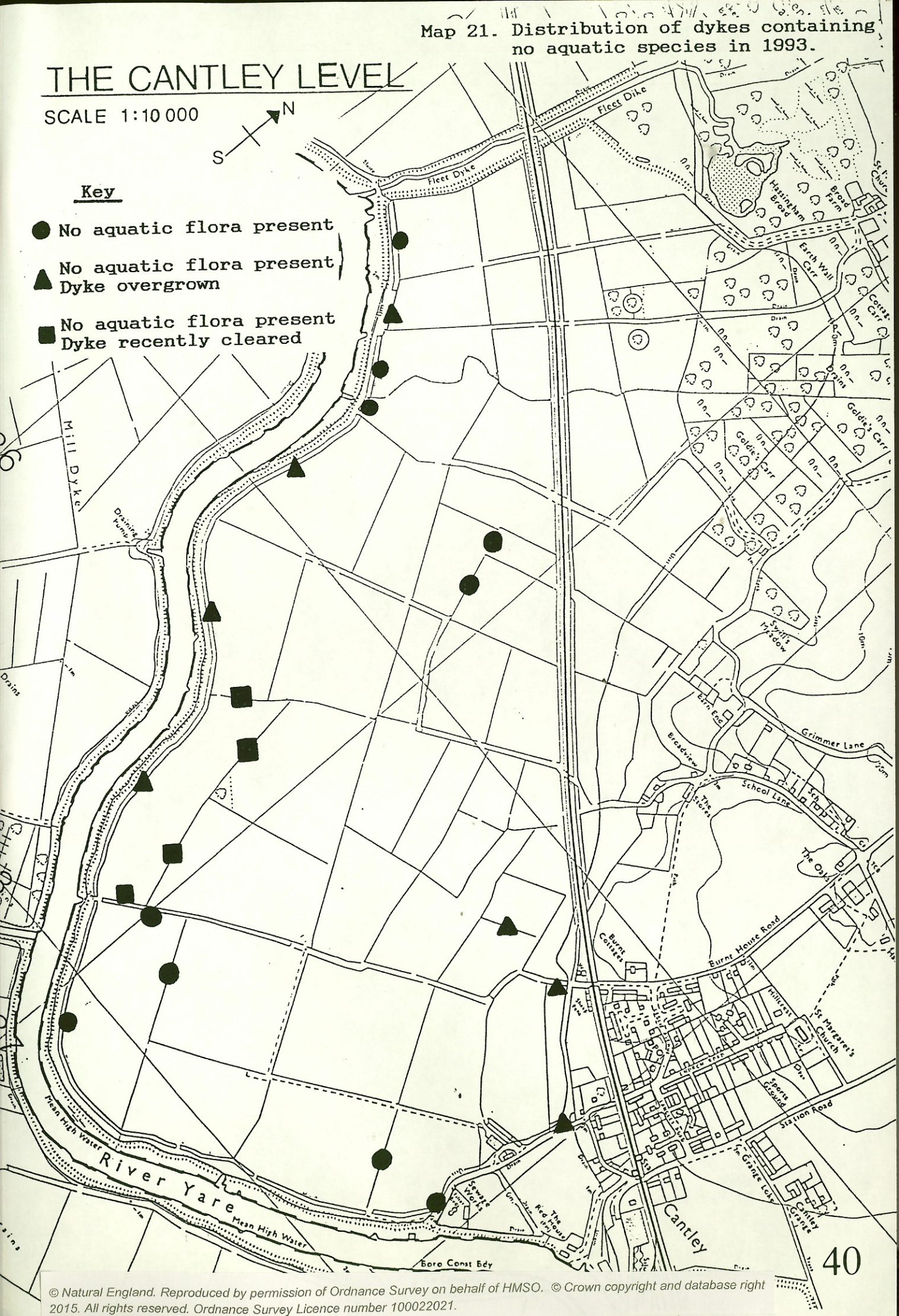
Map 21. Distribution of dykes containing no aquatic species in 1993.



CONDUCTIVITY uS/cm	AQUATIC ENDGROUP A1	A2	A3a	A3b	A4	A5a	A5b	A6	A7a	A7b
<1,000	++	+++	+++	+++	++	+		++	---	---
>1,001 <2,000	-						+++			---
>2,001 <10,000		---	---	---	---	--		--	+++	+++
>10,001 <20,000		--	-	-	-	-	---		+++	+++
>20,000										

Significance levels determined by Cody Chi Squared test

+++ or --- Significant at <0.1% level

++ or -- Significant at <1% level

+ or - Significant at <5% level

The sign indicates the direction of the association

Table 1. The significace of the relationship between water conductivity and aquatic endgroup.
(Source: Doarks and Leach 1990)

Table 2. The DAFOR scale as applied in the standard assessment of species cover values within the aquatic zone of grazing marsh dykes.

Abundance description	Percentage cover within the aquatic zone
D - Dominant	70 - 100
A - Abundant	30 - 70
F - Frequent	10 - 30
O - Occasional	3 - 10
R - Rare	< 3

Source: Doarks and Leach (1990)

Table 3. Determining and modifying a species DAFOR score. Where the local cover of a species is higher than overall abundance, DAFOR score is usually increased. Modified species abundances are given in the form overall abundance/local abundance.

DAFOR score	Overall species abundance	Modified species abundance
5	D	A/D
4	A	F/D F/A
3	F	O/D O/A
2	O	R/D R/A
1	R	

Source: Doarks and Leach (1990)

Table 4. A comparison of percentage occurence for all aquatic species present in the 1988/89 and 1993 surveys of the Cantley level.

Number of dykes containing the given species within the 20m section only (a) or within the entire dyke (b). (c) and (d) correspond to (a) and (b) as percentages of the total number of dykes sampled.

