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THE PARASITOLOGY OF IRISH MUSSELS (*Mytilus edulis*)

BY

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Investigations of the distribution of three parasites of mussels, and internal copepod parasite of the gut (Mytilicola intestinalis), an external decapod parasite in the gill region (Finnotheres pissum) and an annelid shell parasite (Polydora ciliata) were carried out from September 1974 to May 1975.

Samples from 28 locations around the Irish coast were investigated. One hundred mussels from each sample were weighed, measured in 5 mm groups, boiled and the following parameters were determined as percentages of the whole mussel:-

- a. Shell;
- b. Meat;
- c. "Loss"

Each individual mussel was examined for the external parasite P. pissum and each shell was examined for the shell parasite P. ciliata. Shells with a total of 11 or more shell parasites were judged to be "heavily infested", between 5 and 11 parasites "moderately" and less than "lightly" infested.

Examination of M. intestinalis was always carried out on fresh mussels. Fifty mussels were examined from each batch and this was repeated at least three times and five times where possible.

#### RESULTS

Table 1 gives details of the locations examined and the percentage occurrence of each parasite.

##### M. intestinalis

This species was confined to two areas, namely, Galway Bay on the

west coast and the Cork-Kinsale/Courtmacsherry area on the south coast.

The mussels examined from the two places in Galway Bay had infestation rates in excess of 50%, the infestation rate at Ballyvaughan being 72% (see Fig. 1 and Table 2 for locations surveyed and percentage infestation).

The size range of the mussels examined was from 50 to 75 mm and in many locations only above the minimum size acceptable for commercial purposes (Table 2).

The highest rate of infestation was at Ballyvaughan with 9 to 15 parasites per mussel.

The distribution of M. intestinalis has remained reasonably static in recent years, being confined to Galway Bay and certain estuaries on the south coast of Ireland, Courtmacsherry is a new location not previously recorded.

#### P. pisum

The occurrence of this parasite is indicated in Table 3 and Fig. 2. It was found in certain estuaries in the south-west and north-west coasts, and at a few points east coast. The highest infestation rate was at Fenit, Co Kerry.

Crowley (1972) records this parasite as being present in eight locations. In the current investigations the parasite was only recorded in four places. It was recorded at Dungarvan, Youghal, Cork-Kinsale, Cromane, Fenit, Poulasherry, Ballyvaughan and Donegal in 1971. In 1975 it was found only at Malahide, Fenit, Poulasherry and Donegal and was not present in the other areas mentioned above.

P. ciliata

The incidence of this parasite is widespread (Table 4 and Fig. 3) and it was present in eighteen locations the same as 1972 survey and as absent in eleven locations. The shells of Rosscarbery mussels were 60% infested and the Donegal mussels were 57% infested which was a considerably lower degree of infestation than in 1972.

Discussion

Table 5 sets out the degree of infestation by all three parasites, the meat yield, the shell weight and the "loss". The meat yield was not considered satisfactory for intertidal mussels in 15 of the 28 localities examined. The incidence of M. intestinalis the most serious of the three parasites, seems to have declined since the completion of the 1972 survey and likewise the other two.

REFERENCES

- Crowley, M. 1972, The parasitology of Irish Mussels Mytilus edulis.  
Department of Agriculture and Fisheries, 3 Cathal  
Brugha St., Dublin 1.

