

Ochlerotatus japonicus japonicus

System: Terrestrial

Kingdom	Phylum	Class	Order	Family
Animalia	Arthropoda	Insecta	Diptera	Culicidae

Common name Asian bush mosquito (English)

Synonym *Aedes japonicus* , (Reinert, 2000)

Similar species *Ochlerotatus atropalpus*, *Ochlerotatus triseriatus*

Summary *Ochlerotatus japonicus japonicus* is a mosquito native to Japan, Korea and eastern China. It has the potential to be an enzootic or epizootic vector of at least three kinds of encephalitis and may serve as a bridge vector for West Nile Virus. It breeds natural rockpools and a range of artificial containers, and is thought to have been introduced to the United States in infested automobile tyres. It is rapidly expanding its range and is now present in at least 32 states including Hawaii and two Canadian provinces.



[view this species on IUCN Red List](#)

Species Description

Ochlerotatus j. japonicus has multiple upper and lower head hairs which are arranged in a straight line. Antenna are much shorter than the head with multiple, short tufts inserted into the middle of the shaft. There are two hairs on each of abdominal sections 3 through 8. *Oc. j. japonicus* has patch comb scales, a siphon with an index of 2.5 and a tuft of 4 to 6 which is inserted within the pecten row; the pecten is detached. The saddle is an incomplete ring, highly spiculated at the distal margin with 2 precratal tufts (Scott & Crans, 2004). Larvae are distinguishable from all other North American mosquitoes by it's highly spiculated anal saddle, and the upper and lower head hairs which are multiple (tufts) and arranged in a straight line (Scott, 2010).

Notes

A previously accepted name, *Aedes (Finlaya) japonicus* is used by some authors in literature.

Lifecycle Stages

The lifecycle of *Ochlerotatus j. japonicus* is similar to that of *Aedes triseriatus* and is multivoltine (Scott & Crans, 2004). In general, *Oc. j. japonicus* has a longer active period during the warm season than most container breeding species and is more fecund (Oliver & Howard 2005). *Oc. j. japonicus* produces freeze and desiccation resistant eggs that can tolerate a wide range of temperature extremes (Andreadis & Wolfe, 2010). The species is very cold tolerant and in the north-eastern US larval development takes place from early March through November.

Habitat Description

Adult *Ochlerotatus j. japonicus* are commonly found in forested habitats, often at high elevations. Larvae of *Oc. j. japonicus* are commonly found in artificial and natural containers such as discarded tires, bird baths, plastic drink containers, toys, vinyl tarpaulins covering swimming pools and wood piles, rock pools, tree holes, catch basins, and rain pools. (Andreadis *et al.*, 2001; Kim *et al.*, 2005)

A study of larval abundance in rock pool and tyre habitats in Connecticut found that the only pools where *Oc. j. japonicus* did not predominate were those with water temperatures above 30°C from June to September, indicating a temperature barrier may exist for this species. Thus *Oc. j. japonicus* may not be able to survive in regions of the United States with relatively high summer temperatures. This is consistent with distribution of the mosquito in its native range of Japan (Andreadis & Wolfe, 2010).

Reproduction

In the United States, larvae of *Ochlerotatus j. japonicus* have been found at a wide range of altitudes within the Appalachian mountains, up to 1500 meters above sea level where winter temperatures can reach -18 degrees Celsius and with a wide range of other mosquito species (Bevins, 2007). In a laboratory study, *Oc. j. japonicus* readily oviposited an average of 115 eggs on Styrofoam blocks, with a maximum of 289 and a minimum of 3. Fecundity of *Oc. j. japonicus* is equal to that of *Ochlerotatus atropalpus* and exceeds that of *Ochlerotatus triseriatus* (Oliver & Howard 2005).

Nutrition

Ochlerotatus j. japonicus is a species of mosquito with an aggressive opportunistic feeding habit, taking bloodmeals from avian and mammalian hosts, including humans. Adults reared from containers with more organic debris had a larger average body size, growth, and longer wing length (Bevins, 2007).

General Impacts

Ochlerotatus j. japonicus is a species of mosquito with an aggressive opportunistic feeding habit, taking bloodmeals from avian and mammalian hosts, with a preference for human blood (Molaei *et al.*, 2009). Laboratory studies have shown *Oc. j. japonicus* to be an efficient vector of [West Nile Virus \(WNV\)](#) but its role in the natural transmission of the virus is unknown (Scott, 2010; Molaei *et al.*, 2009). Furthermore WNV has been detected in field-collected *Oc. j. japonicus* in at least nine different states. It is thus very likely that this species could serve as a bridge vector of the WNV to humans.