Species	1988/89 (n=54)				1993 (n=54)				1993 (n=191)				Changes in occurence
	a	b	c	d	a	b	c	d	a	b	c	d	
Potamogeton acutifolius	12	12	22.2	22.2	4	7	7.4	13.0	29	37	15.2	19.4	decrease
Potamogeton crispus	0	1	0.0	1.9	1	1	1.9	1.9	1	1	0.5	0.5	stable
Potamogeton fresii	12	13	22.2	24.1	14	15	25.9	27.8	36	49	18.9	25.7	stable
Potamogeton pusillus	0	5	0.0	9.3	6	10	11.1	18.5	25	32	13.1	16.8	large increase
Potamogeton pectinatus	3	7	5.6	13.0	3	4	5.6	7.4	9	11	4.7	5.8	slight decrease
Potamogeton natans	15	15	27.8	27.8	7	9	13.0	16.7	13	16	6.8	8.4	decrease
Potamogeton lucens	1	2	1.9	3.7	0	0	0.0	0.0	1	1	0.5	0.5	slight decrease
Potamogeton tricoides	3	3	5.6	5.6	3	3	5.6	5.6	3	4	1.6	2.1	stable
Hottonia palustris	3	6	5.6	11.1	9	10	16.7	18.5	39	46	20.4	24.1	increase
Sagittaria sagittifolia	5	19	9.3	35.2	9	15	16.7	27.8	31	43	16.2	22.5	stable
Sparganium emersum	3	9	5.6	16.7	2	2	3.7	3.7	7	9	3.7	4.7	large decrease
Hydrocharis morsus-ranae	4	4	7.4	7.4	4	5	7.4	9.3	21	28	11.0	14.7	stable
Scirpus fluitans	1	2	1.9	3.7	5	5	9.3	9.3	12	14	6.9	7.3	increase
Utricularia vulgaris	0	0	0.0	0.0	5	6	9.3	11.1	21	29	11.0	15.2	new species
Myriophyllum spicatum	0	0	0.0	0.0	2	4	3.7	7.4	20	28	10.5	14.7	new species
Myriophyllum verticillatum	12	12	22.2	22.2	1	1	1.9	1.9	5	6	2.6	3.1	extreme decrease
Ceratophyllum demersum	18	18	33.3	33.3	7	8	13.0	14.8	22	28	11.5	14.7	large decrease
Callitriche spp	11	11	20.4	20.4	4	5	7.4	9.3	20	25	10.5	13.1	decrease
Lemna minor	39	39	72.2	72.2	16	16	29.6	29.6	69	71	36.1	37.2	large decrease
Lemna trisulca	23	23	42.6	42.6	11	12	20.4	22.2	34	39	17.8	20.4	large decrease
Lemna gibba	1	1	1.9	1.9	0	0	0.0	0.0	5	5	2.6	2.6	stable
Lemna polyrhiza	1	1	1.9	1.9	0	0	0.0	0.0	0	0	0.0	0.0	extinct
Elodea canadensis	7	20	13.0	37.0	0	0	0.0	0.0	0	0	0.0	0.0	extinct
Zanichellia palustris	2	11	3.7	20.4	0	0	0.0	0.0	0	0	0.0	0.0	extinct
Riccia fluitans	1	1	1.9	1.9	0	0	0.0	0.0	0	0	0.0	0.0	extinct
Nuphar lutea	1	3	1.9	5.6	1	3	1.9	5.6	8	10	4.2	5.2	stable
Fontinalis antipyratica	2	2	3.7	3.7	0	0	0.0	0.0	1	1	0.5	0.5	slight decrease
Ranunculus aquatilis	2	2	3.7	3.7	2	2	3.7	3.7	4	6	2.1	3.1	stable
Ranunculus circinatus	0	7	0.0	13.0	0	0	0.0	0.0	2	2	1.1	1.1	decrease
Chara spp	4	4	7.4	7.4	5	5	9.3	9.3	18	24	9.4	12.6	stable
Enteromorpha spp	6	21	11.1	38.9	19	26	35.2	48.2	55	74	28.8	38.7	large increase
Filamentous algae	33	34	61.1	63.0	27	29	50.0	53.7	96	102	50.3	53.4	slight decrease

Figure 1. The frequency of aquatic endgroups as identified in the 1993 survey of the Cantley level. (Number of samples = 170)

