

# Karyotypes of Pentatomoidea additional to those published by Ueshima, 1979 (Heteroptera)

I.M. Kerzhner, V.G. Kuznetsova & D.A. Rider

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A list of pentatomoid karyotypes published after the monograph by Ueshima (1979) or overlooked by him is given. It includes 131 species.

*I.M. Kerzhner, V.G. Kuznetsova, Zoological Institute, Russian Academy of Sciences, Universitetskaya nab. 1, St.Petersburg 199034, Russia. E-mails: kim@ik3599.spb.edu, karyo@zin.ru*

*D.A. Rider, Department of Entomology, Box 5346, University Station, North Dakota State University, Fargo, North Dakota 58102, USA. E-mail: David.Rider@ndsu.nodak.edu*

Karyotypes are used in the systematics of Pentatomoidea mainly at suprageneric level. Ueshima (1979) published a monograph on the heteropteran karyotypes based on examination of an extensive literature. Independently, such a list for Pentatomoidea was compiled by Nuamah (1982); it included also some species overlooked by Ueshima and numerous original data. In the 25 years, which lapsed since publication of Ueshima's work, some other papers on the pentatomoid karyotypes were published as well. The number of examined species increased about 1.5 times, and it seems

expedient to publish a list of additions (see the Table). For better comparability, we accepted the suprageneric taxa of Pentatomidae as in Ueshima, though the tribal classification used by him is partly outdated. In contrast to Ueshima, we did not subdivide the not numerous Cydnidae and Scutelleridae into subfamilies.

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**Table.** Karyotypes of Pentatomoidea additional to those published by Ueshima (1979)

Taxon	Karyotype	Reference
<b>Family Urostylididae</b>		
<i>Urochela quadrinotata</i> Reut.	12 + XY	Muramoto, 1978
<i>Urochela</i> sp.	14 + XY	Manna & Deb-Mallick, 1981
<i>Urolabida histrionica</i> Westw.	12 + XY	Manna & Deb-Mallick, 1981
<i>Urolabida variegata</i> Dist.	14 + XY	Muramoto, 1978
<i>Urostylis annulicornis</i> Scott	14 + XY	Muramoto, 1978
<b>Family Thaumastellidae</b>		
<i>Thaumastella elizabethae</i> Jacobs	16 + 2m + XY	Jacobs, 1989
<i>Thaumastella managuensis</i> Schaef. & Wilcox	14 + 2m + XY, 12 + 2m + X <sub>1</sub> X <sub>2</sub> Y	Jacobs, 1989
<b>Family Cydnidae</b>		
<i>Aethus indicus</i> Westw.	10 + XY	Satapathy & Patnaik, 1989
<i>Lactistes truncateserratus</i> Sign.	10 + XY	Mittal & Leelamma, 1981
<i>Macroscytus brunneus</i> F.	10 + XY	Nuamah, 1982

Family **Plataspidae**

<i>Brachyplatys incertus</i> Walk.	10 + XY	Nuamah, 1982
<i>Brachyplatys testudonigra</i> Stål	10 + XY	Nuamah, 1982
<i>Coptosoma nepalense</i> Westw.	8 + XY	Mittal & Leelamma, 1981
<i>Coptosoma nubile</i> Germ.	10 + XY	Nuamah, 1982
<i>Coptosoma stali</i> Mont.	10 + XY	Nuamah, 1982
<i>Paracopta</i> (as <i>Coptosoma</i> ) <i>duodecimpunctata</i> Germ.	10 + XY	Mittal & Leelamma, 1981

Family **Acanthosomatidae**

<i>Acanthosoma expansum</i> Horv.	12 + X0	Muramoto, 1973
<i>Acanthosoma spinicolle</i> Jak. (= <i>frater</i> Reut.)	12 + XY	Muramoto, 1978
<i>Anaxandra</i> sp.	10 + XY	Dey & Wangdi, 1988

