

## THE FRESHWATER CRAB *POTAMON FLUVIATILE LANFRANCOI*: A NEWLY DISCOVERED LOCALITY AT IL-WIED TA' ĠORDAJNA, AND A CLARIFICATION OF RECORDS FROM L-IMTAHLEB

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### ABSTRACT

The freshwater crab *Potamon fluviatile lanfrancoi* is recorded from a new locality in Malta: Il-Wied ta' Ġordajna. Individual crabs, exuvia, snail shell fragments, excavated mud piles and burrows were discovered at various points, indicating the presence of a sizeable population. Records from the nearby area of L-Imtahleb are also clarified, thus adding a further new record from Wied Markozz. The occurrence of *P. fluviatile* at Il-Wied ta' Ġordajna is particularly interesting due to its location roughly midway between other known stations for this species at L-Imtahleb and Wied il-Bahrija.

### INTRODUCTION

The freshwater crab *Potamon fluviatile lanfrancoi* (Figs. 5 & 6) is known in Maltese as "Qábru", a generic term that is also applied to various marine crabs. It is listed in the "Red Data Book for the Maltese Islands" as endemic, endangered and with a restricted distribution in the Maltese Islands. It has only been recorded from a few freshwater streams, namely San Martin (near Il-Wardija, l/o San Pawl il-Bahar), Wied il-Ġnejna (l/o Mġarr), Bingemma (l/o Mġarr), Wied il-Bahrija (l/o Rabat), L-Imtahleb (l/o Rabat) and Wied il-Lunzjata (l/o Ta' Kerċem in Gozo).

During field visits in December 1999, March 2000 and June 2000, *Potamon fluviatile lanfrancoi* was observed at Il-Wied ta' Ġordajna (also known as Il-Wied ta' Ghajn Marġa), within the two-tiered cliff system at L-Irdum tas-Sarġ (see Fig. 1). This is hitherto undocumented as a station for this animal. Records of *P. fluviatile lanfrancoi* at L-Imtahleb proper, which are somewhat confusing, were confirmed.

### IL-WIED TA' ĠORDAJNA: SITE DESCRIPTION

Il-Wied ta' Ġordajna (Fig. 2 – 4) consists of a small, semi-permanent stream flowing down an ill-defined

watercourse that cuts across a clay talus between the upper and lower cliffs.

The upstream section of the watercourse, located between the inland rim of Upper Coralline Limestone cliffs and a narrow country road that traverses the stream (marked on survey sheets as Triq tal-Merhla), is lined with a profuse growth of reeds (*Arundo donax*) that also extends laterally for several metres along the road margin. A small pool of standing water (approximately 1.5m in diameter and 15-30cm deep at the time of observation in March 2000 and June 2000) is located within this extension.

The surrounding land consists of cultivated terraced fields, whilst the uppermost parts of the watercourse merge into a maquis of large carob trees (*Ceratonia siliqua*) and prickly pear (*Opuntia ficus-indica*). Undergrowth is practically limited to isolated patches of bramble (*Rubus ulmifolius*) and wall pellitory (*Parietaria diffusa*).

The segment of the watercourse located downstream of the road is less homogeneous. It supports a relatively well-developed watercourse vegetation dominated by alternating clumps of reeds (*Arundo donax*), rushes (*Holoschoenus vulgaris*) and fescue (*Festuca arundinacea*), with lesser stands of