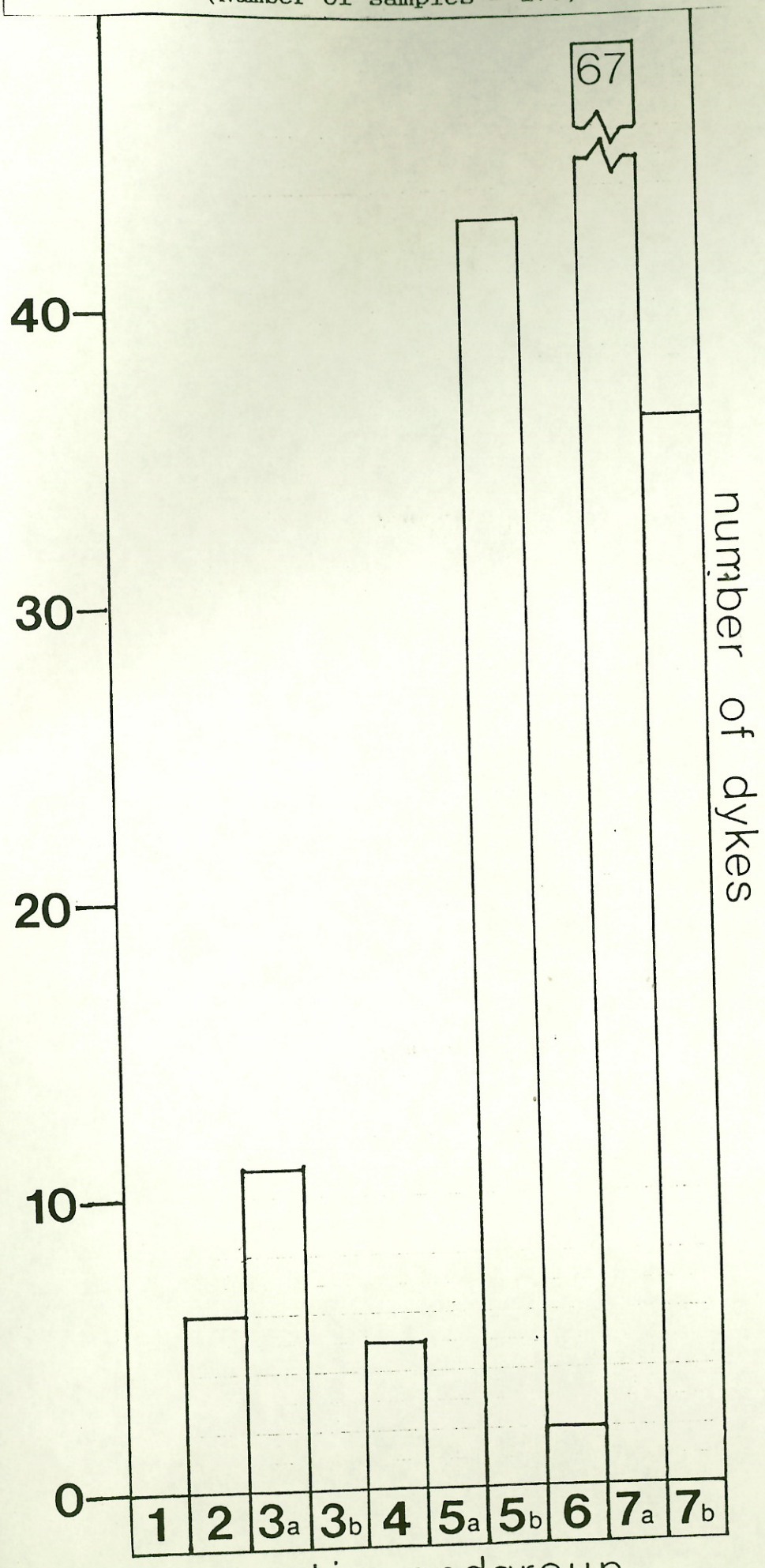


Figure 2. The frequency of aquatic endgroups as identified for the subset of 54 dykes surveyed in 1988/89 and resurveyed in 1993.

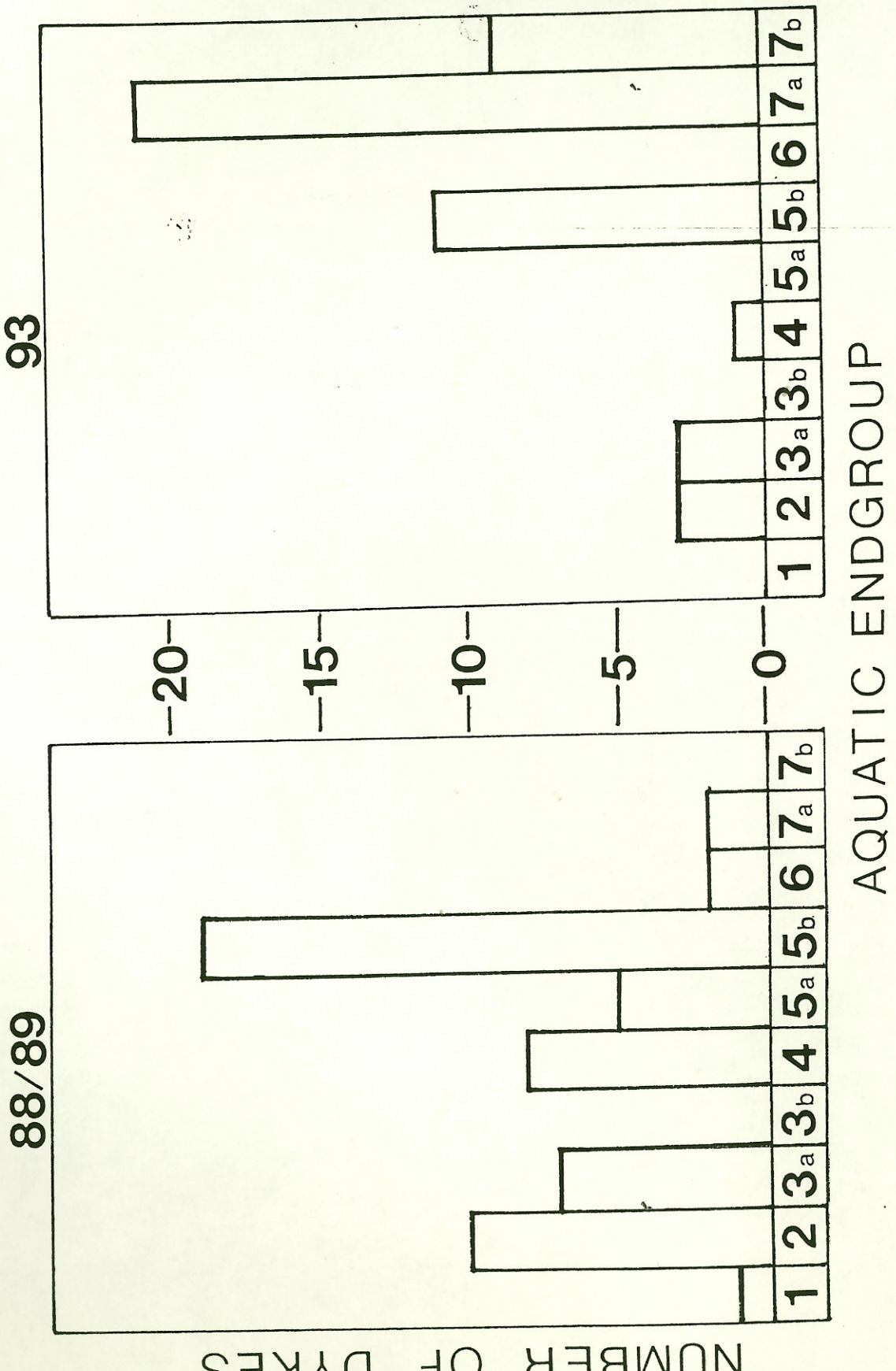


Figure 3. Individual changes in aquatic endgroup occuring in all dykes surveyed in 1988/89 and 1993. Each arrow represents a single dyke.
(Number of samples = 48, 6 dykes possessed no aquatic flora in 1993.)