TABLE 1: Parasites in Mussels and Mussel Shells

Percentage Infestation

Position	<i>Mytilicola intestinalis</i>	<i>Polydora siliata</i>	<i>Pinnotheres pissum</i>
1. Omeath, Co Louth	-	-	-
2. Dundalk, Co Louth	-	43	-
3. Mornington, Co Meath	-	6	-
4. Skerries, Co Dublin	-	47	-
5. Malahide, Co Dublin	-	2	1
6. Wexford, Co Wexford	-	5	-
7. Waterford, Co Waterford	-	-	-
8. Dungarvan, Co Waterford	-	31	-
9. Youghal, Co Cork	-	3	-
10. Cork, Co Cork	46	5	-
11. Oysterhaven, Co Cork	28	-	-
12. Kinsale, Co Cork	2	8	-
13. Courtmacsherry, Co Cork	6	-	-
14. Clonakilty, Co Cork	-	-	-
15. Rosscarbery, Co Cork	-	60	-
16. Glandore, Co Cork	-	4	-
17. Roaringwater Bay	-	1	-
18. Glengarriff, Co Cork	-	-	-
19. Dingle, Co Kerry	-	10	-
20. Cromane, Co Kerry	-	6	-
21. Fenit, Co Kerry	-	-	10
22. Poulmasherry, Co Clare	-	-	2
23. Ballyvaughan, Co Clare	72	-	-
24. Oranmore, Co Galway	52	9	-
25. Killary Harbour, Co Galway	-	2	-
26. Killala, Co Mayo	-	-	-
27. Sligo, Co Sligo	-	-	-
28. Donegal, Co Donegal	-	57	-
29. Killybegs, Co Donegal	-	8	2

TABLE 2: Occurrence of M. intestinalis in Irish Mussels

Location	Size range in m.m.	Number of Mussels examined	Percentage infestation	Mean No per mussel	Highest individual infestation
10. Cork	50-54	50	36	0.42	2
	55-59	50	38	0.46	2
	60-64	50	40	0.52	3
	65-69	50	42	0.80	4
	70-74	50	74	1.44	7
11. Oysterhaven	50-54	50	26	0.26	1
	55-59	50	28	0.28	1
	60-64	50	32	0.34	2
	65-69	50	24	0.24	1
	70-74	50	30	0.32	2
12. Kinsale	50-54	50	4	0.02	1
	55-59	50	4	0.04	1
	60-64	50	4	0.04	1
	65-69	50	4	0.04	1
	70-74	50	6	0.06	1
13. Courtmacsherry	50-54	50	2	0.02	1
	55-59	50	4	0.04	1
	60-64	50	6	0.06	1
	65-69	50	8	0.08	1
	70-74	50	10	0.12	2
23. Ballyvaughan	50-54	50	70	0.74	2
	55-59	50	70	0.98	7
	60-64	50	72	1.24	9
	65-69	50	74	1.38	5
24. Oranmore	50-54	50	50	1.04	4
	55-59	50	50	0.98	4
	60-64	50	54	0.90	3
	65-69	50	54	1.10	6
	70-74	50	52	1.08	6

TABLE 3: Occurrence of P. Pisum

Location	% Infested	% Male	% Female	Mean No per Mussel
1. Omeath	-	-	-	-
2. Dundalk	-	-	-	-
3. Mornington	-	-	-	-
4. Skerries	-	-	-	-
5. Malahide	-	0.5	0.5	0.01
6. Wexford	-	-	-	-
7. Waterford	-	-	-	-
8. Dungarvan	-	-	-	-
9. Youghal	-	-	-	-
10. Cork	-	-	-	-
11. Oysterhaven	-	-	-	-
12. Kinsale	-	-	-	-
13. Courtmacsherry	-	-	-	-
14. Clonakilty	-	-	-	-
15. Rosscarbery	-	-	-	-
16. Glandore	-	-	-	-
17. Roaringwater Bay	-	-	-	-
18. Glengarriff	-	-	-	-
19. Dingle	-	-	-	-
20. Crumane	-	-	-	-
21. Fenit	10	2.0	8.0	0.10
22. Poulmasherry	2	0.5	1.5	0.02
23. Ballyvaughan	-	-	-	-
24. Oranmore	-	-	-	-
25. Killary Harbour	-	-	-	-
26. Killala	-	-	-	-
27. Sligo	-	-	-	-
28. Donegal	-	-	-	-
29. Killybegs	2	1.0	1.0	0.02

