

**THE FAUNA OF SCOTLAND WITH  
SPECIAL REFERENCE TO  
CLYDESDALE AND THE WESTERN  
DISTRICT. FRESH AND BRACKISH-  
WATER OSTRACODA**

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The Fauna of Scotland with special reference to Clydesdale and the Western District. Fresh and brackish-water ostracoda by David Robertson

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**DAVID ROBERTSON**

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FRESH AND BRACKISH-WATER OSTRACODA.

INTRODUCTION.

IN undertaking the preparation of a Catalogue of the Fresh and Brackish-water Ostracoda, chiefly of the West of Scotland, I have had great misgivings whether at the present time it could be brought to a satisfactory issue. I have to express my thanks to Dr. G. S. Brady for his valuable assistance in all cases of doubtful species. I may mention that the new species in this Catalogue will be described and figured in a joint Paper by Dr. G. S. Brady and myself.

To approach exhaustiveness, even in the most distant way, the various localities would not only have to be visited once, but several times in the year, as different species appear at different seasons. My opportunities have not allowed me to visit as many localities, nor these so frequently, as I could have wished, in the West of Scotland, and still fewer in the East; the list can therefore only be regarded as a record chiefly of characteristic species of the localities which have come under my observation.

The Fresh and Brackish-water Ostracoda, it is to be remembered, form but a small section of the Entomostraca, and the species will necessarily be fewer when confined to a limited area. The catalogue was at first intended to comprise gatherings only from the West of Scotland, but, on further consideration, it was thought advisable not to limit the boundary strictly to any one part of the country, as the more widely apart they are, the better will the districts show the various aspects of distribution.

One point in regard to distribution may be noticed, viz, there appears to be a greater dissimilarity of species between the east and west coasts of Scotland than between England and Scotland. In

the neighbourhood of Edinburgh *Cypris gibba* is plentiful, sometimes gregarious almost to the exclusion of all others, whereas, on the west coast, it has been my experience to find that species but sparingly distributed.

*Goniocypris nitra* and *Cypris punctillata* are common to the east of Scotland and the fen districts of England, but are not yet recorded in the West of Scotland. Still, it is true that, on a comparison of localities one with another, so far as the results have been brought out, there is less difference existing between stations widely apart than might have been expected. The means of distribution do not seem to depend so much on the facilities of transport as on the conditions of locality. Ostracoda may be abundant in ditches and absent in the lochs and tarns that receive their waters. Examples of this are so common that they must be familiar to every one who has paid any attention to the subject.

The Ostracoda in this list, which may be considered to belong exclusively to brackish water, but never by choice to be purely marine, are *Cypris salina*, *Cypridopsis aculeata*, *Cytheridea torosa*, and its variety *teres*. The latter species and variety, although more estuarine, may be placed in the same category. *Cypris incongruens* and *Cypridopsis obesa* are frequently found in brackish water, but as frequently in purely fresh water. Many other species are occasionally met with in water more or less brackish, as in ponds a little above high-water mark, subject to the spray of the sea during high tides and storms, but chiefly in fresh water quite beyond the reach of marine influences. A group of small ponds lying close together along the south-west shore of the island of Cumbrae, and apparently subject to an equal amount of spray, may here be referred to. These ponds are mostly within a few yards of each other, and seem to be exposed to similar conditions, yet their microscopic fauna are found, when compared, to differ widely. A list of Ostracoda found in ten of these sub-brackish patches of water will best show the great number of reputed fresh-water species associated with those which constantly affect brackish water, and also the diversity in the numbers and grouping of species existing between one pond and another. This mixture of fresh and brackish-water species is all the more remarkable, as none of these ponds communicate with the others, nor with any fresh-water stream. All of them, as stated, are within a short distance of each other, only a little above high-water mark, and subject to the spray of the sea. The effect of this

spray in transporting saline matter is well known, to the discomfort of the inhabitants of the cottages along the shore, the salt obscuring their windows after every storm.

All the gatherings were purposely taken for comparison on the same day, 15th October, 1878, so that they should all be alike so far as regards weather conditions and season of the year. Seeing that the same species are often found widely apart, there can be no doubt that there are ample means of transport to distant localities afforded to these minute organisms—much more, we should think, to those of closer proximity. It appears that some other condition than the saline element is necessary for the presence of one of our most characteristic brackish-water species—viz, *Cypridopsis aculeata*—as only in three of these ponds do we find it. *Cypris salina*, another characteristic brackish-water species, has not been found here, but is met with in other similarly situated ponds on the island. Among the above-mentioned sub-brackish pools we find the following undoubted fresh-water species:—