Oc. j. japonicus is also a highly efficient vector of St. Louis encephalitis virus and a moderately efficient vector of eastern equine encephalitis and La Crosse viruses in laboratory tests. It has also been known to transmit Japanese B encephalitis to humans (Molaei *et al.*, 2009; Andreadis *et al.*, 2001; Sardelis *et al.*, 2003; Sardelis *et al.*, 2002).

Larvae of *Oc. j. japonicus* are highly effective competitors and can reduce populations of native mosquito populations significantly through interspecific competition for limited resources. Surveys in Connecticut in 2005 revealed that *Oc. j. japonicus* was the dominant species collected in all waste tyres and natural rock pool environments. Comparisons with data from previous years indicated significant decline of native species including *Oc. atropalpus*, *Oc. triseriatus* and *Culex restuans*.

Management Info

Preventative measures: It is important for the general public to be informed on preventative steps that can be taken to reduce the risk of contact with mosquitoes. The following are personal protective measures that individuals can carry out to protect themselves from the transmission of disease resulting from mosquito bites: schedule outdoor activity to avoid periods of high mosquito activity (dusk to dawn), use mosquito repellents properly, use mosquito netting on baby carriages and play pens when outdoors, cover as much skin with clothing as much as possible, use and repair screens on windows and doors in homes, remove any standing water from any type of natural or artificial container near homes, and avoid camping near freshwater sources if possible (Massachusetts Department of Public Health, 2007).

Gravid traps placed at a trapping density of 44 square kilometers may be used for seasonal monitoring of *Oc. j. japonicus* (Falco *et al.*, 2002). In order to avoid failure in detecting *Oc. j. japonicus* due to low capture rates from gravid or light traps, larvae collection should be carried out in natural and artificial habitats within the sampling area (Moberly *et al.*, 2005). Blocks of expanded polystyrene (EPS) are a cheap alternative to CDC ovitraps for egg collection devices for container dwelling species like *Oc. j. japonicus* for detection and monitoring purposes (Scott & Crans 2003).

To reduce the risk of introduction of *Oc. j. japonicus* and other vectors, governing bodies can utilize the inspection and treatment of imported used tires and tire collection facilities, the disinfection of airline cargo holds, increase quarantine inspections, and develop sterile corridors around airports and port facilities (Larish & Savage 2005). In a study of CDC gravid trap attractants in New York state, a common lawn sod infusion using Kentucky bluegrass was found to be a better attractant for *Oc. j. japonicus* than that of rabbit chow infusion, both under a seven day infusion period (Lee & Kokas 2004). In a New Jersey study, infusion baited gravid traps were found to be the best method of sampling or monitoring for *Oc. j. japonicus* (Scott *et al.*, 2001). Gravid traps have an increased chance of attracting mosquitos that have had a blood meal, making these traps ideal for arbovirus surveillance studies (Falco *et al.*, 2002).

Pathway

Ochlerotatus j. japonicus was intercepted in New Zealand in a shipment of used tires which is also the believed pathway of invasion into the United States by this species (Andreadis *et al.*, 2001).

Principal source:

Andreadis, Theodore G.; John F. Anderson, Leonard E. Munstermann, Roger J. Wolfe, and David A. Florin., 2001. Discovery, Distribution, and Abundance of the Newly Introduced Mosquito *Ochlerotatus japonicus* (Diptera: Culicidae) in Connecticut, USA .

Bevins, Sarah N. 2007. Establishment of a Recently Introduced Mosquito Species *Ochlerotatus japonicus* (Diptera: Culicidae) in the Southern Appalachians, USA.

Scott, Jamesina J.; Crans, Wayne J., 2003. Expanded polystyrene (EPS) floats for surveillance of *Ochlerotatus japonicus*.

[Scott, Jamesina J. 2010. *Ochlerotatus japonicus* \(Theobald\). Rutgers University Entomology/Placer Mosquito. New Jersey Mosquito Control Association Incorporated.](#)

Compiler: National Biological Information Infrastructure (NBII) & IUCN/SSC Invasive Species Specialist Group (ISSG)

Review: Theodore G. Andreadis, Center for Vector Biology & Zoonotic Diseases, The Connecticut Agricultural Experiment Station