TABLE 4: Occurrence of P. Ciliata

Location	Percentage Infestation				Total
	None	Light	Medium	Heavy	
1. Omeath	100	-	-	-	-
2. Dundalk	57	35	7	1	43
3. Mornington	94	6	-	-	6
4. Skerries	53	16	17	14	47
5. Malahide	98	2	-	-	2
6. Wexford	95	3	2	-	5
7. Waterford	100	-	-	-	-
8. Dungarvan	69	13	7	11	31
9. Youghal	97	3	-	-	3
10. Cork	95	5	-	-	5
11. Oysterhaven	100	-	-	-	-
12. Kinsale	92	8	-	-	8
13. Courtmacsherry	100	-	-	-	-
14. Clonakilty	100	-	-	-	-
15. Rosscarbery	40	22	20	18	60
16. Glandore	96	-	2	2	2
17. Roaringwater Bay	99	1	-	-	1
18. Glengarriff	100	-	-	-	-
19. Dingle	90	8	-	2	10
20. Cromane	94	6	-	-	6
21. Fenit	100	-	-	-	-
22. Poulmasherry	100	-	-	-	-
23. Ballyvaughan	100	-	-	-	-
24. Oranmore	91	6	3	-	9
25. Killary Harbour	98	1	1	-	2
26. Killala	100	-	-	-	-
27. Sligo	100	-	-	-	-
28. Donegal	43	20	27	10	57
29. Killybegs	92	4	2	2	8



TABLE 5: Percentage Infestation of Mussels with the three parasites, and meat yield, shell and "loss".

Location	Degree of infestation (%)			Weight (%)		
	<u>Mytilicola intestinalis</u>	<u>Polydora ciliatis</u>	<u>Pinnotheres pissum</u>	<u>Meat Yield</u>	<u>Shell</u>	<u>"Loss"</u>
1. Omeath	-	-	-	23.0	57.0	20.0
2. Dundalk	-	43	-	27.5	45.5	27.0
3. Mornington	-	6	-	25.5	44.5	30.0
4. Skerries	-	47	-	11.5	57.5	31.0
5. Malahide	-	2	1	14.0	54.5	31.5
6. Wexford	-	5	-	22.0	58.0	20.0
7. Waterford	-	-	-	16.5	55.5	28.0
8. Dungarvan	-	31	-	14.0	55.2	30.8
9. Youghal	-	3	-	16.5	48.0	35.5
10. Cork	46	5	-	17.5	55.0	27.5
11. Oysterhaven	28	-	-	19.0	52.5	28.5
12. Kinsale	2	8	-	13.5	54.0	32.5
13. Courtmacsherry	6	-	-	20.0	49.0	31.0
14. Clonakilty	-	-	-	13.0	52.0	35.0
15. Rosscarbery	-	60	-	13.0	52.0	35.0
16. Glandore	-	4	-	12.5	50.0	37.5
17. Roaringwater Bay	-	1	-	15.0	48.5	36.5
18. Glengarriff	-	-	-	16.0	55.0	29.0
19. Dingle	-	10	-	10.4	55.0	34.6
20. Cromane	-	6	-	20.0	60.0	20.0
21. Fenit	-	-	10	13.0	50.0	37.0
22. Poulmasherry	-	-	2	7.0	60.0	33.0
23. Ballyvaughan	72	-	-	9.8	54.0	36.2
24. Oranmore	52	9	-	9.7	50.5	39.8
25. Killary Harbour	-	2	-	13.5	51.0	35.5
26. Sligo	-	-	-	13.0	55.0	32.0
27. Donegal	-	57	-	19.5	45.5	35.0
28. Killybegs	-	8	2	13.0	52.0	35.0

