreberiana; crispa	Weissia longifolia
Dicranum montanum	

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△Figure 1. Records of new taxa recorded in VC28 (West Norfolk), grouped into lustra (5 year periods). NB: The last pair of bars only cover a two year period.

he was not primarily a bryologist, and he may have been relying on (duff?) advice from others. He acknowledged in his Floras (Petch & Swann 1968; Swann 1982) that he relied heavily on records submitted by others.

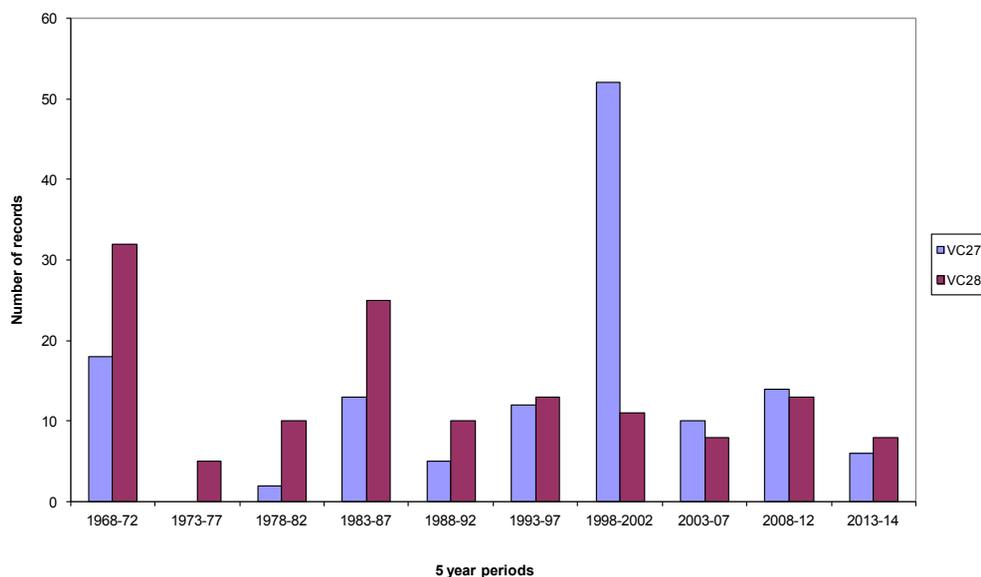
Lophozia longiflora, which we would now regard as equally unlikely, featured on his original list as *L. porphyroleuca*. This was listed by Paton (1965) as present in the adjacent VC27, thereby justifying his choice. *L. porphyroleuca* was then subsumed into *L. guttulata*, which, in the 1981

Census Catalogue (Corley & Hill 1981) was noted as being part of a 'complex ...in need of revision'. Ten years later it was still listed, by Smith (1990), as being 'widely distributed but rare in western and northern Britain and Ireland, elsewhere very rare'. Blockeel & Long (1998 - citing Grolle 1983), limited its distribution to a single VC96. When the next Census Catalogue was published (Hill *et al.*, 2008) it appeared, as a bracketed species, for VC26 as well as in VC96.

The latest thinking on the subject, in Blockeel *et al.* (2014) restricts its distribution to a single hectad in Scotland, and observes that the only character used to identify the species 'seems ambiguous, and further work on this difficult group is probably needed'. Proof, as if it were needed, that bryology is not an exact science! Swann's suggestion that it might occur in West Norfolk was not, by the criteria available to him



◁Left. *Orthotrichum striatum* at Ken Hill, Norfolk.
R. Stevenson



△ Figure 2. Records from East and West Norfolk compared, between 1968 and the present. NB: The last pair of bars only cover a two year period.

at the time, as unlikely as it now appears.

The taxonomy of *Chiloscyphus polyanthos* is similarly confused, whilst the position of some of the mosses capitalised in Table 1 may, at the time, have been equally uncertain.