Family **Scutelleridae**

<i>Calidea duodecimpunctata</i> F.	10 + XY	Nuamah, 1982
<i>Chrysocoris</i> (as <i>Fitha</i> ) <i>ardens</i> Walk.	10 + XY	Mittal & Leelamma, 1981
<i>Chrysocoris eques</i> F.	10 + XY	Jande, 1959b
<i>Eucorysses</i> (as <i>Chrysocoris</i> ) <i>grandis</i> Thunb.	10 + XY	Manna & Deb-Mallick, 1981
<i>Hotea subfasciata</i> Westw.	10 + XY	Nuamah, 1982
<i>Poecilocoris nepalensis</i> H.-S. (as <i>hardwickii</i> Westw.)	10 + XY	Mittal & Leelamma, 1981
<i>Sphaerocoris testudogrisea</i> De G.	10 + XY	Nuamah, 1982
<i>Steganocerus multipunctatus</i> Thunb.	10 + XY	Nuamah, 1982

Family **Dinidoridae**

<i>Coridius brunneus</i> Thunb. (as <i>obscurus</i> F.)	12 + XY	Satapathy & Patnaik, 1988
<i>Coridius chinensis</i> Dall.	12 + XY	Dey & Wangdi, 1988
<i>Coridius cuprifer</i> Westw.	12 + XY	Nuamah, 1982
<i>Coridius nepalensis</i> Westw.	2n = 14	Dey & Wangdi, 1988
<i>Megymenum brevicorne</i> F. (as <i>inerme</i> H.-S.)	16 + XY	Satapathy & Patnaik, 1988

Family **Tessaratomidae**

<i>Eurostus grossipes</i> Dall.	10 + XY	Dey & Wangdi, 1988
<i>Eusthenes cupreus</i> Westw. (as <i>eurytus</i> Dist.)	10 + XY	Dey & Wangdi, 1985
<i>Eusthenes robustus</i> Lep. & Serv.	10 + XY	Dey & Wangdi, 1985
<i>Piezosternum calidum</i> F.	12 + XY	Nuamah, 1982
<i>Piezosternum subulatum</i> Stål	10 + XY	Schrader, 1947
<i>Tessaratoma javanica</i> Thunb.	10 + XY	Parshad, 1957
<i>Tessaratoma papillosa</i> Drury	10 + XY	Satapathy et al., 1990

Family **Pentatomidae**Subfamily **Asopinae**

<i>Afrius yolofa</i> Guér. (as <i>purpureus</i> Westw.)	12 + XY	Nuamah, 1982
<i>Andrallus spinidens</i> F.	12 + XY	Satapathy et al., 1990
<i>Dinorhynchus dybowski</i> Jak.	16 + XY	Muramoto, 1981
<i>Macrorhaphis acuta</i> Dall.	12 + XY	Nuamah, 1982
<i>Picromerus</i> sp.	12 + XY	Dey & Wangdi, 1985
<i>Podisus distinctus</i> Stål	14 + XY	Rebagliati et al., 2002
<i>Podisus nigrispinus</i> Dall.	14 + XY	Rebagliati et al., 2002

## Subfamily Pentatominac

## Tribe Halyini

<i>Atelocera serrata</i> F.	12 + XY	Nuamah, 1982
<i>Cahara jugatoria</i> Leth.	2n=14	Dey & Wangdi, 1988
<i>Erthesina fullo</i> Thunb.	12 + XY	Mittal & Leelamma, 1981
<i>Halys serricollis</i> Westw. (as <i>parvus</i> Chopra)	12 + XY	Mittal & Leelamma, 1981