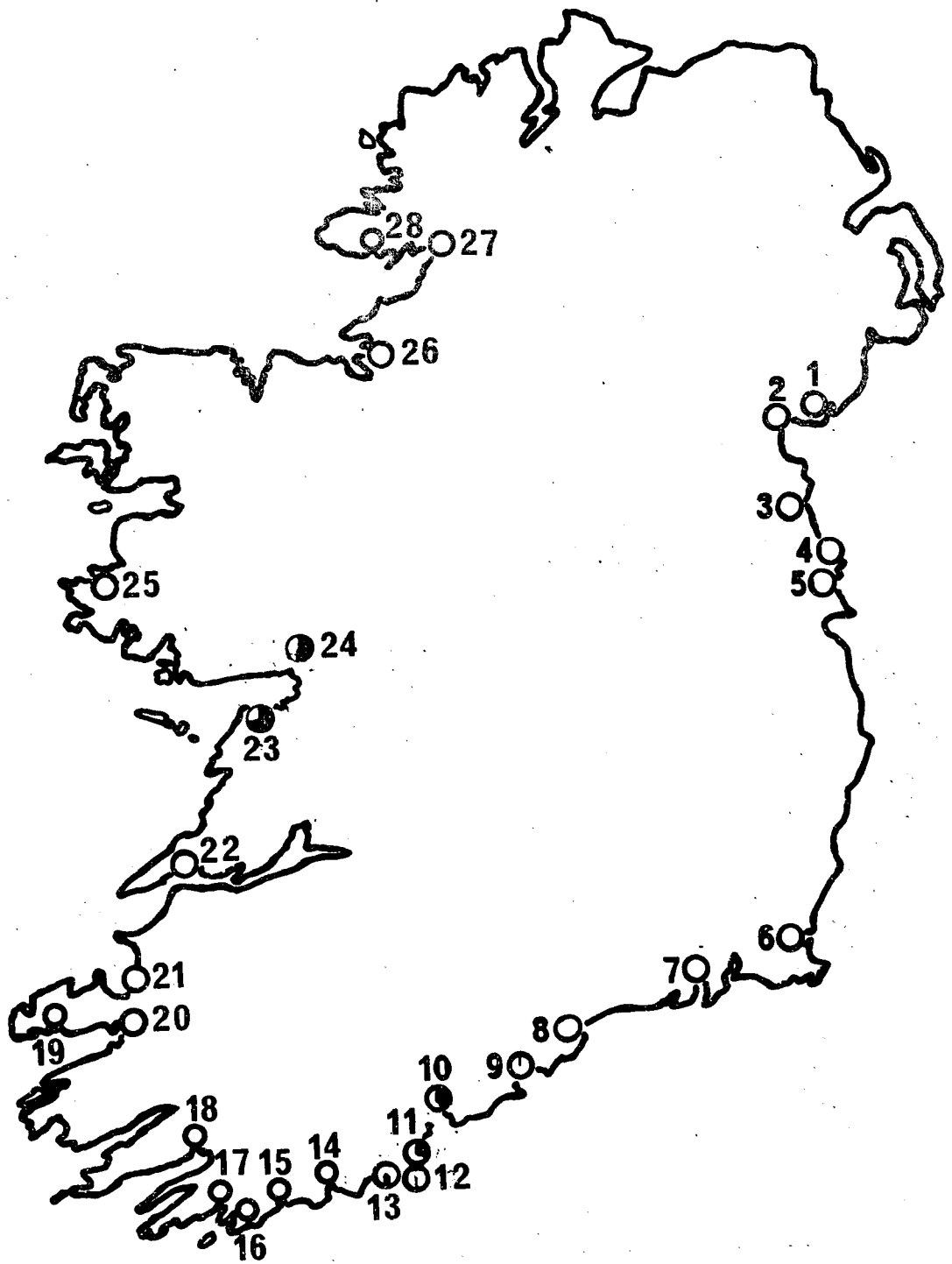


Fig.1. Map of Ireland showing general distribution of Mytilicola intestinalis in mussels.