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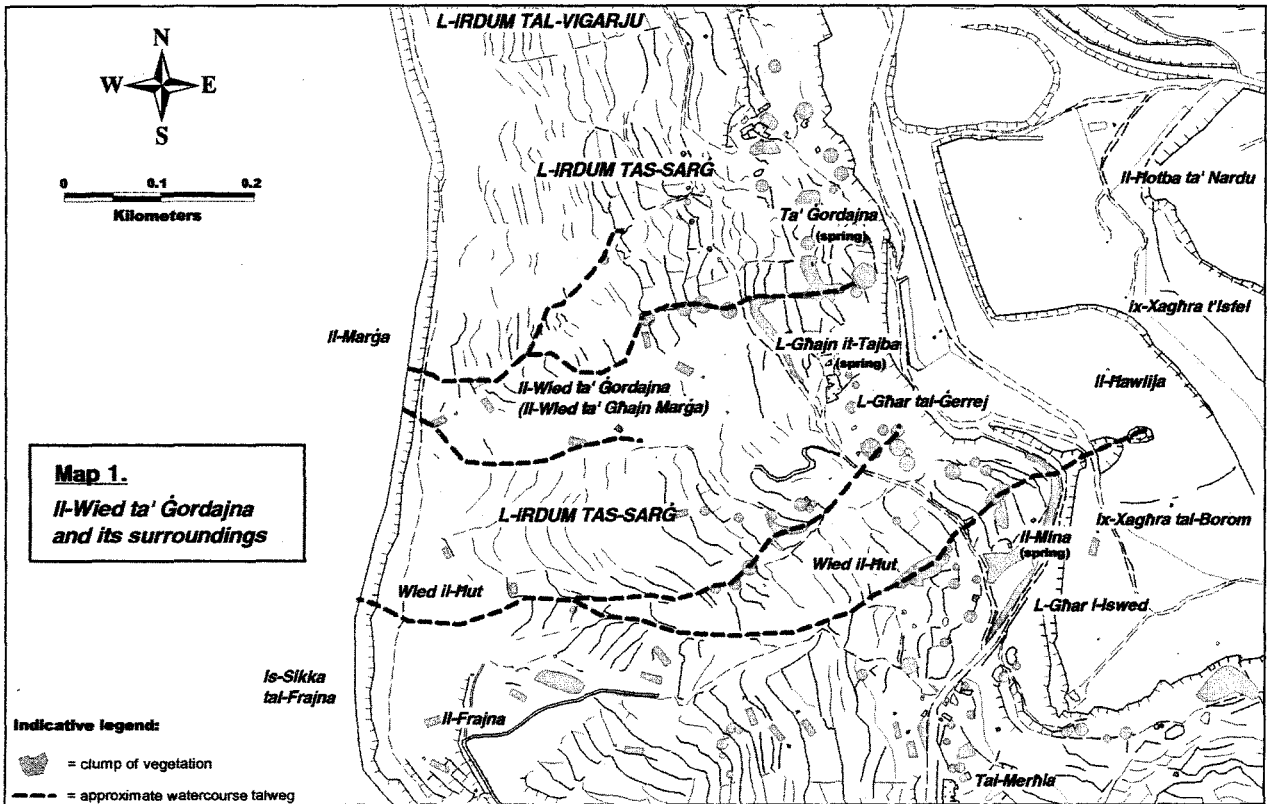


Fig. 1. II-Wied ta' Ġordajna and its surroundings.

