

Chromosome rearrangements are not accompanied by expected genome size change in the tree weta *Hemideina thoracica* (Orthoptera, Anostostomatidae)

Author(s): Mary Morgan-Richards

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DaVIZd	4Yc` ^ `d ^ V dRIV	#_	DM	=`TR&Z_	4`UV	7] h Tj e ^ Veg :_UM	4G i` /
H. crassidens	"&	"&	I@	Dj 7Rc^	S	SZ`*%	SZ`#
H. crassidens	"&	"'	II	Dj 7Rc^	R	SZ`&#	%Z`6
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H. crassidens	"*	"*	I@	=VhZlARdH	T	SZ`#` &	SZ`#
H. thoracica	"S	"S	I@	9V_UVcd _	9V_ S'	SZ`&S"	%Z`S"
H. thoracica	"S	"S	I@	9V_UVcd _	9V_ S#	SZ`&#	SZ`)
					9V_ S#	SZ`A` *	SZ` (
H. thoracica	"S	"%	II	9V_UVcd _	9V_ S!	SZ`" S	#Z`#
H. thoracica	"S	"%	II	9V_UVcd _	9V_ SS	SZ`!` *	SZ`'
H. thoracica	"S	"%	II	9V_UVcd _	9V_ SS	SZ`))	#Z` S
H. thoracica	"S	"%	II	9V_UVcd _	9V_ S%	SZ`A` (	#Z`"
H. thoracica	"S	"%	II	9V_UVcd _	9V_ S&	SZ`" #	#Z` (
H. thoracica	"S	"%	II	9V_UVcd _	9V_ S'	SZ`) *	#Z`"
H. thoracica	"S	"S	I@	HRZR\RdV	2e` "#	SZ`! S	SZ` &
H. thoracica	"S	"S	I@	HRZR\RdV	2e` "!	SZ`&#	#Z` S
					2e` "!	SZ`*` *	SZ`0%
H. thoracica	"S	"S	I@	HRZR\RdV	2e` " S	SZ`&#	#Z`'
H. thoracica	"S	"S	I@	HRZR\RdV	2e` "%	SZ`&#`	#Z`%`
H. thoracica	"S	"S	I@	HRZR\RdV	2e` "&	SZ`&` %	#Z`"
H. thoracica	"S	"%	II	HRZR\RdV	2e` ""	SZ`%`	#Z`6S
H. thoracica	"S	"%	II	HRZR\RdV	2e` "'	SZ`#`%	SZ`#
H. thoracica	"S	"%	II	HRZR\RdV	2e` "(	SZ`S`%	SZ`!
H. thoracica	"&Q	"&	I@	5`^ VGR]V	5`^ ##	SZ` (	SZ`S`%
					5`^ ##	SZ`#` &	SZ`&#
H. thoracica	"&Q	"&	I@	5`^ VGR]V	5`^ #	SZ`S`%#	SZ`#
					5`^ #	SZ`! (	SZ`S`#
H. thoracica	"&Q	"&	I@	5`^ VGR]V	5`^ #	SZ`#`&#	SZ` &
					5`^ #	SZ`S` (	SZ` (
H. thoracica	"&Q	"&	I@	5`^ VGR]V	5`^ #&	SZ`#`)	#Z`"
H. thoracica	"&Q	"'	II	5`^ VGR]V	5`^ #!	SZ`%`	SZ`!
H. thoracica	"&Q	"'	II	5`^ VGR]V	5`^ #%	SZ`) S	SZ`'
					5`^ #%	SZ`&` %	#Z`!
H. thoracica	"&Q	"'	II	5`^ VGR]V	5`^ #S	SZ` ( (	SZ`&#`
H. thoracica	"(	")	II	ARZ`Z	ARZ`%!	SZ`) !	SZ`) %
					ARZ`%!	SZ`&#`'	SZ` (
					ARZ`%!	SZ`S`	SZ`*
H. thoracica	"(	")	II	ARZ`Z	ARZ`%#	SZ`&#` #	SZ`*
H. thoracica	"(	"(	I@	ARZ`Z	ARZ`%`	SZ`) S	SZ` S
					ARZ`%`	SZ` ()	#Z`0
H. thoracica	"(	"(	I@	ARZ`Z	ARZ`%#	SZ`#` #	#Z`!
H. thoracica	"(	"(	I@	ARZ`Z	ARZ`%S`	SZ` &	#Z` S
H. thoracica	"*	#!	II	> eEVAf`V			#Z`#