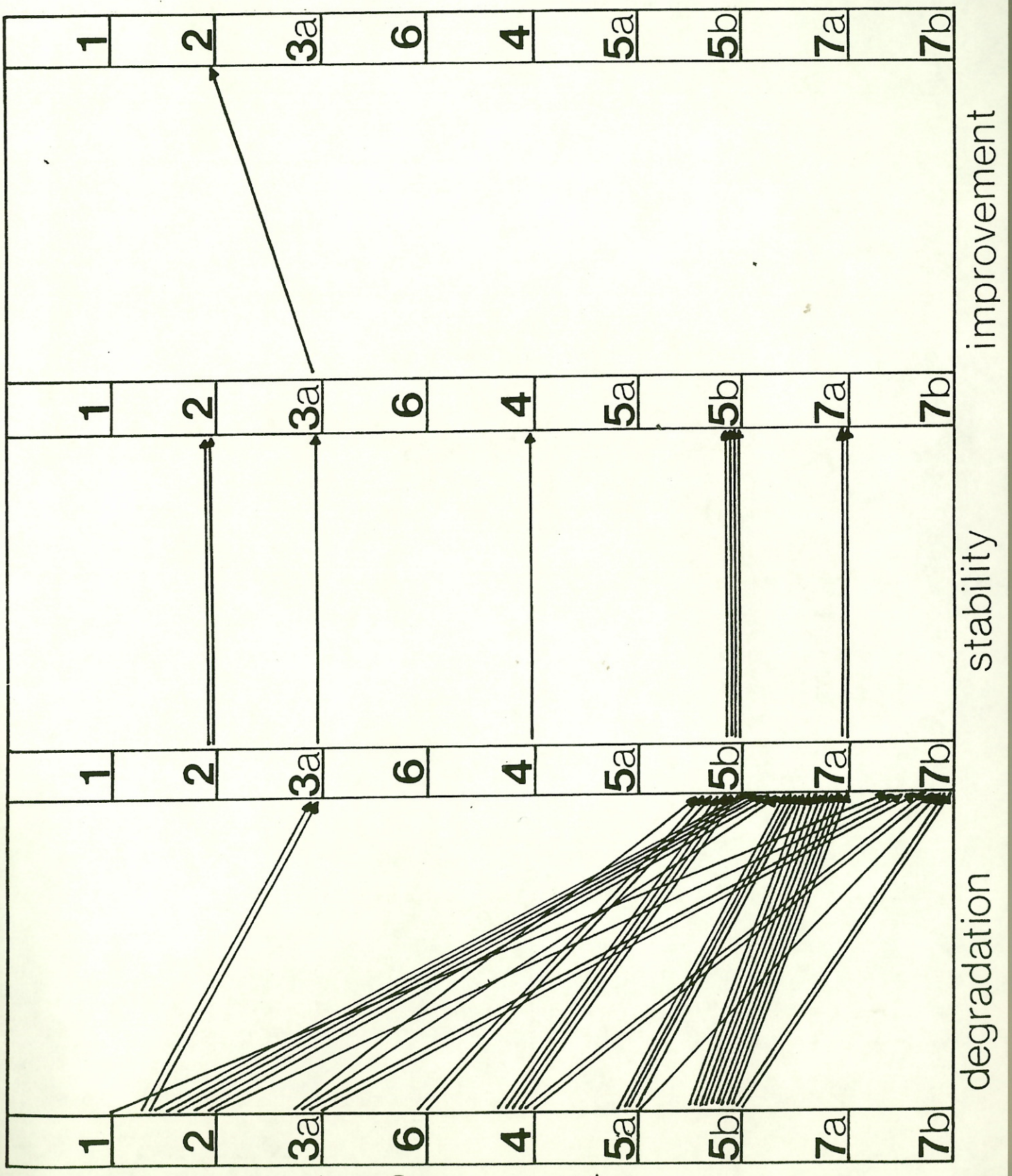
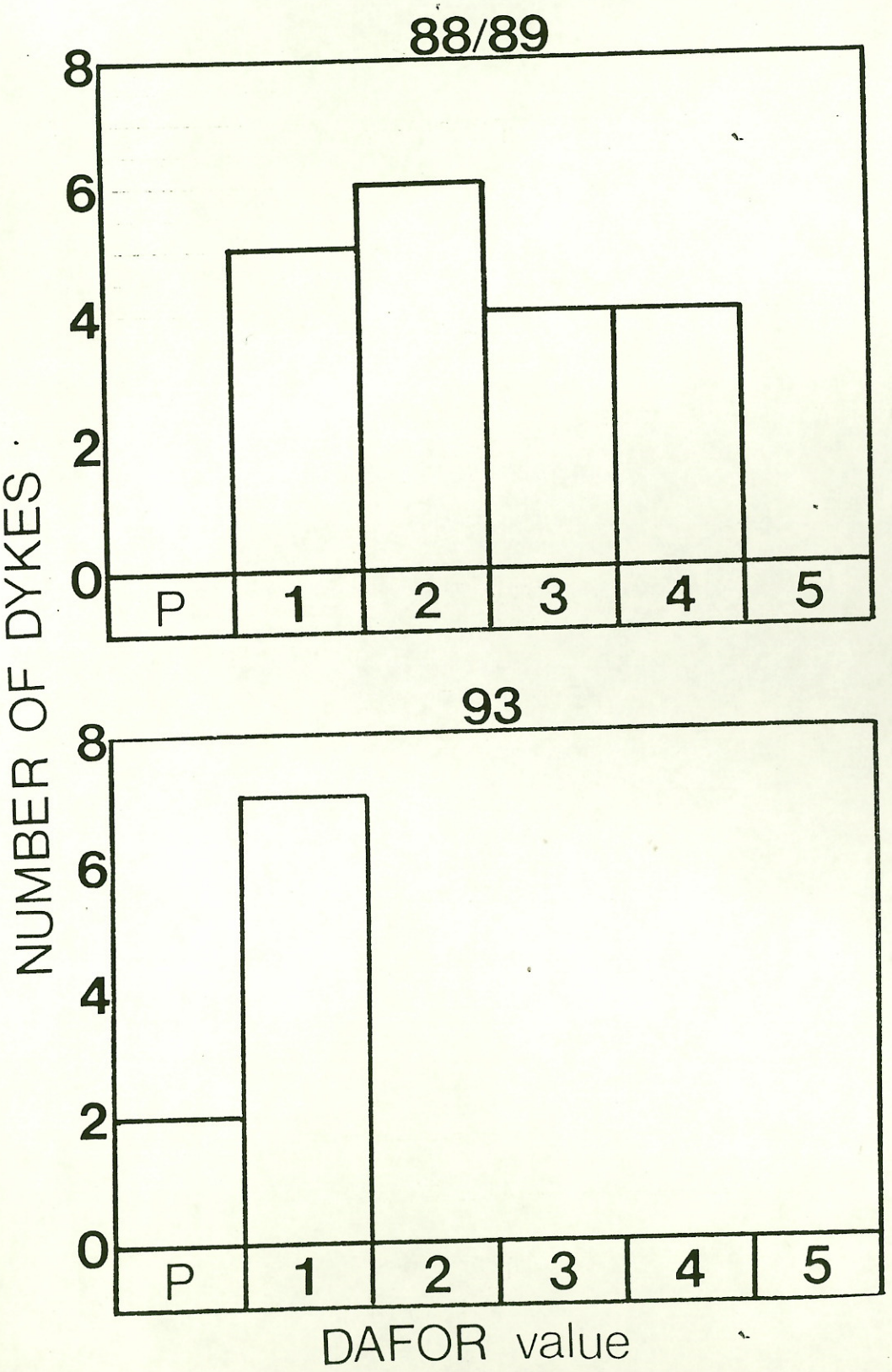


