ORIGINAL RESEARCH ARTICLE

Discrimination of dwarf honey bee (*Apis florea*, Fabricius 1876) populations in Iran using Elliptic Fourier Wing Cell Shape Analysis

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Online Supplementary Data

Table S1. Cross-validation summary of *A. florea* colonies based on DFA of 3rd submarginal cell (a) and 2nd cubital cell (b) shapes (N = number of colonies).

(A)

State	N	Ilam	Khuzestan	Bushehr	Hormuzgan
Ilam	54	51 (94.4)	3 (5.6)	-	-
Khuzestan	34	5 (14.7)	27 (79.4)	2 (5.9)	-
Bushehr	14	-	3 (21.4)	9 (64.3)	2 (14.3)
Hormuzgan	12	-	-	-	12 (100)

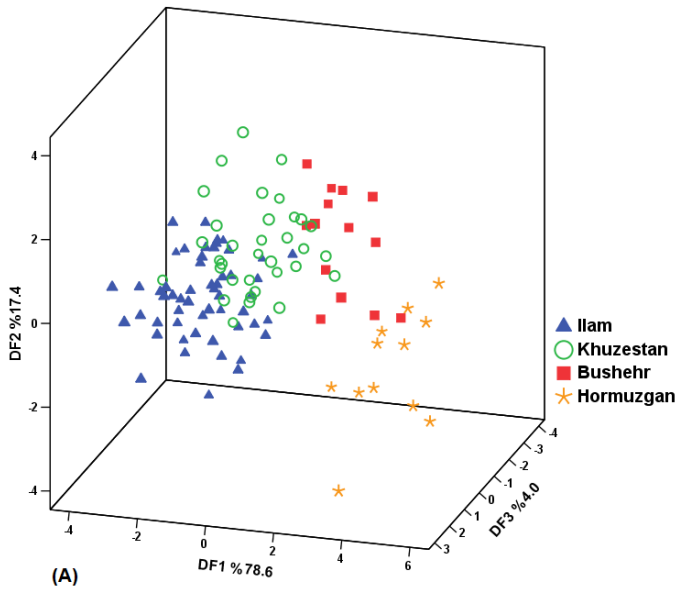
(B)

State	N	Ilam	Khuzestan	Bushehr	Hormuzgan
Ilam	54	53 (98.1)	1 (1.9)	-	-
Khuzestan	34	5 (14.7)	27 (79.4)	2 (5.9)	-
Bushehr	14	1 (7.1)	2 (14.3)	11 (78.6)	-
Hormuzgan	12	-	-	2 (16.7)	10 (83.3)

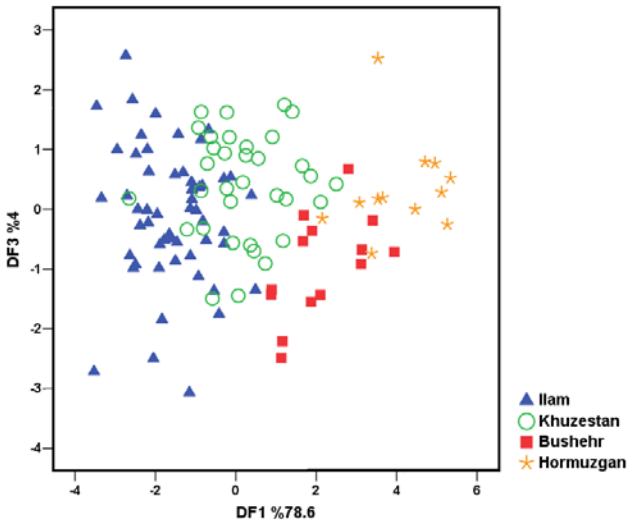
Table S2. Summary classification results based on standard morphometry (SM), landmark-based geometric morphometric method (LM) and outline-based geometric morphometric method (EFA) (N = number of colonies).

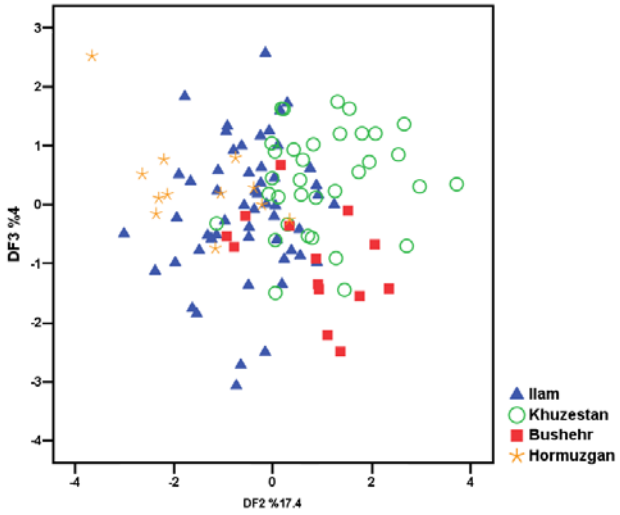
State (N)	Correct Classification (%)								
			EFA (This study)						
	SM (Özkan et al., 2009)	LM (Kandemir et al., 2009)	Marginal cell	1st submarginal cell	2nd submarginal cell	3rd submarginal cell	1st medial cell	2nd medial cell	2nd cubital cell
Ilam (54)	94	96.3	94.4	88.9	90.7	98.1	92.6	88.9	100
Khuzestan (34)	94	91.2	79.4	67.6	82.4	82.3	82.4	73.5	79.4
Bushehr (14)*	93	100	78.6	21.4	78.6	71.4	64.3	100	85.7
Hormuzgan (12)	100	100	100	100	83.3	100	100	100	100
Total	**95**	**95.7**	**88.6**	**75.4**	**86.0**	**90.4**	**86.8**	**86.8**	**92.1**