EYVRZ `WYZdfUj hRde fd^ VRfd VWRZV5? 2T_e_e
`WhVR_fTjVZe` e`hYVcTYR_XdZ TYc ^ `d ^ V_f^ SVc
hVVT_dhV_ehZy` eVYja` eVZMUac` TdVZ5fa|ZIRZ_ `c
]` d` WYc ^ `d ^ VhRdMaVtUe` dV` j`Z TYR_XdZ` e` d] 5? 2
T_e_e` dhYZdeCS` e` d` TRZ_` hRdMaVtUe` YRgV_` dX` Z` TR_e
WVte` _` eV` e` d] 5? 2T_e_e` e` AVtj` et al. #! %Z

Methods

EcWhVRRV~ZYeVdLRS` dRjL` Tf` c` RjL` ^` _Z` dVdVRef` dV
Y` jVdZ` eWef` _` d` RUVSj` h` `` Uis` cZ` XSWeVjRgRve` YZUVf` c

lj dZ XDj dV^ 1A2D hRdV a] j VUf dZ X} j dC T ^ SZ RZ_d`W
 F8 "LE-%#! LE-&! LR U88%&&R UR^ VIF g R TjR^ a 193@
 "!! HZ#Z7ZgVeY f dR_U_f TjVzhV^ V Rf dUWcVRiYhV R Laf d
 Z eC Rj dR UR U1o#&! W^ VRIY/Z5? 2 h R d dRZ VUh ZY 52A:L
 hYZY ZIR _ Z eC Rj RZ Xj V e R s Z U d a c W W V e R j j e 2 H E S R d d
 Z e Z l e V W W V _ e R a a c a c Z R e V e T _ g V e 5 ? 2 ^ V R f d V V e d Z e
 a Z T X R d Z ; Y d e _ e t a l 1 " * * * / d Y h e Y R Z X V V R j L X _ ^ V
 d k V V e Z R e d f d Z X 5 2 A : R X W U h V j h Z Y e Y d V ` S e R Z W f d Z X
 ` e V c ~ f ` c T y c ^ V e Z 8 V _ ^ V d k V R V a c d V e U R d e V R e Z ` W
 e Y V ^ R _ f T j V Z d V W e V Z d V e T ^ a R U e e Y V d W W V T V R _ U
 e Y V W e V R c V _ j T ^ a R S j V h Z Y Z e Z i d f U j Z

2 g r Z j ` W d f V j a d W ^ e Y h V e R h V e Z U E Z j f U Z X e S Z R
 Z e d Z V R _ U ^ R j a Z Y R _ d S f j V e S W W e V e V R e V _ R h R d d V I e U
 W c ~ h T j e ^ V e Z T R R j d Z 4 V j d W ^ e Y V R e V _ R ` W R U F j e h V e R
 h V e d U ^ Z d R V 8 # ` W Z e d I R U d e Y Z i d f V X R V R d Z X V
 a R ` W f T j V Z Z 8 ! z 8 " Z 2 _ e V _ R e Z h V Y R d e V R U U R U R g R e X d
 e Y R e Z e Z i f _ j V j e S V T _ e R Z R e U h Z Y T j j d W ^ a R R d a d ` c
 W U a j R e d R U d R ^ a j V d I R S V e R V h Z Y f e V j Z X e V Z d V e Z j j
 ~ h T j e ^ V e j d f j e d a d V e U R e W ^ R e V _ R e Z h V e R V S W e V
 T j j Y Z Z V e R e V d R U f d U h Z Y Z " Y ` W j j V e Z _ Z 2 R j d d W
 g R Z R T V i _ V h R j 2 ? @ C 2 / h R d a V e W ^ U d a R R e V j W e e V e h `
 d M V d i a j R _ U T ^ a R Z i _ d L ` U M : : / f d Z X D A D g v c Z _ " " Z Z Z