Figure 4. A comparison of the frequency of DAFOR values for Potamogeton natans in 1988/89 and 1993. (Number of samples = 54)



Figures 5 and 6. A comparison of the frequency of DAFOR values for Sparganium emersum and Myriophyllum verticillatum in 1988/89 and 1993 (n = 54).

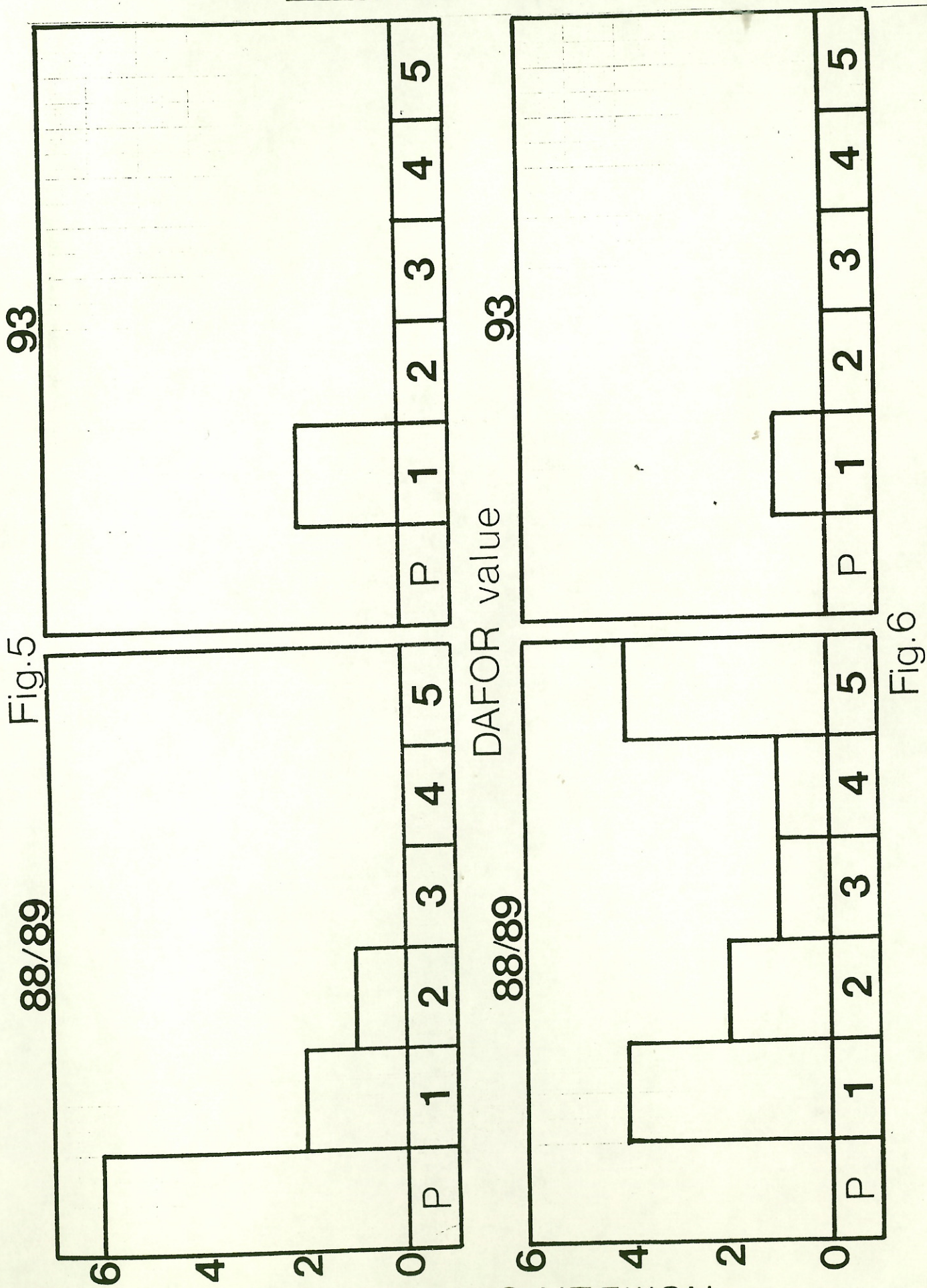


Figure 7. A comparison of the frequency of DAFOR values for Hottonia palustris in 1988/89 and 1993 (n = 54).

