Torres 2003, Ciênc. Agrotec. 27(6): 1264–1267; Schlesener, D.C.H., A.M. Nunes, J. Cordeiro, M.S. Gottschalk, and F.R.M. Garcia 2014, Cultivar HF 12: 6–8; Tochen, S., D.T. Dalton, N.G. Wiman, C. Hamm, P.W. Shearer, and V.M. Walton 2014, Environ. Entomol. 43: 501–510; Turica and Mallo 1961, Idia. Suppl. 6: 145–161; Vlach, J., 2013, http://www.oregon.gov/oda/shared/ documents/publications/ippm/spottedwingdrosoph ilaidkey.pdf; Walsh, D.B, M.P. Bolda, R.E. Goodhue, A.J. Dreves, J. Lee, D.J. Bruck, V.M. Walton, S.D. O'Neal, and F.G. Zalom 2011, J. Integr. Pest Manag. 2: 1–7; Wang, X.G., G. Kaçar, A. Biondi, and K.M. Daane 2016, Biol. Control 96: 64–71; Wertheim, B., R. Allemand, L.E.M. Vet, and M. Dicke 2006, Ecol. Entomol. 31: 216–226; Wiman, N.G., V.M. Walton, D.T. Dalton, G. Anfora, H.J. Burrack, J.C. Chiu, K.M. Daane, A. Grassi, B. Miller, S. Tochen, X. Wang, and C. Ioriatti 2014, PLoS One 9: e106909.

New chromosomic paracentric inversions in *Drosophila cardinoides* (Diptera, Drosophilidae) at Santa Catarina Island, South of Brazil.

Dencker, M.J., L.W. Fischer[1], and D.C. De Toni[2]. [1]Laboratório de Drosofilídeos, Departamento de Biologia Celular, Embriologia e Genética – Universidade Federal de Santa Catarina; [2]Pós-Graduação em Biologia Celular e do Desenvolvimento, UFSC, Florianópolis, Brasil; e-mail: michele.dencker@gmail.com; Keywords: *Cardini* group, Forest Atlantic, Inversion polymorphisms, South America, Cytogenetic, Neotropical species.

Introduction

Included in the *Cardini* group, which is characterized by drosophila with polymorphisms of abdominal pigmentation and inhabits neotropical region, *Drosophila cardinoides* is a representative species in southern Brazil that can be collected many times in the island of Santa Catarina, mainly on the border of the forest. This species is characterized by a dark abdominal pigmentation, wings and abdomen with bright appearance, but has the body morphology very similar to *D. procardinoides*, forming a monophyletic group. Thus, they are not taxonomically decisive features. Cytogenetically, the chromosomal inversions of *D. cardinoides* are more fixed, following the pattern of the *Cardini* group. According to previous studies, it was expected that the number of inversions of *D. cardinoides* was not so wide, since it is less polymorphic compared to other species, such as *Drosophila polymorpha*, for example. Even with significant advances on the chromosomal map of *D. cardinoides*, there are many gaps and investigations to be made in order to contribute to evolutionary and phylogenetic studies of this species group.

Material and Methods

In the southern part of the island of Florianopolis, in Caieira da Barra do Sul (Figure 1) there is a conserved Atlantic Forest area remaining at the Serra do Tabuleiro State Park, where *Drosophila* were collected in the years of 2015 and 2016 during summer and spring. For this, an entomological network was used over baits with bananas and yeast. From these collections, eleven isolineages of *Drosophila cardinoides* were established, maintained in culture media at a constant temperature of 17ºC. To obtain the polythenic chromosomes, cytological slides were prepared with third stage larvae using the Ashburner technique (1967) with small modifications and for the chromosomal analysis, the Rohde and Valente (1996) and Cordeiro *et al*. (2014) methods.

Figure 1. Point shows the collecting point at Florianópolis Island (S 27º48 '; O 48º56').

Results

In addition, new inversions were detected (Figures 2 and 3) in all *Drosophila cardinoides* chromosome arms. The breaking points of the inversions of Figures 2 and 3 are described in Table 1.

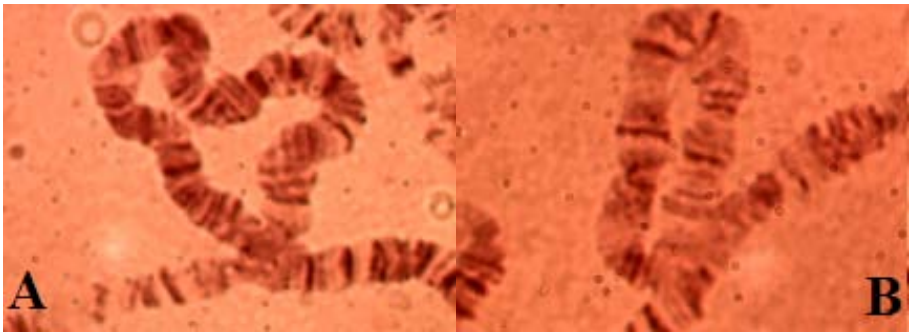

Figure 2. In **A** we have an IIRA inversion, and in B we have an IILC inversion.

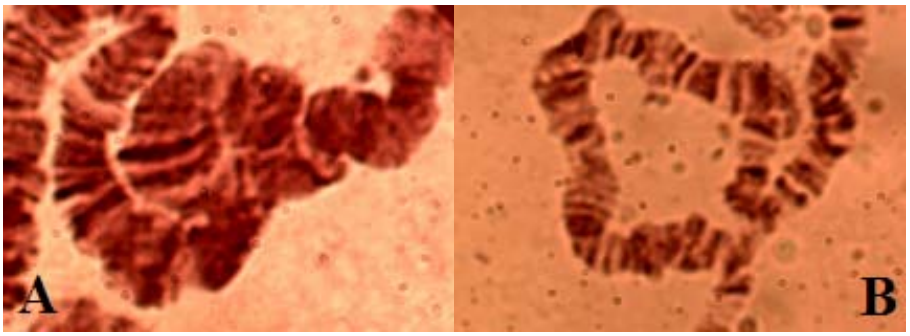

Figure 3. In **A** we have an IIIRA inversion, and in B we have an XA inversion.

Table 1. Break points inversion.

Chromosome arms	Break points
IIRA	56c distal a 49b distal
IILC	31b proximal a 29a proximal
IIIRA	92a proximal a 94c proximal
XA	4c proximal a 7b distal

Conclusions

Studies to date on paracentric heterozygous chromosome inversions in *Drosophila cardinoides* were essential for assembling the chromosomal map of the species and for elucidating the reason of why such high frequencies of this phenomenon are found in nature. Our analyses pointed for a high level of polymorphism in this species besides *D. polymorpha*, as well as the necessity and importance of the continuity of investigations in the area, to help elucidate evolutionary, phylogenetic, and ecological issues of the karyotypic evolution of the *cardini* species group.

References: Ashburner, M., 1989. Drosophila: *A Laboratory Handbook*, New York: Cold Spring Harbor Laboratory; Cordeiro, J., D.C. De Toni, G.S. Silva, and V.L.S. Valente 2014, Genetica 142(5): 461–472; Rohde, C., and V.L.S. Valente 1996, Brazilian Journal of Genetics 19(1): 27–32; Heed, W.B., and J.S. Russell 1971, University of Texas Publications 6(7103): 91–130.