<i>Cypris compressa</i> ,	in 9 of the ponds,	more or less common.
" <i>granulosa</i> , sp. nov.	in 1 of the ponds,	moderately common.
" <i>tesselata</i> ,	in 5 of the ponds,	more or less common.
" <i>levis</i> ,	in all	" more or less common.
	and in 1	" exceedingly abundant.
" <i>ovum</i> ,	in 1	" moderately common.
" <i>gibba</i> ,	in 1	" rare.
" <i>incongruens</i> ,	in 2	" moderately rare.
" <i>obliqua</i> ,	in 5	" more or less common.
<i>Cypridopsis villosa</i> ,	in 2	" moderately rare.
<i>Condonia albicans</i> ,	in 3	" moderately rare.
" <i>detecta</i> ,	in 5	" moderately common.
" <i>candida</i> ,	in 3	" moderately common.
" <i>Kingaleii</i> ,	in 3	" moderately rare.
<i>Notodromas monachus</i> ,	in 3	" moderately common.
<i>Limnocythere inopinata</i> ,	in 1	" rare.

Others might be added from other brackish localities—amongst them *Cypridopsis vidua*, *Cypris fusca*, and *Cypris reptans*. From the circumstance that these species are uniformly inhabitants of inland fresh water, although occasionally found in brackish water, we cannot call them "brackish" species, and scarcely even "sub-

brackish" species; but that they can accommodate themselves to either habitat there can be no doubt.

We thus see that, independently of the saline element, some ponds are more favourable to certain species of Ostracoda than others, and we may reasonably assume that different species are in some degree influenced by the different growths of the vegetation of the ponds during the season. This holds true in regard to other orders of the Microzoa. And it is a fact, howsoever we may explain it, that scarcely any two of these ponds are alike in the vegetation which they support, so that the causes of difference between them, whatever it may be, influences the plant as well as the animal life.

These observations require to be followed out over a more extended area, and a larger accumulation of facts obtained before any satisfactory conclusions can be arrived at. Hitherto there has been but little done in this department of Natural History in Scotland, and few to lead or assist. For these reasons it has been in a great measure overlooked, and other branches of a more popular kind preferred.

It may be useful to refer to a few of the places which have yielded the best results both in variety and abundance of species of Ostracoda, as it frequently happens, when information is derived only from maps, or from persons unacquainted with this class of organisms, that the collector is left wholly uncertain as to the suitability of a locality for his pursuit. Many fine sheets of water are quite barren of Ostracoda, or nearly so, while, on the other hand, they are often abundant in places where such organisms might be least expected.

*Govan Colliery Dam*, a short distance east of Crosshill, Glasgow, may almost be mentioned as a thing of the past. There can be no doubt that, considering the demand for suburban ground for building purposes, this small patch of water, so accessible from the city, and which has yielded for years many fine gatherings of various species of Ostracoda, will shortly be filled up and disappear. It has yielded the following species:—

<i>Cypria gibba</i> ,	-	-	-	Ramdohr.
—— <i>lavis</i> ,	-	-	-	Müller.
—— <i>compressa</i> ,	-	-	-	Baird.
—— <i>virens</i> ,	-	-	-	Jurine.
—— <i>reptans</i> ,	-	-	-	Baird.



<i>Cypridopsis obesa</i> ,	- -	Brady & Robertson.
<i>Candona candida</i> ,	- -	Müller.
———— <i>nitens</i> ,	- -	Sp. nov.
———— <i>compressa</i> ,	- -	Koch.
———— <i>detecta</i> ,	- -	Müller.
———— <i>albicans</i> ,	- -	Brady.
———— <i>similis</i> ,	- -	Baird.
<i>Limnocythere inopinata</i> ,	-	Baird.

*Hairmyres*, two miles west of East Kilbride, is an old limestone quarry, in disuse for upwards of twenty years, and mostly grown over with moss and varied species of pondweed. Amongst this pondweed Ostracoda are moderately plentiful. Some parts are very ochreous, yet there the Ostracoda are not uncommon and in fine condition. The following species are generally met with:—

<i>Cypris fusca</i> ,	- - -	Straus.
———— <i>compressa</i> ,	- -	Baird.
———— <i>striolata</i> ,	- -	Brady.
———— <i>granulosa</i> ,	- -	Sp. nov.
———— <i>levis</i> ,	- -	Müller.
———— <i>tessellata</i> ,	- -	Fischer.
<i>Candona compressa</i> ,	- -	Koch.
———— <i>albicans</i> ,	- -	Brady.
———— <i>candida</i> ,	- -	Müller.
———— <i>diaphana</i> ,	- -	B. & R.
———— <i>hyalina</i> ,	- -	B. & R.
———— <i>Kingsteii</i> (male),	-	B. & R.

*Possil Marsh*, or *Loch*, about three miles north of Glasgow, is of considerable extent, with both hard and swampy margins, and mostly well grown up with vegetation, though at the same time there is a large portion of clear water. At the north end a number of weedy, stagnant ditches are connected with the loch, and far exceed it in richness and variety of Ostracoda. This is one of those places where, when judging from appearance, we expect much but get little. The following species are from the marsh and ditches:—

<i>Cypris fusca</i> ,	- - -	Straus.
———— <i>tessellata</i> ,	- -	Fischer.
———— <i>levis</i> ,	- -	Müller.