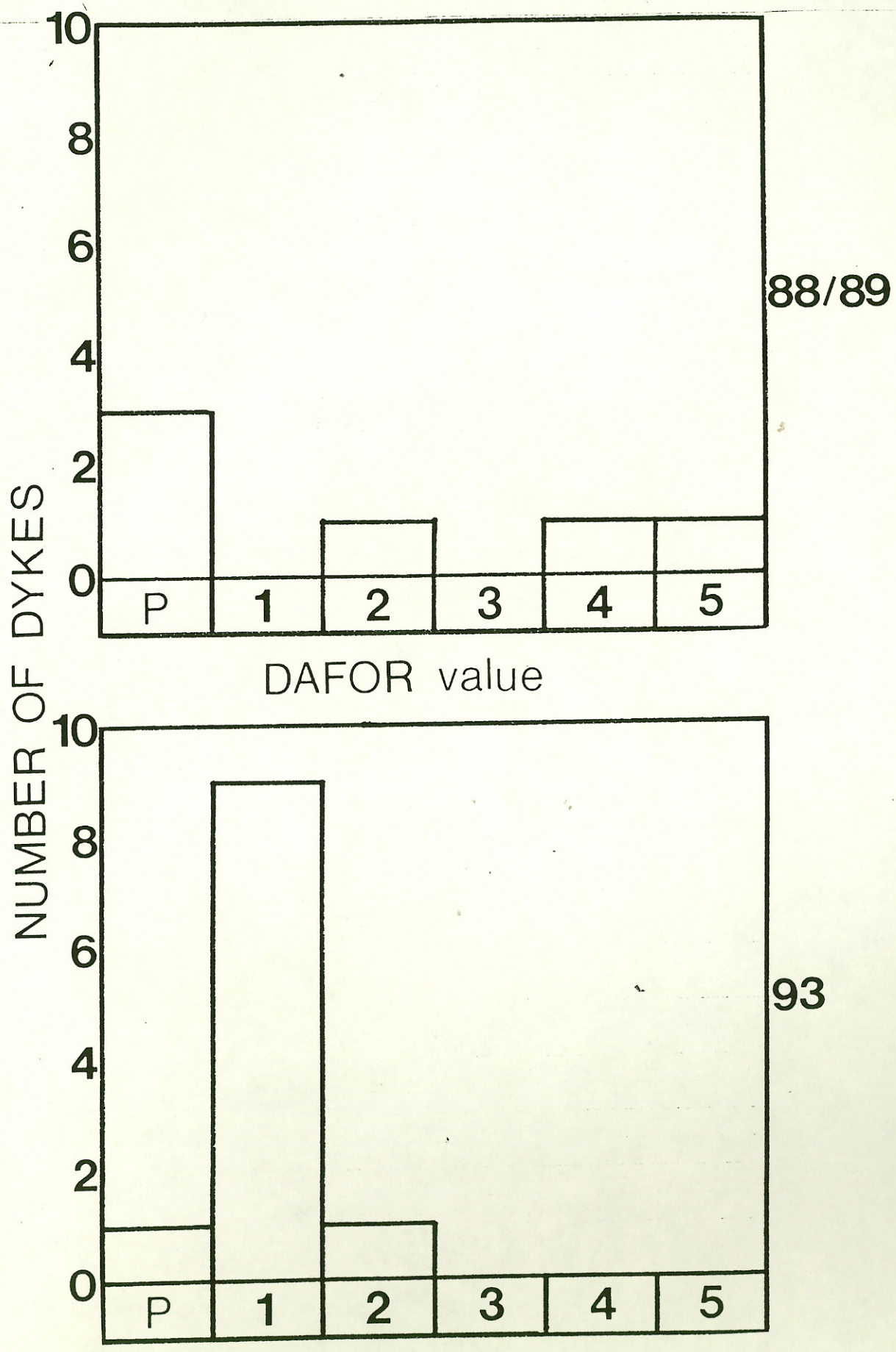


Figure 8. A comparison of the frequency of DAFOR values for Sagittaria sagittifolia in 1988/89 and 1993 (n=54).

