SHORT NOTES

CHROMOSOME NUMBERS OF *Acaena* FROM SOUTH GEORGIA

By D. M. Moore* *and* D. W. H. Walton

Abstract. Chromosome numbers of the South Georgian taxa of *Acaena* are reported, and the results are compared with published counts from other parts of the Southern Hemisphere.

Two species of *Acaena* are known from South Georgia (Greene, 1964), viz.: *A. tenera* Alboff, which also occurs in southern Tierra del Fuego and has been reported by Skottsberg (1916) from Argentina (prov. Río Negro, Lago Nahuel Huapí, lat. 41°01′S.), and *A. adscendens* Vahl. The latter species is widespread in southern South America where it is known as *A. magellanica* (Lam.) Vahl, extending northwards along the Andes to lat. 24°55′S. (Moore, 1968) and into most islands of the sub-Antarctic region (Greene and Greene, 1963) as *A. adscendens* Vahl. There is evidence that these two species hybridize in South Georgia (Walton and Greene, 1970), and the purpose of the present paper is to report the chromosome numbers of both species and the putative hybrid.

Chromosome numbers were determined at mitotic metaphase in root-tip squashes, following pre-treatment with *para*-dichlorobenzene, fixation in 2 : 1 ethanol–acetic acid and staining in aceto-orcein. In all material examined (Table I) the somatic chromosome number was found to be $2n = 42$. The small size of chromosomes in these suffruticose herbs precludes a detailed karyotype analysis, but all suitable preparations showed one pair of chromosomes to have small satellites, thus agreeing with observations on all other 42-chromosome *Acaena* species studied (unpublished information of D. M. Moore).

Table I. Material of South Georgian *Acaena* used in the chromosome studies

Species, locality and date collected		*Voucher specimen*	
A. tenera			
Grytviken area	April 1963	Borland	33
Southern end of Bore Valley	April 1969	Collins	136
Scree above Grytviken	April 1969	Collins	135
A. magellanica			
King Edward Point	April 1969	Collins	139
Near lakes behind Maiviken	April 1969	Collins	140
A. magellanica × *tenera*			
Near lakes behind Maiviken	April 1969	Collins	137
Near Grytviken radio hut	April 1969	Collins	138

All material was in cultivation in Birmingham at the time of counting. Voucher specimens of the Collins collections have been deposited in the herbarium of the British Antarctic Survey, at present housed in the Department of Botany, University of Birmingham.

The count for *Acaena tenera* confirms an earlier determination made by one of us (D.M.M.) on material from South Georgia (Table I, Borland 33). On the other hand, the report of $2n = 42$ for *A. magellanica* is at variance with earlier counts. Thus, $2n = 84$ has been counted in material of this species from the Falkland Islands (Moore, 1967) and from near Punta Arenas in southern Andean Patagonia (Moore, 1964; material incorrectly determined as *A. antarctica* Hook. f.). The occurrence of two chromosome numbers within a single species has not been hitherto known in *Acaena*, which seems to be characterized by karyotype stability, despite the often considerable morphological variability at the species level.

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Interestingly, $2n = 42$ is known for material from Macquarie Island referred to *Acaena adscendens* Vahl (Moore, 1960). In his revision of the Argentinian species of *Acaena*, Grondona (1964) reduced *A. adscendens* to synonymy with *A. magellanica*. Skottsberg (1915) and Allan (1961) raised the possibility that *A. adscendens* on Macquarie Island might be distinct from the South American species, but Walton and Greene (1970) have found close morphological similarity between Macquarie Island and South Georgian material and consider them conspecific.

Although there are still very few chromosome counts available, it appears that there are certainly two chromosome numbers, $2n = 42$ and $2n = 84$, within material currently recognized as *Acaena magellanica*. The 42-chromosome plants have been found only in the sub-Antarctic islands and the 84-chromosome plants in southern South America and the Falkland Islands. Should this pattern be supported by future chromosome studies, it would clearly be of great interest to determine what factors are involved in the latitudinal separation of the different ploidy levels. It would also be important to seek morphological characters correlated with the different chromosome numbers in an attempt to give formal taxonomic recognition to the two polyploid levels. With regard to the latter point, it is interesting to note that Walton and Greene (1970) have evidence that the earliest valid name for *Acaena magellanica* is *Ancistrum decumbens* Gaertn., probably based on a Forster specimen collected in South Georgia during Cook's voyage of 1772–75.

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AGE OF A CAMPTONITE DYKE FROM SOUTH-EAST ALEXANDER ISLAND

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The camptonite dykes in south-east Alexander Island have been described in detail by Horne and Thomson (1967). Their intrusion post-dates the major regional deformation of the Aptian sediments and they are apparently associated with a late Tertiary circum-Pacific basaltic province. K-Ar age measurements have been made on one of the described specimens from the northern end of Waitabit Cliffs with the following result:

Specimen	K (per cent)	*Radiogenic* ^{40}Ar (s.c.c./g.$\times 10^{-6}$)	*Atmospheric* ^{40}Ar (per cent)	*Age* (m. yr.)
KG.103.225	2·82	1·687	39·2	15±1
	2·82	1·700	28·2	15±1

Decay constants: $\lambda_\beta{}^{40}\mathrm{K} = 4{\cdot}72\times 10^{-10}$ yr.$^{-1}$; $\lambda_e{}^{40}\mathrm{K} = 0{\cdot}584\times 10^{-10}$ yr.$^{-1}$.
$^{40}\mathrm{K} = 1{\cdot}19\times 10^{-4}$ mole/mole K.

The determinations were made on whole rock samples crushed to −60 +120 mesh. Potassium was determined by flame photometry, the quoted result being the average of three determinations. The argon was extracted by fusion *in vacuo* and measured by isotope dilution on an A.E.I. MS10 mass spectrometer operated under static conditions and fitted with digital output.

The 15 m. yr. age obtained supports the general conclusion of Horne and Thomson that the camptonite dykes are late Tertiary.

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