## Tribe Pentatomini

<i>Acladra</i> sp.	12 + XY	Rebagliati et al., 2002
<i>Acrosternum</i> (as <i>Nezara</i> ) <i>gramineum</i> F.	12 + XY	Mittal & Leelamma, 1981
<i>Acrosternum heegeri</i> Fieb.	12 + XY	Nuamah, 1982
<i>Aeliomorpha</i> sp. nr. <i>griseoflava</i> Stål	12 + XY	Nuamah, 1982
<i>Aeliomorpha lineatocollis</i> Westw.	12 + XY	Mittal & Leelamma, 1981
<i>Aeptus singularis</i> Dall.	12 + XY	Nuamah, 1982
<i>Aethemenes nigropunctata</i> Sign. (as <i>chloris</i> Westw.)	12 + XY	Nuamah, 1982
<i>Antestia</i> sp.	12 + XY	Nuamah, 1982
<i>Antestia</i> sp. s.l.	12 + XY	Nuamah, 1982
<i>Antestia</i> sp.? <i>immunda</i> L.	12 + XY	Nuamah, 1982
<i>Antestia</i> (as <i>Farnya</i> ) <i>versicolor</i> Dist.	12 + XY	Nuamah, 1982
<i>Antestiopsis</i> (as <i>Antestia</i> ) <i>cruciata</i> F.	12 + XY	Manna, 1951
<i>Antestiopsis</i> sp. s.l.	12 + XY	Nuamah, 1982
<i>Aspavia acuminata</i> Mont.	12 + XY	Nuamah, 1982
<i>Aspavia armigera</i> F.	12 + XY	Nuamah, 1982
<i>Aspavia hastator</i> F.	12 + XY	Nuamah, 1982
<i>Aspavia ingens</i> Dist.	12 + XY	Nuamah, 1982
<i>Banasa alboapicata</i> Stål	24 + XY	Thomas & Yonke, 1981
<i>Banasa angulobata</i> Thomas	24 + XY	Thomas & Yonke, 1981
<i>Banasa derivata</i> Walk.	24 + XY	Thomas & Yonke, 1981
<i>Banasa excavata</i> Thomas	24 + XY	Thomas & Yonke, 1981
<i>Banasa packardii</i> Stål	24 + XY	Thomas & Yonke, 1981
<i>Banasa rolstoni</i> Thomas & Yonke	14 + XY	Thomas & Yonke, 1981
<i>Banasa sordida</i> Uhl.	24 + XY	Thomas & Yonke, 1981
<i>Banasa subcarnea</i> Van Duzee	24 + XY	Thomas & Yonke, 1981
<i>Bathycoelia rodhaini</i> Schout.	12 + XY	Nuamah, 1982
<i>Bathycoelia thalassina</i> H.-S.	12 + XY	Nuamah, 1982
<i>Benia</i> sp. A	12 + XY	Nuamah, 1982
<i>Carbula aliena</i> Dist.	12 + XY	Mittal & Leelamma, 1981
<i>Carbula biguttata</i> F.	12 + XY	Yosida, 1956; Satapathy & Patnaik, 1988
<i>Carbula capito</i> Stål	12 + XY	Nuamah, 1982
<i>Carbula carbula</i> Dist.	12 + XY	Nuamah, 1982
<i>Carbula indica</i> Westw.	12 + XY	Dey & Wangdi, 1988
<i>Carbula insocia</i> Walk.	12 + XY	Mittal & Leelamma, 1981
<i>Carbula limpoponis</i> Stål (as <i>marginella</i> Thunb.)	12 + XY	Nuamah, 1982
<i>Carbula melacantha</i> F.	12 + XY	Nuamah, 1982
<i>Carbula scutellata</i> Dist.	12 + XY	Mittal & Leelamma, 1981
<i>Carbula</i> sp. nr. <i>sjostedti</i> Schout.	12 + XY	Nuamah, 1982