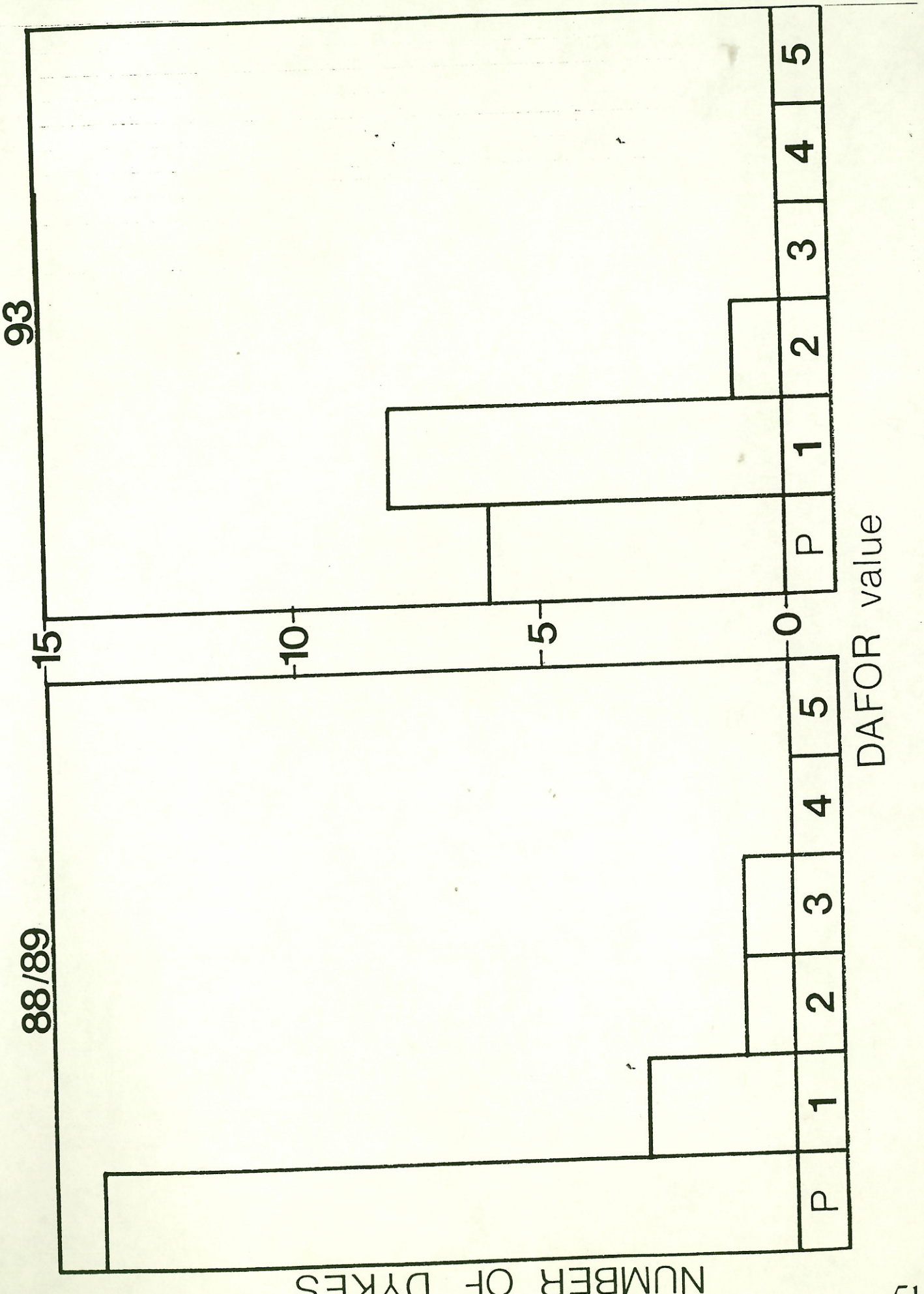
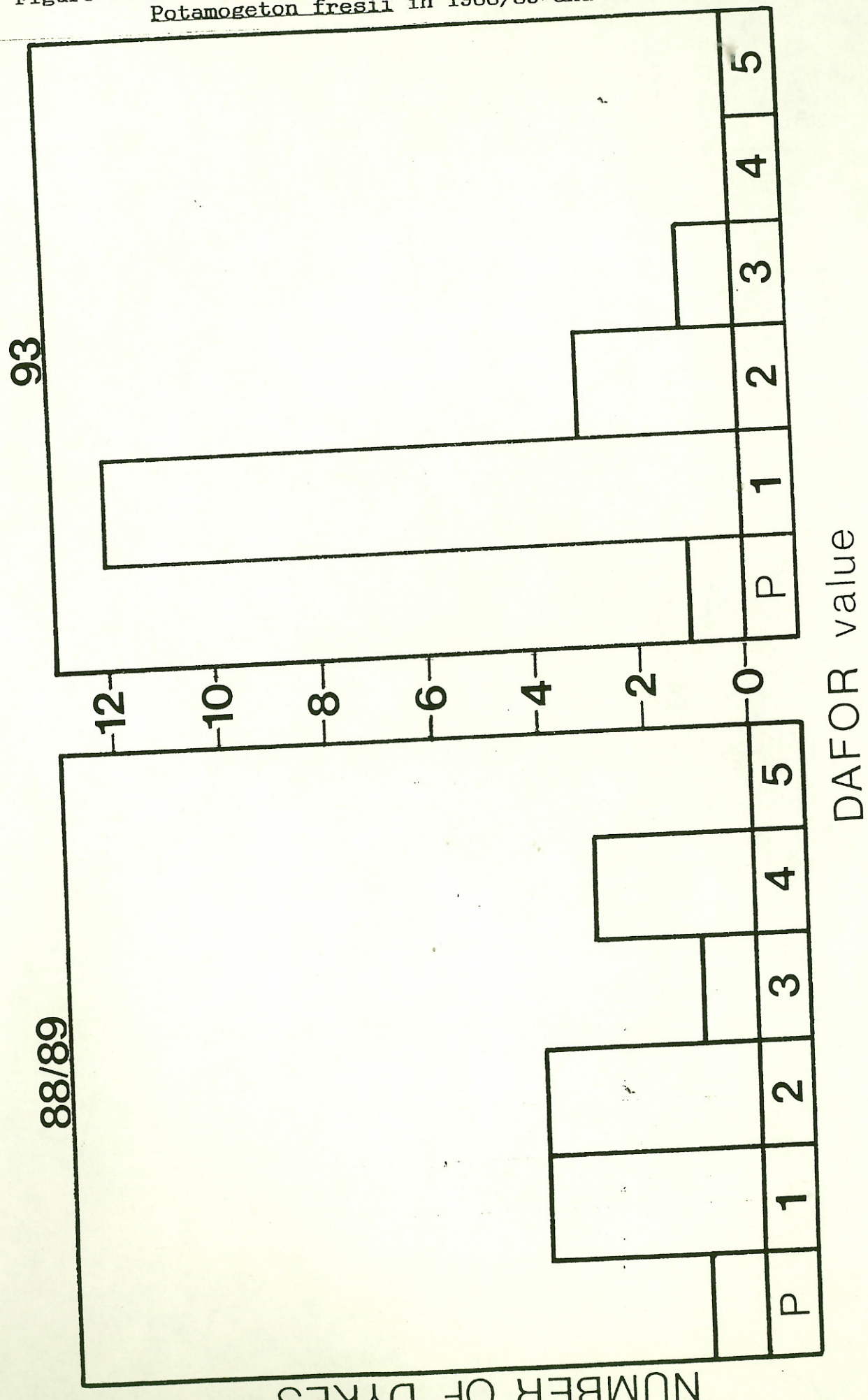
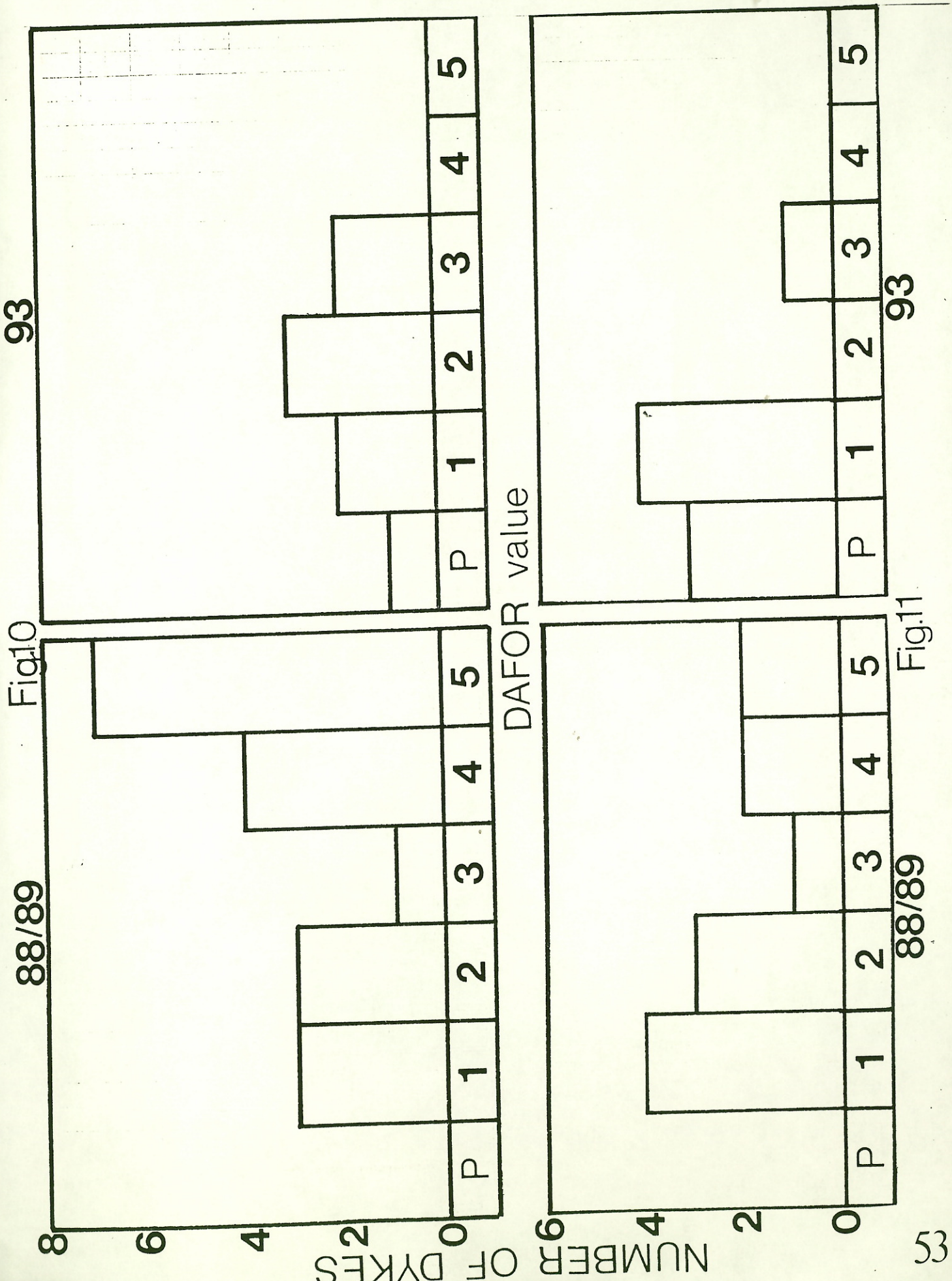