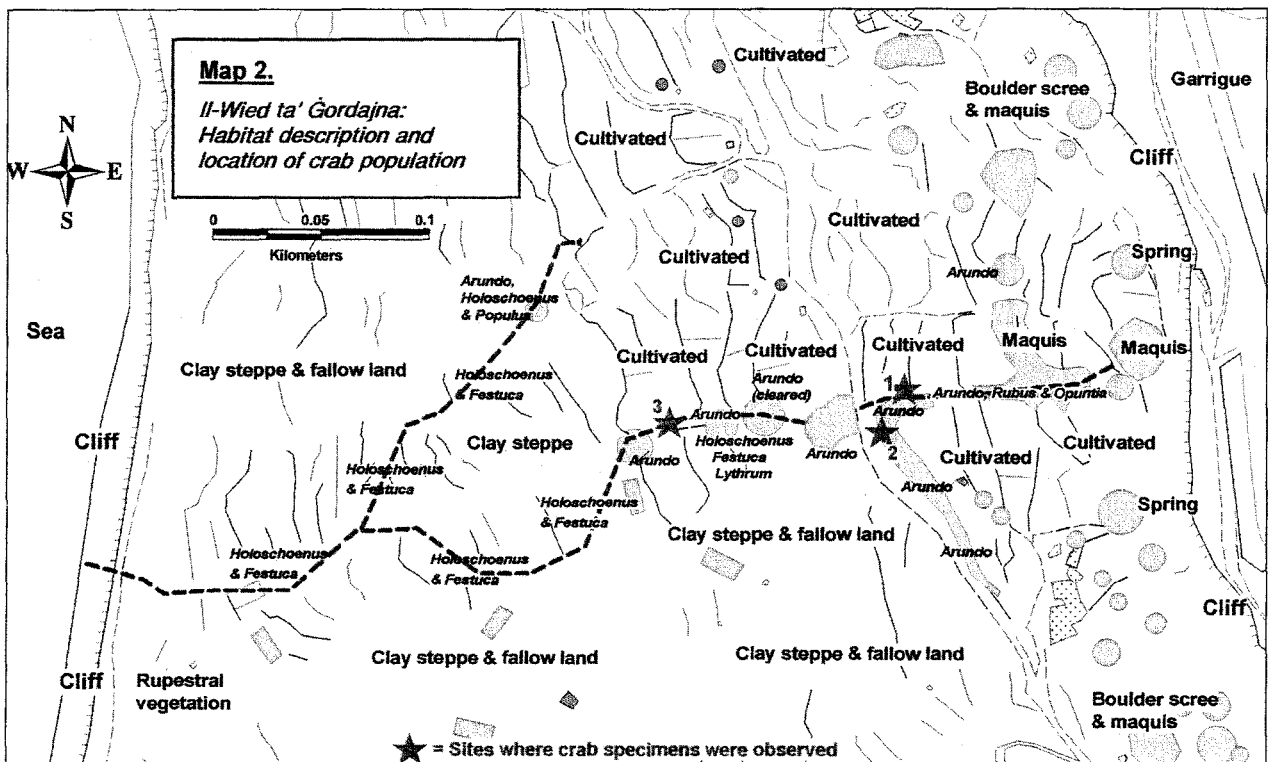


Fig. 2. II-Wied ta' Ġordajna: Habitat description and location of crab population

