Freshwater fauna of Aammiq Marsh and neighbouring ditches. 1.
Notes of survey carried out from 8.4.99 to 10.4.99

Purpose.
The survey could be used as the baseline for a monitoring programme.

Survey sites.
The following sites were surveyed. They were chosen largely for their accessibility and convenience, rather than for representativeness. Hopefully, they cover a reasonable proportion of the ditch, pond and marsh biotopes. However, even with this very cursory survey, there were marked differences in the fauna between superficially similar sites.

1	Games Area Ditch	Enter Games Area. Go along track to the S running WNW-ESE. Site is 30m ESE of end of line of small trees. 8/4/99: Very clear water; 50% of substrate covered with submerged vegetation; <20% of surface covered with floating algal mat
2	Israeli Pool Road Ditch	Go ESE along Israeli Pool Road. Site is 50m before first track to the left, in ditch on left (N) of Road. 8/4/99: v. little submerged aquatic vegetation; some emergent species (rushes and docks); floating algal mat covered about 50% of surface; water discoloured; fertiliser sack at site
3	Rush Swamp	Site is just below the ruined building, by the water-level monitoring pool just beyond the Irrigation Pool. 8/4/99: abundant water-crowfoot and spike-rush; water slightly discoloured; most of substrate covered with decaying vegetation from last year
4	Irrigation Pool	A band of emergent rushed cuts across the pool, parallel to its short edge, and near the southern end. Site is at E end of this band of rushes. 8/4/99: away from edge, abundant submerged and emergent vegetation; in shallows, near edge, substrate bare clay, or covered with filamentous algae. Water clear.
5	Pumping Engine Ditch	Going ESE along the Israeli Pool Road, turn left along the track (to the line of manna ash) *before* the track to the Irrigation Pool. About 1/3 of the way along this track, at a T-junction of ditches, is a diesel pumping engine (which looks like a long-term fixture). Site is 10m beyond this (i.e. NNE of it). 9/4/99: substrate extremely densely covered with filamentous algae and submerged macrophytes; around 20% of surface covered with floating algal mats.
6	Riachi East	Site is just opposite the measuring pole. 9/4/99: small quantities of submerged macrophytes; around 25% of surface covered with algal mats; much submerged decaying vegetation, coated with filamentous algae.
7	Main Springs	Site is at the main springs in the NE corner of the roadside pool, just below the car-parking area by the road. 10/4/99: some submerged vascular plants and mosses; most of substrate bare stones.

8	Naylor's Nemesis	Site is in lower roadside pond, about 30m NNW from the end of the channel where Chris fell in. 10/4/99: submerged macrophytes and some algae. A little floating algal mats
9	Earth Ditch	From the end of the track leading into the Marsh from the car-park, bear left to where a narrow channel has been cut through an earth embankment, to connect one of the ditches to the Marsh. Site is in this ditch a few m from the channel. 10/4/99: Earth substrate. V. little vegetation either submerged or floating. Water fairly clear
10	Interserve Visit Ditch	Close to where the large E-W ditch has been filled in, bear right to a short length of ditch (separated from the peripheral ditches) running roughly NNE-SSW. Site is about 10m SSW of the northern end of this ditch. 10/4/99: Floating algal mats covered ca. 30% of surface at sampling site, but this varied considerably over the short length of the ditch. A little submerged vegetation. Much submerged decaying vegetation from last year.

Method.

In the absence of preservatives, binocular microscopes, keys, and lots of time, it seemed best to examine the samples on site.

- The standard net (25cm wide, 500µm mesh) was swept through a total of about 5m of water, twice (backwards and forwards – so the net was swept through about 10m of water altogether).
- Contents were decanted into a small white tray – much too small, in view of the large amount of weed at most sites. Consequently, the weed (most of which was filamentous algae, had to be picked over to remove at least some of the more obvious animals. The method of assessing numbers (see below) meant that it was not necessary to do this completely for the more numerous species. Of course, scarcer animals may well have been missed altogether.

  Fortunately, animals from several invertebrate groups usually make their presence obvious: adult water beetles and some mayfly larvae are active swimmers. Flatworms often adhere to the sides of a container. But Odonata larvae, several water beetle larvae, some mayfly larvae and smaller cased caddis larvae are not. Nevertheless, damselfly larvae were found at a few sites.

  It was not possible to identify animals to species. In some cases, I could be confident about a family or genus, but in many I had to resort to "Beetle 1", "Beetle 2", etc. Together with the descriptions, it might be possible to be more precise at a later stage. However, for many purposes it is probably not necessary to identify to species. For example, in the BWMP (British Water Monitoring Programme) system for scoring water quality based on invertebrates, scores are given to families (normally), rather than species, in producing a total score for a sample. The scoring system would probably not be directly transferable to Lebanon, but the principles would apply.

- Numbers of individuals in each species were estimated and coded as follows:

Estimated number	Code
1	1
2 – 10	2
11 – 100	3
101 – 1000	4
1001 – 10000	5
etc.	

General comments.
The ditches of the "sustainability" zone are not very species-rich in invertebrates, but some of them are (at least in parts) rich in the more obvious fauna: frogs, turtles and fish. The margins of some of them support fringes of reeds which are used by warblers and other birds.

However, it looks as if It also looks as if many of the ditches are distinctly eutrophic. Algae is present in large quantities: submerged filamentous algae; floating masses of algae, and submerged masses that coat almost all submerged surfaces in some ditches. Large masses of algae block light to lower levels of the ditches, and thereby reducing oxygen concentrations there: fine for some chironomids (the "bloodworms") and probably useful as a food resource for snails and tadpoles - but not good for much else. Submerged macrophytes, on the other hand, are useful for freshwater fauna for severla purposes (food, depositing eggs on, lurking among, escaping among).

Surely one of the causes of eutrophication (if not the major one) is fertliser runoff from adjacent fields. Understandably, farmers plough right up to the edges of ditches. Less understandably, many of them dump their used fertiliser bags in the ditches. And what about spray drift? As well as impoverishing the fauna, they are probably doing the same to the aquatic flora as well since (by analogy with terrestrial habitats) scarcer species cannot compete against a dominant few. Moreover, if this is what farmers do with fertilisers, what are they doing with pesticides? (However, the discarded bags all seemed to be of fertilisers.)

In a few places, the ditch margins are good for annual plants of bare ground. But these will also be lost if this form of management carries on. (In the UK, many of the more endangered species are "cornfield annuals" which have been killed by herbicides in the fields, and out-competed by coarse grasses on field margins.)

Ideally, farmers should be required to follow codes of conduct about spraying and disposal of bags. Even more ideally, there should be uncultivated buffer zones adjacent to watercourses – at least 5m wide.