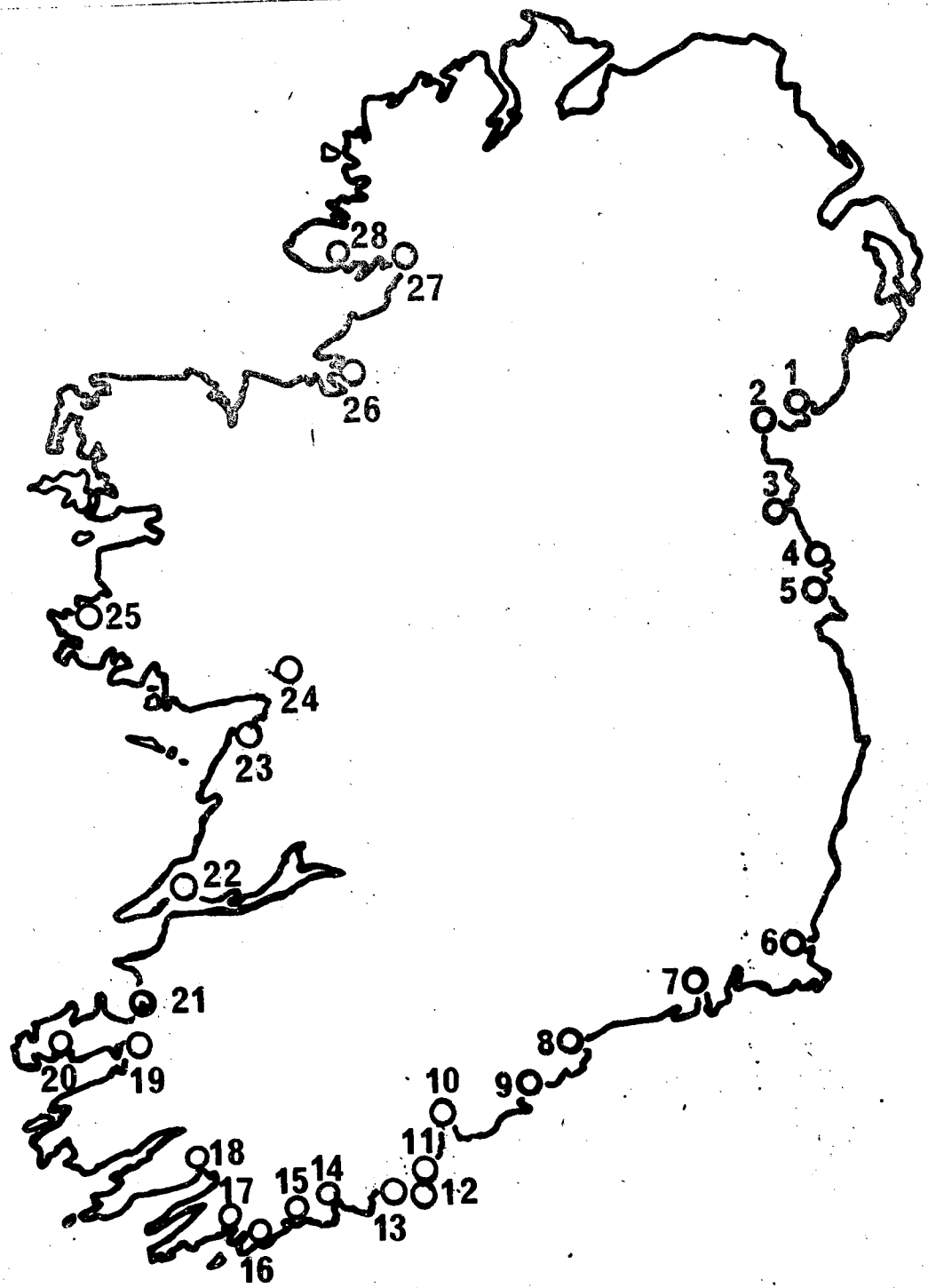


Fig.2. Map of Ireland showing general distribution of Pinnotheres pissum in mussels.