Results

7 c H. crassidens1" & T y c ^ ^ d ^ V d R I V e V I T y c ^ ^ d ^ V Z I
 R a a c i Z R e V j " " " ` W e V ^ R j V X _ ^ ^ V Z E Y Z i Z I T _ d e V e h Z Y
 V e Z R e d W ^ ^ V R f c Z X a j R Z d R Z V U T y c ^ ^ d ^ V d e R e R V
 S V h W _ " " Z e 1 " & T y c ^ ^ d ^ V d R I V R _ U " ! " ` W e V ^ R j V X i
 _ ^ V i " * I T y c ^ ^ d ^ V d R I V > ` c X R I C Z I Y R d " * * & L # ! ! / Z 7 c
 H. thoracica V e Z R e d ` W e V d k V ` W e V Z e I T y c ^ ^ d ^ V S R M j
 ` _ ~ h T j e ^ V e j L e R X V W ^ * Z " e " # ` W e V ^ R j V X _ ^ V
 1 7 Z Z S / Z E Y V d V } X c d R e V d Z Z R e V e Z R e d W ^ ^ V R f d V V e d
 ` W a j R Z d R Z V U T y c ^ ^ d ^ V d V S V h W _ * Z % R _ U " S Z # 1 > ` d
 X R I C Z I Y R d " * * (/ Z E Y V e V R e Z V 5 ? 2 T _ e V e W e V # d R I V d W I
 c r a s s i d e n s 1 h Z Y Z e Y V e R X V W I . t h o r a c i c a e R S j V " / Z

E Y V T y c ^ ^ d ^ R j d R I V d W I . t h o r a c i c a d a c d V e U Z e Y Z i d f U j
 U Z W W c V j R e Z V 5 ? 2 T _ e V e i 2 ? @ C 2 + ^ R j V d U W S L 7 . & Z L a -
 ! Z ! " , W R j V d U W S L 7 . ") Z L a - ! Z ! " L Z E Y V " S I T y c ^ ^ d ^ R j
 d R I V Y R d e V R e Z V j ^ ^ c V 5 ? 2 e Y R e V e V e S T y c ^ ^ d ^ R j d R I V L
 h Y Z I Y U _ e U Z W W c Z Z T R e j W ^ V R I Y ` e Y V e 1 2 ? @ C 2 + ^ R j V d
 U W # L 7 . % Z L a . ! Z & , W R j V d U W # L 7 . # Z L a . ! Z * / Z E Y V " &
 R _ U " (I T y c ^ ^ d ^ V d R I V d U Z W W c S j R y a ` e V d Z M d Z X V C S e R d
 j T R e Z _ , Y h V g c e V " S R _ U " & L (R _ U " * a R Z d h V e V a c V e Z f d j
 e Y f X Y e e U Z W W ^ V R I Y ` e Y V e S j R d Z X V U f a j Z R e Z _ z j d d V R
 d R j j R i c T V Y e T R e d ^ V 1 7 Z Z / Z @ _ R g V R V e V " S i R j ` g a V
 Y R d e V R e Z V j ^ ^ c V 5 ? 2 e Y R e V e V e R j ` g a V d e Y Z U Z W W V T V
 d R X d W ^ R a a c i Z R e V j & ` W e V W R j V X _ ^ ^ V 1 S V h W _
 " % I I / R _ U " ! I I // e " " " ` W e V ^ R j V X _ ^ ^ V 1 S V h W _ " S i I @ /
 R _ U " (I I @ / Z

E Y V % T y c ^ ^ d ^ R j d R I V d W I . t h o r a c i c a d a c d V e U Z e Y Z i d f U j
 U Z W W c V j R e Z V 5 ? 2 T _ e V e i 2 ? @ C 2 + ^ R j V d U W S L 7 . & Z L a -
 ! Z ! " , W R j V d U W S L 7 . ") Z L a - ! Z ! " L Z E Y V " S I T y c ^ ^ d ^ R j
 d R I V Y R d e V R e Z V j ^ ^ c V 5 ? 2 e Y R e V e V e S T y c ^ ^ d ^ R j d R I V L
 h Y Z I Y U _ e U Z W W c Z Z T R e j W ^ V R I Y ` e Y V e 1 2 ? @ C 2 + ^ R j V d
 U W # L 7 . % Z L a . ! Z & , W R j V d U W # L 7 . # Z L a . ! Z * / Z E Y V " &
 R _ U " (I T y c ^ ^ d ^ V d R I V d U Z W W c S j R y a ` e V d Z M d Z X V C S e R d
 j T R e Z _ , Y h V g c e V " S R _ U " & L (R _ U " * a R Z d h V e V a c V e Z f d j
 e Y f X Y e e U Z W W ^ V R I Y ` e Y V e S j R d Z X V U f a j Z R e Z _ z j d d V R
 d R j j R i c T V Y e T R e d ^ V 1 7 Z Z / Z @ _ R g V R V e V " S i R j ` g a V
 Y R d e V R e Z V j ^ ^ c V 5 ? 2 e Y R e V e V e R j ` g a V d e Y Z U Z W W V T V
 d R X d W ^ R a a c i Z R e V j & ` W e V W R j V X _ ^ ^ V 1 S V h W _
 " % I I / R _ U " ! I I // e " " " ` W e V ^ R j V X _ ^ ^ V 1 S V h W _ " S i I @ /
 R _ U " (I I @ / Z