<i>Caura pugillator</i> F.	12 + XY	Nuamah, 1982
<i>Dichelops furcatus</i> F.	10 + XY	Rebagliati et al., 2001
<i>Dichelops melacanthus</i> Dall.	10 + XY	Rebagliati et al., 2002
<i>Diploxys bipunctata</i> Am. & Serv.	12 + XY	Nuamah, 1982
<i>Diploxys</i> (as <i>Amayosana</i> ) <i>punctata</i> Dist.	12 + XY	Nuamah, 1982
<i>Dunnius</i> sp.	14 + XY	Dey & Wangdi, 1988
<i>Durmia haedula</i> Stål	12 + XY	Nuamah, 1982
<i>Durmia lutulenta</i> Stål	12 + XY	Nuamah, 1982
<i>Durmia</i> sp.	12 + XY	Nuamah, 1982
<i>Dymantis grisea</i> Jen.-Haar.	12 + XY	Nuamah, 1982
<i>Eysarcoris fallax</i> Breddin	12 + XY	Muramoto, 1978
<i>Gynenica affinis</i> Dist.	14 + XY	Satapathy & Patnaik, 1989
<i>Halyomorpha annulicornis</i> Sign.	12 + XY	Nuamah, 1982
<i>Halyomorpha reflexa</i> Sign.	12 + XY	Nuamah, 1982
<i>Lerida punctata</i> P.B.	12 + XY	Nuamah, 1982
<i>Loxa deducta</i> Walk.	12 + XY	Rebagliati et al., 2001
<i>Mecocephala</i> sp.	10 + XY	Rebagliati et al., 2002
<i>Menida histrio</i> F.	12 + XY	Satapathy et al., 1990
<i>Mormidea paupercula</i> Berg	14 + XY	Rebagliati et al., 2002
<i>Morna</i> sp.	12 + XY	Muramoto, 1979
<i>Nezara icterica</i> Horv.	12 + XY	Manna & Deb-Mallick, 1981
<i>Niphe subferruginea</i> Westw.	12 + XY	Parshad, 1957
<i>Pentatoma semiannulata</i> Motsch. (as <i>armandi</i> Fallou)	12 + XY	Zhang & Zheng, 1999
<i>Piezodorus guildinii</i> Westw.	12 + XY	Rebagliati et al., 2001
<i>Placosternum taurus</i> F.	12 + XY	Dey & Wangdi, 1985
<i>Plautia brunnipennis</i> Sign.	12 + XY	Muramoto, 1979
<i>Priassus spiniger</i> Hagl.	12 + XY	Mittal & Leelamma, 1981
<i>Proxys albopunctulatus</i> P.B.	12 + XY	Rebagliati et al., 2001
<i>Rhynchocoris humeralis</i> Thunb.	12 + XY	Mittal & Leelamma, 1981
<i>Rolstoniellus</i> (as <i>Compastes</i> ) <i>boutanicus</i> Dall.	2n=14	Dey & Wangdi, 1988
<i>Sabaeus humeralis</i> Dall.	12 + XY	Manna & Deb-Mallick, 1981
<i>Sepontia misella</i> Stål	12 + XY	Nuamah, 1982
<i>Tolumnia latipes</i> Dall.	12 + XY	Mittal & Leelamma, 1981
<i>Tyoma verrucosa</i> Mont.	12 + XY	Nuamah, 1982
<i>Veterna sanguineirostris</i> Thunb.	12 + XY	Nuamah, 1982
Tribe Strachiini		
<i>Stenozygum coloratum</i> Klug	12 + XY	Nuamah, 1982
Tribe Edessini		
<i>Edessa meditabunda</i> F.	12 + XY	Rebagliati et al., 2003
Tribe Discocephalini		
<i>Dinocoris prolineatus</i> Becker & Grazia	12 + XY	Rebagliati et al., 2001
<i>Macropygium</i> sp.	12 + XY	Rebagliati et al., 2002
Subfamily Phyllocephalinae		
<i>Macrina juvenca</i> Burm.	12 + XY	Nuamah, 1982

Subfamily Podopinae

<i>Scotinophara coarctata</i> F.	10 + XY	Satapathy et al., 1990
<i>Scotinophara fibulata</i> Germ.	12 + XY	Nuamah, 1982
<i>Stortheoris nigriceps</i> Horv.	12 + XY	Mittal & Leelamma, 1981