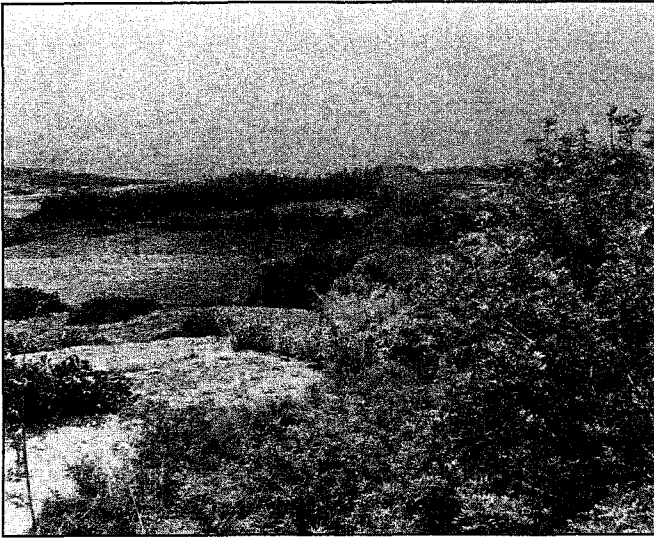


Fig. 3. Il-Wied ta' Ġordajna – Panorama



Fig. 4. Il-Wied ta' Ġordajna – Habitat

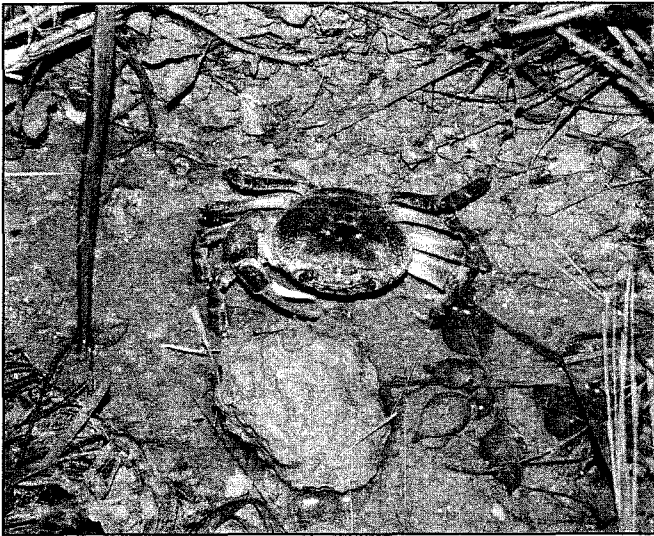


Fig. 5. *P. fluviatile lanfrancoi*.

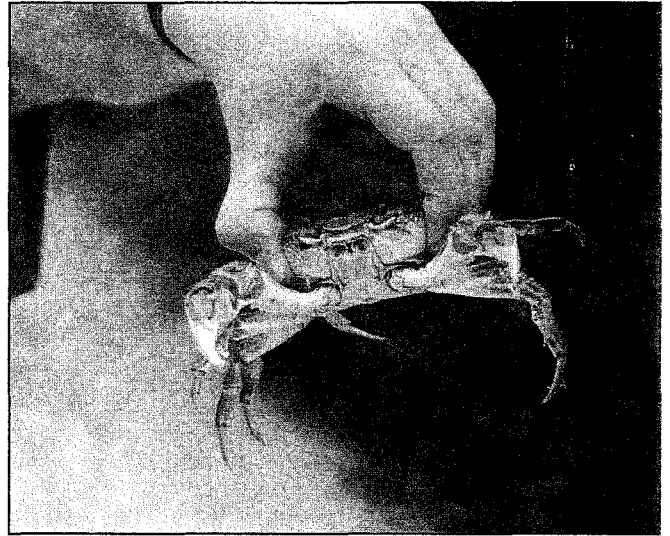


Fig. 6. *P. fluviatile lanfrancoi*. Close-up.



Fig. 7. Burrow



Fig. 8. Torn snail shells.

*Polygomon monspeliensis*, *Lythrum græfferi*, the endangered *Mentha suaveolens*, and *Apium nodiflorum* which is a reliable indicator of relatively unpolluted freshwater (Lanfranco, 2000 pers. comm.).

## FIELD OBSERVATIONS AT IL-WIED TA' GORDAJNA

The watercourse at Il-Wied ta' Ġordajna was repeatedly surveyed in the course of the various field visits. Several individual crabs (Figs. 5 & 6), together with other indicators [e.g. burrows (Fig. 7), exoskeleton fragments including carapaces and chelæ, exuviae, excavation piles, and mutilated snail shells (Fig 8)] were recorded from three main sites within the stream, as marked on Fig. 2. Details of field observations, including detailed measurements, are summarised in Tables 1 and 2.

**Existing records from "Mtaħleb"** - Since the environs of Il-Wied ta' Ġordajna are often loosely considered as part of L-Imtaħleb, an assessment of current documentation about *P. fluviatile* from "Mtaħleb" (*sic*) is of some relevance.

Schembri & Lanfranco (1984) overlook the population at L-Imtaħleb in their description of "Wied ir-Rum, Wied Ġħar Ilma, Wied Markozz and Wied Miġra Ferħa". The occurrence of the freshwater crab at L-Imtaħleb is also overlooked by Schembri (1983), who states that "In Malta it has been reported at Baħrija and Bingemma Valleys, at San Martin and at Ġnejna while in Gozo it is found at Wied tal-Lunzjata". Likewise, Schembri *et al.* (1987) only make reference to crab populations at Wied il-Baħrija, San Martin and Wied il-Lunzjata (Gozo).