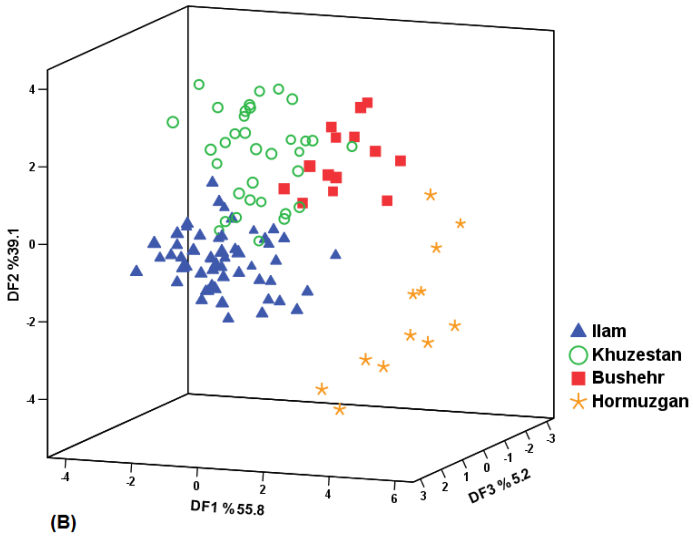
*15 colonies from Bushehr were used in the previous two studies (Özkan et al., 2009; Kandemir et al., 2009).

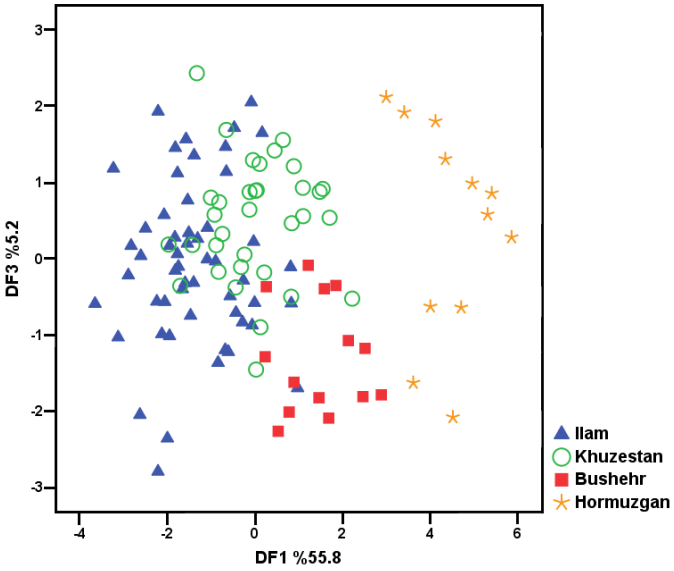

DF2 %17.4
DF1 %78.6
DF3 %4.0
Ilam
Khuzestan
Bushehr
Hormuzgan

(A)


DF3 %4
DF1 %78.6
Ilam
Khuzestan
Bushehr
Hormuzgan


DF3 %4
DF2 %17.4
Ilam
Khuzestan
Bushehr
Hormuzgan





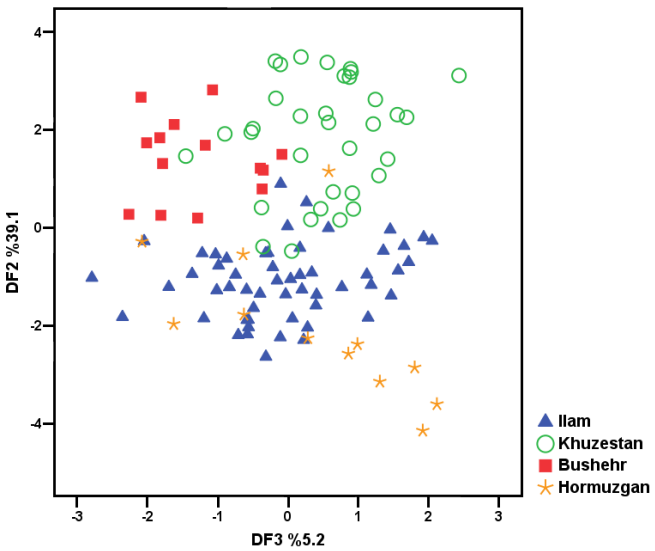


Figure S1. Scatter plot of DFA generated by different functions based on 3rd submarginal cell (a) and 2nd cubital cell (b).