References

- Dey, S.K. & Wangdi, T. 1985. Meiotic chromosomes and sex mechanism in males of twelve species of Heteroptera. *Entomon*, **10**: 327-328.
- Dey, S.K. & Wangdi, T. 1988. Chromosome number and sex chromosome system in forty-four species of Heteroptera. *Chromosome Inform. Serv.*, **45**: 5-8.
- Jacobs, D.H. 1989. A new species of *Thaumastella* with notes on the morphology, biology and distribution of the two southern African species (Heteroptera: Thaumastellidae). *J. entomol. Soc. south. Africa*, **52**(2): 301-316.
- Jande, S.S. 1959. Chromosome number and sex mechanism in twenty-seven species of Indian Heteroptera. *Res. Bull. Panjab Univ. (N.S.)*, **10**: 215-217.
- Manna, G.K. & Deb-Mallick, S. 1981. Meiotic chromosome constitution in forty-one species of Heteroptera. *Chromosome Inform. Serv.*, **31**: 9-11.
- Mittal, O.P. & Leelamma, J. 1981. Chromosome number and sex-mechanism in twenty-eight species of Indian pentatomoid bugs. *Chromosome Inform. Serv.*, **30**: 6-7.
- Muramoto, N. 1973. A chromosome study in eighteen Japanese heteropterans. *La Kromosomo*, **1**(91): 2896-2905.
- Muramoto, N. 1978. Notes on Gimsa-banded chromosomes in some heteropteran insects. *Proc. Japan Acad.*, **54B**: 101-105.
- Muramoto, N. 1979. A chromosome study of 15 species of Heteroptera from Australia and Japan. *La Kromosomo*, **2**(14): 390-397.
- Muramoto, N. 1981. A chromosome study of thirteen species of heteropteran insects (Heteroptera). *La Kromosomo*, **2**(23): 668-675.
- Nuamah, K.A. 1982. Karyotypes of some Ghanaian shield-bugs and the higher systematics of the Pentatomoidea (Hemiptera: Heteroptera). *Insect Science and its Application*, **3**(1): 9-28.
- Parshad, R. 1957. Cytological studies in Heteroptera. III. A comparative study of the chromosomes in the male germ cells of eleven species of the subfamily Pentatomoidea. *Res. Bull. Panjab Univ.*, **122**: 401-420.
- Rebagliati, P.J., Mola, L. & Papeschi, A.G. 2001. Karyotype and meiotic behaviour of the holokinetic chromosomes of six Argentine species of Pentatomidae (Heteroptera). *Caryologia*, **54**(4): 339-347.
- Rebagliati, P.J., Papeschi, A.G. & Mola, L.M. 2002. Cytogenetics of Pentatomidae. In: Kerzhner, I.M. (Ed.). *2nd quadrennial meeting of the International Heteropterists' Society, Abstracts*: 49. St.Petersburg.
- Rebagliati, P.J., Papeschi, A.G. & Mola, L.M. 2003. Meiosis and fluorescent banding in *Edessa mediterranea* and *E. rufomarginata* (Heteroptera: Pentatomidae: Edessinae). *Europ. J. Entomol.*, **100**: 11-18.
- Satapathy, S.N. & Patnaik, S.C. 1988. Chromosomal studies in seven species of family Pentatomidae (Heteroptera). *Caryologia*, **41**(1): 49-60.
- Satapathy, S.N. & Patnaik, S.C. 1989. Chromosome numbers in forty-one species of Indian Heteroptera. *Chromosome Inform. Serv.*, **47**: 3-5.
- Satapathy, S.N., Nahak, U. & Patnaik, S.C. 1990. Chromosome numbers in seventeen species of Heteroptera (Hemiptera, Insecta). *Chromosome Inform. Serv.*, **48**: 20-22.
- Schrader, F. 1947. The role of kinetochore in the chromosomal evolution of Heteroptera and Homoptera. *Evolution*, **1**: 134-142.
- Thomas, D.B. & Yonke, T.R. 1981. Evolutionary cytogenetics of *Banasa Stål* (Hemiptera: Pentatomidae). In: Stock, M.W. (Ed.). *Application of genetics and cytology in insect systematics and evolution*: 103-121. Moscow: Univ. Idaho.
- Ueshima, N. 1979. Hemiptera II: Heteroptera. In: John, B. (Ed.). *Animal cytogenetics*, **3**(6). Berlin & Stuttgart: Gebrüder Borntraeger. 113 p.
- Yosida, T.H. 1956. Studies on the chromosomes of coleopteran and Heteroptera insects, with special regard to the quantitative relationship between autosomes and sex chromosomes. *Proc. 10th int. Congr. Entomol. Montreal*, **2**: 979-989.
- Zhang, H.F. & Zheng, L.Y. 1999. Studies on the chromosomes in four species of family Pentatomidae (Hemiptera: Heteroptera). *Acta entomol. Sinica*, **42**(3): 234-240.

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