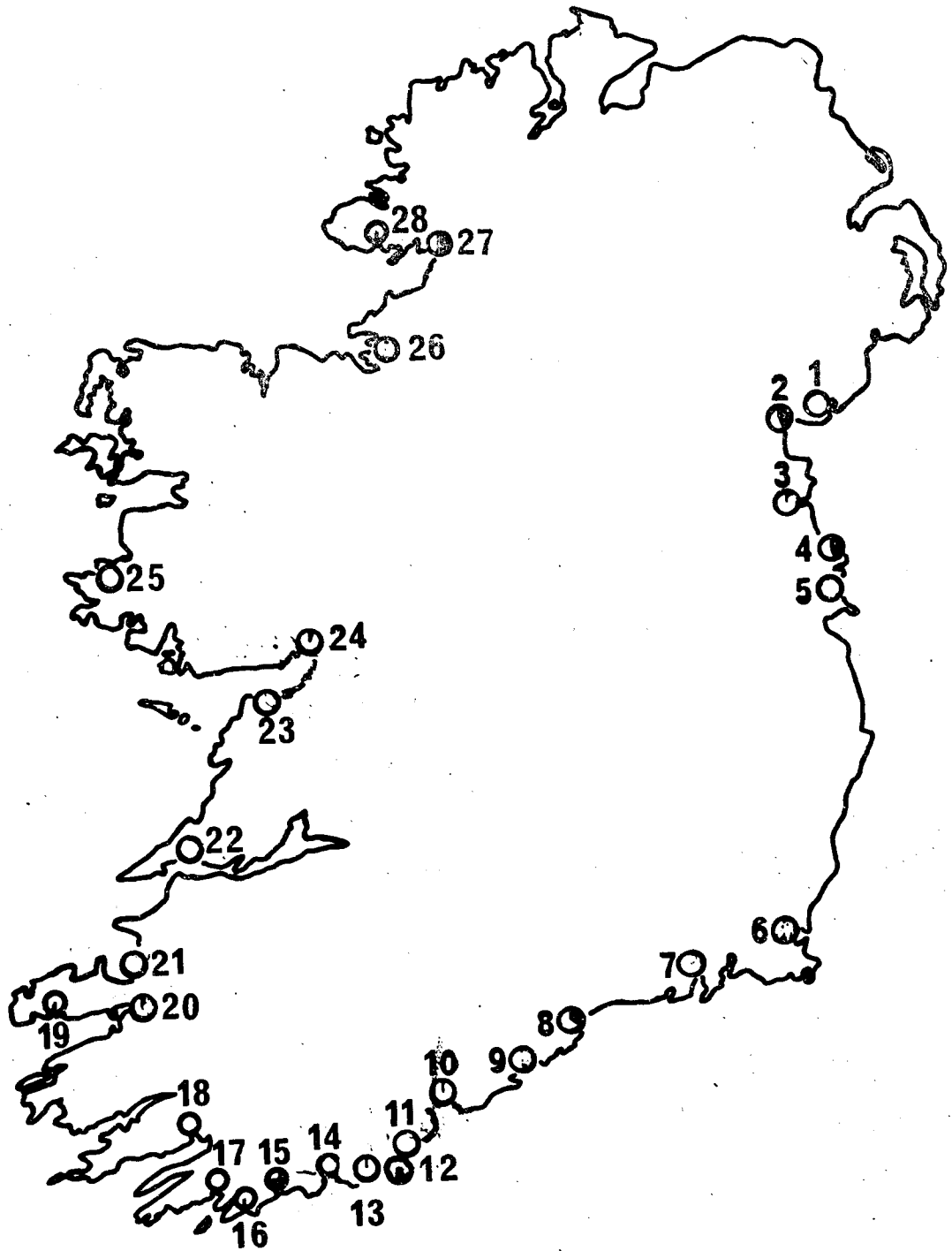


Fig.3. Map of Ireland showing general distribution of Polydora ciliata in mussel shell.