Trying to identify which, out of many, old records he reckoned needed confirmation would be nigh impossible. In his Floras (Petch & Swann 1968; Swann 1982) he lists old records, generally without comment. Only occasionally, as in the case of *Antitrichia curtipendula*, does he speculate that the plants might be extinct. One can only assume that he regarded most old records as fair game.

Progress in recording

Progress in finding Swann's Desiderata has been traced by looking firstly at the account of the meeting (Swann 1968), and then at all the new

vice-county records published since then. These were initially printed in the *Transactions*, then the *Journal of Bryology* (up until 1974), when they transferred to the *Bulletin* and then *Field Bryology*. (The date of publication does not always coincide with the actual date of discovery, which was, in many instances, several years previously). A summary of this data is presented in Figure 1.

As can be seen, the 1967 Field Meeting was very successful in finding plants on Swann's list, however, during the next 10 years little or no



▷ Right. *Lophozia capitata* at RSPB Leziate, Norfolk.
R. Stevenson



◁Left. Wootton Woods, Norfolk. R. Stevenson

which called for the submission of voucher specimens to support older records for which no vouchers existed.

In the period from about 1980 onwards, progress has been much more regular, both in West and East Norfolk (VC27). Figure 2 illustrates differences in recording between the two vice-counties, again by lustra (5 year periods).

Until comparatively recently VC28 has yielded most new records; the very high number of VC27 records in the 1998-2002 period was due to missing vouchers being submitted in 1999, after the production of the new Census Catalogue (Blockeel & Long 1998).

Whilst the bulk of the species listed by Swann remain relatively rare in the vice-county, a number are now known to be widespread (at hectad level), even if not actually common (Table 2).

▽Below. *Leiocolea rutheana* at Scarning Fen, Norfolk. R. Stevenson

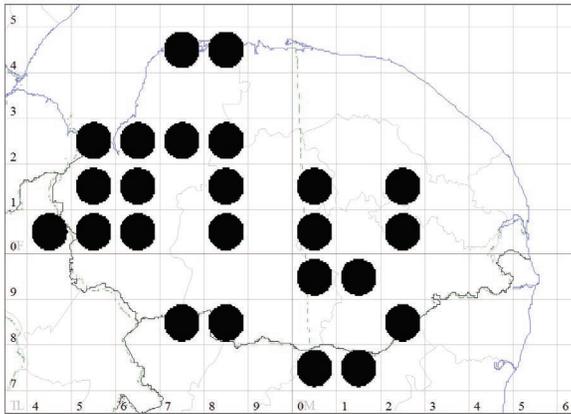


progress was made.

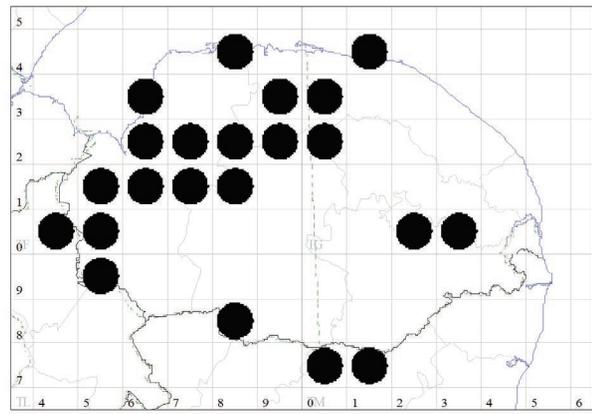
More striking is that species additional to those actually anticipated by Swann have turned up in greater numbers, and much more frequently, than those he thought likely. It demonstrates how slow progress in recording may be, and how difficult it was, nearly fifty years ago, to make predictions as to probability of occurrence. Eric Swann was primarily a vascular botanist, rather than a bryologist; local legend relates that, in addition to an inability to read a grid reference correctly, he was firmly of the opinion that some places were simply 'not worth the bother of visiting', so the sort of systematic recording which unearths the unexpected was not on his agenda.