Figure 9. A comparison of the frequency of DAFOR values for Potamogeton fresii in 1988/89 and 1993 (n=54).



Figures 10 and 11. A comparison of the frequency of DAFOR values for Ceratophyllum demersum and Potamogeton acutifolius in 1988/89 and 1993 (n=54).



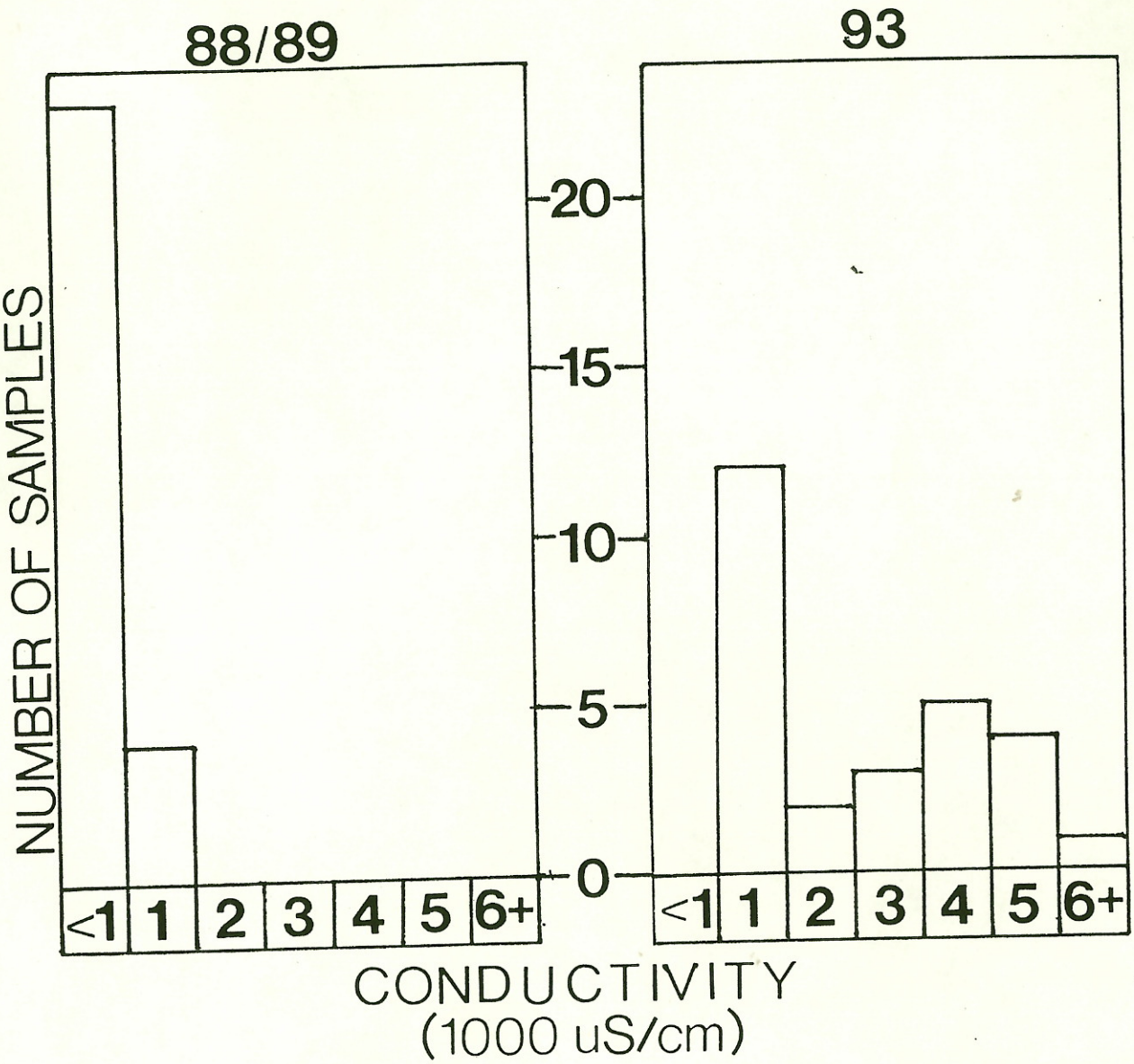


Figure 12. A comparison of the frequency of conductivity as determined at the Cantley level for the subset of 27 dykes where conductivity was measured both in 1989 and 1993.