Discussion

CS e R d j T R e Z _ d R e V _ e V a V I e U e T Y R _ X V e V e d j 5 ? 2
 T _ e V e R _ U ^ L

Fig 3

> R\DIRIYZ @Š DIRJZ GŠ KF TT eZ > Ž"**) Ž 7| h1Tj e ^ VēZT R Rj dVd
 `VZ eRchVIZ T XV `^ V dKv gRZREZ _d Z_ Bacillus atticus 1: _dVTeL
 AYRt Re UVRZS V `^ V%+ ' #*1' S&Z

> `cR ICZYRUd > Š"***&Z2 _Vh dVIZd `WēWhVēR W ^ ēV? `cēY
 :dR U `W? Vh KVRJR U 19V^ ZUZ R+ DēV `aV^ RēZURV+@cēY aēVRZ
 ? Vh KVRJR U 6_e `^ `j` XZē")+" &I#%Z

> `cR ICZYRUd > Ž"*(Z_eRthVIZ T Rj `g aVgRZREZ _ZL `eT _T dR_e
 hZēY Rj| kj ^ V gRZREZ _Z ēV 2fT|R U cW hVēR `W? Vh KVRJR UL
 Hemideina thoracica1@cēY aēVR+DēV `aV^ RēZURVZSZ | XZIR|; `f_c_Rj
 `VAV=Z_VR D TZēj ' !+%#S!%#Z

> `cR ICZYRUd > Ž#!! ŽC Svēd _Z_ cR_dj TRēZ _dR U3TYc ^ `d ^ Vd
 Z_ ēV HVj|Z Xē _ cW hVēR Hemideina crassidens 1@cēY aēVR+
 2_ `dē dē ^ RēZURVZ9 VēVUZd" S#+%#1&%Z

> `cR ICZYRUd > ŽEchZT DZŽHRjZIS ŽŽ#!!" ŽAYc ^ `d ^ VēRIVhZēY
 AJZ TV_V `cZ dVgZUV TVW ^ ^ e5? 2Ž9 VēVUZēj)' +S! S!S' #Z

> `cR ICZYRUd > ŽHRjZIS ŽŽ#!" SŽ2 T ^ aRēZi _ `WgVYj SēZUK _Vd' W
 ēVhVēRHemideinathoracica1@cēY aēVR+2_ `dē dē ^ RēZURV+5 VēV W
 Tj ē XV VēZTUWVēV ēRēZ _WZdē acVUZēYj SēZUK _VhZēYŽēg |f ēZ _
 &(+) %81) ' " Ž

AVēj ;ZDRAc9 ŽCLAY ` <ŽŽŽ#!" %ŽAV_eZT) dZ _ l dZ_ a|VR_ UT ^ a|M
 ^ VIYR Ži cZAYc ^ `d ^ VCVRēY" #+ #(' %8 Ž

CZdSVēX=ŽŽ#!!" ŽAYc ^ `d ^ VēVRēR X^ V_e dR U dVIZēZ _ ŽEēV Ud
 Z_ 6T |` Xj R U 6g |f ēZ _ "' +S&1S& Ž

DēVd; ŽHē > `cZk4Z*) (ŽAYc ^ `d ^ RjVg |f ēZ _ R U dVIZēZ _ cVgZēVŽ
 Ij dēV RēZTK `|` Xj S' + " &S!" (%Ž

D |RēZ2ŽŽ' ***Žj _Raē _V RjT ^ a|M R Rj dZL Yf ^ R_ ^ RjVZ WēZēj Ž
 6f c aVR_ ; `f_c_Rj `V0 Zē TYV^ Žkēj %S+# &I#('

HYZV > ŽZē Ž"*() Ž > `Ud `VdVIZēZ _ ŽHē Ž7ēV^ R_ IIR_ 7cR TZIT Ž
 HRjRIV3Zē Ž Ž#!" SŽEYVWWWē `WVēc kj X dēj LXV_ZT` cTYc ^ `d ^ RjL
 ` _ WēZēj Z_ ēVT ^ `^ ` _ dYēh 1Srexeareus` R_ UY` f dV^ ` f dV Mus
 musculus domesticusŽ > R' ^ RjR' (+S! " IS! ' Ž