<i>Cypris striolata</i> , - - -	Brady.
——— <i>compressa</i> , - - -	Baird.
——— <i>reptans</i> , - - -	Baird.
<i>Cypridopsis vidua</i> , - - -	Müller.
——— <i>obesa</i> , - - -	B. & R.
<i>Notodromas monachus</i> , - - -	Müller.
<i>Candona candida</i> , - - -	Müller.
——— <i>detecta</i> , - - -	Müller.
——— <i>similis</i> , - - -	Baird.
——— <i>diaphana</i> , - - -	B. & R.
——— <i>Kingslevi</i> , - - -	B. & R.

*Frankfield Loch*, about four and a half miles east of Glasgow. No place could have a more promising appearance for Ostracoda. It covers about seven or eight acres, nowhere deep, and in most places it can be waded in. There is an abundance of marsh plants growing all over it, and the margins are grassy, with many ditches filled with vegetation, which harbour a fair proportion of Ostracoda and other Microzoa.

<i>Cypris fusca</i> , - - -	Straus.
——— <i>reptans</i> , - - -	Baird.
——— <i>virens</i> , - - -	Jurine.
——— <i>tessellata</i> , - - -	Fischer.
——— <i>lavis</i> , - - -	Müller.
——— <i>compressa</i> , - - -	Baird.
——— <i>granulosa</i> , - - -	Sp. nov.
<i>Cypridopsis vidua</i> , - - -	Müller.
——— <i>villosa</i> , - - -	Jurine.
<i>Candona detecta</i> , - - -	Müller.
——— <i>candida</i> , - - -	Müller.
——— <i>nicensis</i> , - - -	Sp. nov.
——— <i>compressa</i> , - - -	Koch.
——— <i>Kingslevi</i> , - - -	B. & R.
——— <i>albicans</i> , - - -	Brady.

*Woodend Loch*, about three-quarters of a mile to the south of Gartcosh Station, on the Caledonian Railway, and seven miles east of Glasgow. This loch is nearly half a mile long, and about a quarter of a mile broad; the margins on the north-western side are flat and shallow, and overgrown with vegetation, chiefly grass; and this is, perhaps, the best side for the capture of Ostracoda.

The following species were taken, 5th June, 1878:—

<i>Cypris fusca</i> ,	-	-	-	Straus.
—— <i>striolata</i> ,	-	-	-	Brady.
—— <i>compressa</i> ,	-	-	-	Baird.
—— <i>ovum</i> ,	-	-	-	Jurine.
—— <i>lavis</i> ,	-	-	-	Jurine.
—— <i>tumefacta</i> ,	-	-	-	B. & R.
—— <i>reptans</i> ,	-	-	-	Baird.
<i>Cypridopsis vidua</i> ,	-	-	-	Müller.
<i>Candona albicans</i> ,	-	-	-	Brady.
—— <i>detecta</i> ,	-	-	-	Müller.
—— <i>nitens</i> ,	-	-	-	Sp. nov.
—— <i>compressa</i> ,	-	-	-	Koch.
—— <i>Kingslei</i> ,	-	-	-	B. & R.
—— <i>similis</i> ,	-	-	-	Baird.

*Johnston Loch*, about 7 miles east of Glasgow, and a little to the north of Gartcosh Railway Station, is of a quadrangular form, and about a quarter of a mile each way. The greater part of the margin is covered with weed, and not very deep, and the bottom is hard for a considerable distance from the shore, affording good footing. No place could be more convenient for collecting Microzoa. *Daphniads* are in great abundance; *Hydrachna* and *Lynceids* are common. The species taken 3rd June, 1878, were—

<i>Cypris fusca</i> ,	-	-	-	Straus.
—— <i>tessellata</i> ,	-	-	-	Fischer.
—— <i>compressa</i> ,	-	-	-	Baird.
—— <i>striolata</i> ,	-	-	-	Brady.
—— <i>lavis</i> ,	-	-	-	Müller.
—— <i>reptans</i> ,	-	-	-	Baird.
<i>Cypridopsis vidua</i> ,	-	-	-	Müller.
<i>Notodromas monachus</i> ,	-	-	-	Müller.
<i>Candona candida</i> ,	-	-	-	Müller.
—— <i>nitens</i> ,	-	-	-	Sp. nov.
—— <i>detecta</i> ,	-	-	-	Müller.
—— <i>Kingslei</i> ,	-	-	-	B. & R.
<i>Linnicythere inopinata</i> ,	-	-	-	Baird.

*Bishop Loch* is about 7 miles east of Glasgow, near Gartcosh Station, and is nearly a mile in length by a quarter of a mile in