The 'new' taxa in Figure 1 include both varieties and de-bracketed species, i.e. confirmations of species which had not been seen for more than 50 years. Some of the peaks seen correspond with the publication of recent Census Catalogues e.g. Blockeel & Long (1998), and Hill *et al.* (2008)

Syntrichia virescens



Orthotrichum striatum



△Figure 3 (left). The present known distribution of *Syntrichia virescens* in Norfolk as a whole. △Figure 4 (right). The present known distribution of *Orthotrichum striatum* in Norfolk as a whole.

Table 2. Species sought by Swann, and presumably regarded as rare, but now regarded as widespread in VC28. The number of hectads from which the species has now been recorded are indicated.

<i>Fissidens incurvus</i> - 20
<i>Metzgeria violacea</i> - 27
<i>Orthotrichum cupulatum</i> - 18
<i>Orthotrichum lyellii</i> - 22
<i>Plagiothecium curvifolium</i> - 22
<i>Rhynchostegiella tenella</i> - 29
<i>Tortula truncata</i> - 24
<i>Ulota bruchii</i> - 30
<i>Ulota phyllantha</i> - 21

Discussion

The progress in recording seen in Figure 2 has been due to a number of factors. For a start there has been much greater recording activity by local bryologists, as well as two further Spring Meetings in the county (in 1986 (Stevenson, 1987) and 2003 (Fisk, Mott & Stevenson, 2004) - even though these were not concentrated on VC28, as the 1967 meeting had been).

The availability of improved floras (Smith 1978, 2004; Paton 1999) has probably also been important, whilst the influence of the *Field*

Guide (Atherton, Bosanquet & Lawley, 2010) history will judge.

Some of the biggest contributions of new records, however, have resulted from the exploration of hitherto unexplored habitats, such as orchards, whilst environmental changes - such as climate change, reductions in SO₂ or increases in nitrogen deposition - have probably also played an important role. However, as discussed by Bates & Preston (2011) it is not always easy to distinguish between these different factors.

What Figures 1 and 2 do not show is the extent to which fieldwork has broadened our knowledge of overall distribution patterns. The number of hectads in West Norfolk depends on what you count; there are some 33 hectads, many of which - especially along the county boundaries - are only partially occupied by W. Norfolk. *Syntrichia virescens* for instance, from being 'unknown' is now known to be present in 15 hectads (Fig. 3).

Some of these species (e.g. *Fissidens incurvus* and *Orthotrichum cupulatum*) had presumably been simply overlooked, or the rather specialised habitat in which they occur (as with *Rhynchostegiella tenella*), not been identified; in Norfolk the latter occurs most commonly at the base of oolitic limestone grave markers. Other species, however, (as noted above) may have become commoner as a result of environmental



△Above. Pear orchard in bloom, Norfolk. R. Stevenson

changes. *Orthotrichum striatum* for instance (Fig. 4), not anticipated by Swann, was first found in VC28 in 2007, yet is clearly now widespread.

Whilst there have been many additions to the flora of West Norfolk there have also been losses and obvious examples of under-recording: of the two species of *Pterygoneuron* recorded in 1967 only *P. ovatum* has been seen (once) since then. *Ptilidium ciliare* seems to have become much scarcer, whilst some species, such as *Rhynchostegium megapolitanum* remain firmly lodged as observer 'Blind Spots'. DNA analysis (Bell, Long & Hollingsworth, 2013) has robbed us of Norfolk Flapwort (*Leiocolea rutheana* var. *laxa*), but given us *Leiocolea gillmanii* - the Lord giveth, and the Lord taketh away...

Acknowledgements

Phil Stanley originally supplied me with a copy of Swann's list of Desiderata. His Index to the Society's publications, and his excellent new search facility (Stanley 2014) made collecting and collating the data much simpler, whilst his careful reading of this note, in draft, and suggestions for its improvement, are all gratefully acknowledged.

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▽Below. Roydon Common path, Norfolk. R. Stevenson