Documented records of *P. fluviatile* that refer to "Mtaħleb" are vague and apparently refer to the much larger and better-known permanent stream at Il-Wied ta' l-Imtaħleb (Stevens, 1999 pers. comm.; Lanfranco, 1999 pers. comm.), which lies over 1 km to the west-southwest of Il-Wied ta' Ġordajna and forms part of an entirely distinct catchment that ultimately discharges at Miġra l-Ferħa.

Capolongo & Cilia (1987) record the existence of *P. fluviatile* at "Imtaħleb", confirming an earlier record by Pace (1974), and describe the locality as a valley having a "North West to Northerly (flow ?) direction" similar to "Baħrija, San Martin, Ġnejna" and unlike "Wied Lunzjata which is directed South to South West". This geographic reference does not tally

with any of the valleys in the area (including Il-Wied ta' Ġordajna, Il-Wied tal-Ġħajn it-Tajba, Wied il-Ħut, Wied Markozz, Il-Wied ta' l-Imtaħleb, Il-Wied ta' Miġra l-Ferħa, and the entire Wied ir-Rum catchment system except Wied Ħazrun). Capolongo & Cilia also include a schematic map (unsuitable for precise location of the crab populations) showing "Localities with freshwater crabs in the Maltese Islands". Due to inadvertent interchange of map symbols for L-Imtaħleb and Bingemma, "Imthaleb" (*sic*) is marked as a locality from which the crab is probably extinct; this has since been rectified by Cachia (1997).

In order to determine whether the "Mtaħleb" records could be mistaken references to the Il-Wied ta' Ġordajna population, Il-Wied ta' l-Imtaħleb and its major tributary Wied Markozz were inspected in December 1999, whereupon discrete clusters of partly-flooded burrows were observed in both valleys. Wied Markozz is thus another undocumented station for the species. In both cases, burrows were located under thick reed beds along stream banks; a single small living crab (reddish-pink in colour) was noted at Il-Wied ta' l-Imtaħleb. The presence of crabs at Wied Markozz/Il-Wied ta' l-Imtaħleb is well-known among local farmers interviewed on the same date.

## CONCLUSION

The new record of *P. fluviatile* at Il-Wied ta' Ġordajna is particularly interesting in view of its geographical location roughly midway between the Il-Wied ta' l-Imtaħleb and Wied il-Baħrija valley systems, where populations of crabs are already known.

Although interaction between the various populations of *P. fluviatile* appears unlikely, in view of the significant distances and intervening topographical, microclimatic and ecological barriers, this possibility should not be entirely discarded without further investigation, especially in view of the following:

1. Studies carried out by Cachia (1997) at San Martin (near Il-Wardija, l/o San Pawl il-Baħar) record a secondary crab population near a perennial spring (Ġħajn Astas) that is separated by about 250-350 metres of dry habitat and cultivated land from the main population in the watercourse proper. Whereas the separation of Il-Wied ta' Ġordajna from both Wied Markozz/Il-Wied ta' l-Imtaħleb and Wied Rini/Wied il-Baħrija is about three to four times as much, Cachia's observations do not rule out the remote possibility that greater distances may be travelled by the crabs.

**TABLE 1. Field visits carried out during this study**

FIELD VISIT NO.	DATE	TIME	AREA	PRESENT	NOTES
1	05 DEC 1999	16.30 hrs (at dusk)	Site 1 on Map 2	AC, AZ	Several flooded burrow openings were observed along the west-facing edge of the reed bed. It could not be determined whether burrows were occupied.
2	25 MAR 2000	17.45 – 18.45 hrs	Site 1 on Map 2	AC, SC	
3	03 JUN 2000	12.00 – 17.30 hrs	Sites 1 & 2 on Map 2	AC, SC	Nineteen burrow openings were identified on the stream-bed at Site 1; a fresh excavation pile was prominently visible round one of the openings.
4	07 JUN 2000	10.30 – 14.30 hrs	Sites 2 & 3 on Map 2	AC, SC, JFC	Five burrow openings on the stream-bed at Site 3. Several mutilated snail-shells (mostly <i>Helix aspersa</i> ), probably victims of the crabs, were noted at Site 3. A nearby valley between Il-Wied ta' Ġordajna and Wied il-Hut, dry at the time, was also investigated but no signs of habitation by crabs were noted.

Key to abbreviations used in Table 1: AC= Alex Camilleri; AZ= Alexei Zammit; SC= Stephen Cachia; JFC= John F. Cachia.

**TABLE 2. Specimen records. (? denotes data that could not be obtained).**

Specimen	Field Visit	Location	Maturity	Moult stage	Sex	Heterochely	Injuries	Car. Width (mm)	Car. length (mm)	R. Chela length (mm)	R. Chela width (mm)	R. Chela height (mm)	L. Chela length (mm)	L. Chela width (mm)	L. Chela height (mm)	Fresh weight (g)
1	1	Field margin near watercourse	A	Old	?	N/A	Missing L. chela	?	?	?	?	?	N/A	N/A	N/A	?
2	2	Under stone on stream bed	S	?	♀	N/A	Missing R. chela	24.00	20.45	N/A	N/A	N/A	14.75	5.50	4.05	5.0
3	2	Under stone on stream bed	S	?	♂	R.	Small 2 <sup>nd</sup> R pereiopod	21.60	18.00	14.10	6.35	4.35	13.55	5.10	3.60	≈ 4.0 – 5.0
4	3	Near burrow on muddy stream bed	A	Old	♂	N/A	Missing L. chela	42.20	36.35	30.40	10.40	14.60	N/A	N/A	N/A	34.0
5	3	Pool (Site 2)	J	?	?	?	?	?	?	?	?	?	?	?	?	?
6	3	Muddy stream bed	?	Old	?	?	?	?	?	?	?	?	?	?	?	?
7	3	Muddy stream bed	J	Old	♂	R.	None	21.80	19.30	14.80	4.90	6.70	14.00	3.90	4.90	4.0
8	3	Muddy stream bed	J	Fresh	?	?	?	Slightly larger than specimen 7		?	?	?	?	?	?	?
9	3	Muddy stream bed	?	?	?	?	?	?	?	?	?	?	?	?	?	?
10	4	Pool (Site 2)	A	Old	♂	R.	None	55.00	48.60	47.50	14.80	21.50	40.85	9.95	14.70	92.0
11	4	Inside burrow (Site 3)	S	Fresh	?	?	?	?	?	?	?	?	?	?	?	?
12	4	Pool (Site 2)	A	Old	♂	R.	Missing 3 <sup>rd</sup> R. pereiopod	44.80	39.10	33.10	11.00	16.30	29.10	8.40	12.40	54.0

Key to abbreviations used in Table 2: A = adult; S = sub-adult; J = juvenile; R. = right; L = left; N/A = not applicable; Car. = carapace

2. Radio-tracking studies in Toscana (Italy) indicate that *P. fluviatile* is capable of long-distance movements of up to 100 metres across areas that lack surface water (Gherardi *et al.*, 1988; Gherardi & Vannini, 1989).

3. The possibility of other "bridging" populations is not excluded, especially since numerous other springs (including L-Għajn it-Tajba, near Il-Wied ta' Gordajna) have been observed throughout the continuous rim of *irdumijiet* (complexes of cliffs, clay taluses and boulder screes) that surrounds the entire area.

#### SUPPLEMENTARY NOTE

The entire area at L-Imtaħleb and L-Irdum tas-Sarg, including all the springs and valleys mentioned in this paper, is legally protected ("scheduled") by virtue of Government Notice 400/1996, issued under the

provisions of Section 46 of the Development Planning Act, 1992.

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