Publication date: 2010-06-23

ALIEN RANGE

[1] BELGIUM

[2] CANADA

[1] FRANCE

[1] GERMANY

[1] NEW ZEALAND
[26] UNITED STATES

[1] SWITZERLAND

BIBLIOGRAPHY

64 references found for *Ochlerotatus japonicus japonicus*

Management information

Eritja, Roger.; Rau Escosa, Javier Lucientes, Eduard Marque`s, Ricardo Molina, David Roiz & Santiago Ruiz., 2005. Worldwide invasion of vector mosquitoes: present European distribution and challenges for Spain. *Biological Invasions* (2005) 7: 87-97

Frampton, E.R., 2005. [Pathways of Entry and Spread of Exotic Mosquitoes, With Particular Reference to Southern Saltmarsh Mosquito, *Ochlerotatus camptorhynchus*. Report for New Zealand Ministry of Health](#)

Summary: Available from: [http://www.hpac.govt.nz/moh.nsf/0/BE6579DAFF42F259CC256FE100082E0A/\\$File/pathwaysofentry.pdf](http://www.hpac.govt.nz/moh.nsf/0/BE6579DAFF42F259CC256FE100082E0A/$File/pathwaysofentry.pdf) [Accessed 11 March 2008]

Joy, E. James and S. Nichelle Sullivan., 2005. Occurrence of tire inhabiting mosquito larvae in different geographic regions of West Virginia. *Journal of the American Mosquito Control Association* Volume 21, Issue 4 (December 2005) pp. 380-386

Joy, James E., 2004. Larval mosquitoes in abandoned tire pile sites from West Virginia. *Journal of the American Mosquito Control Association*. 20(1). March 2004. 12-17.

Kaufman, Phillip E.; Laura C. Harrington, J. Keith Waldron, and Donald A. Rutz., 2005. The importance of agricultural tire habitats for mosquitos of public health importance in New York state. *Journal of the American Mosquito Control Association* Volume 21, Issue 2 (June 2005) pp. 171-176

Kilpatrick, A. Marm.; Laura D. Kramer, Scott R. Campbell, E. Oscar Alleyne, Andrew P. Dobson and Peter Daszak., 2005. [West Nile Virus Risk Assessment and the Bridge Vector Paradigm. *Emerging Infectious Diseases* Vol. 11, No. 3, March 2005](#)

Summary: Available from: <http://www.cdc.gov/ncidod/eid/vol11no03/pdfs/04-0364.pdf> [Accessed 11 March 2008]

[Landcare Research, undated. Keys to the mosquitoes of New Zealand. *Ochlerotatus \(Finlaya\) japonicus* \(Theobald, 1901\)](#)

Summary: Available from:

<http://www.landcareresearch.co.nz/research/biocons/invertebrates/mosquitoes/Mosquitoes%20of%20New%20Zealand/html/japonicus.htm> [Accessed 8 March 2008]

Lee, Joon-Hak; Kokas, John E. 2004. Field evaluation of CDC gravid trap attractants to primary West Nile virus vectors, *Culex* mosquitoes in New York State. *Journal of the American Mosquito Control Association*. 20(3). September 2004. 248-253.

Mabbett, Terry., 2003. Insect vector-borne diseases and their control by aerial application. *International Pest Control*. 44(6). November-December 2002. 307-309.

[Massachusetts Department of Public Health, 2007. Preventing Disease Spread By Mosquitoes. Massachusetts Department of Public Health, Bureau of Communicable Disease Control, Division of Epidemiology and Immunization.](#)

Summary: This is an informational pamphlet regarding preventing disease spread by mosquitoes for public use, produced by the Massachusetts Department of Public Health with funding from the Center for Disease Control.

Available from: http://www.mass.gov/Eeohhs2/docs/dph/cdc/arbovirus/mosquito_preventing.pdf [Accessed 7 April 2008]

Medlock, J. M.; Snow, K. R.; Leach, S., 2005. Potential transmission of West Nile virus in the British Isles: an ecological review of candidate mosquito bridge vectors. *Medical & Veterinary Entomology*. 19(1). March 2005. 2-21.

Mikami, Akiko; Yamashita, Nobuo., 2004. The inhibitory effects of a neem formulation on emergence of *Ochlerotatus japonicus* and *Culex pipiens pallens* *Medical Entomology & Zoology*. 55(3). September 2004. 237-240.

[Multnomah County Vector Control. 2006. Multnomah County's Vector Control works to take the bite out of summer. News release, May 15, 2006. Portland, OR: Multnomah County Oregon Public Affairs Office.](#)

Summary: Available from: http://www.co.multnomah.or.us/health/vector/documents/japonicus_media_release.pdf [Accessed 23 June, 2010]

[New Zealand BioSecure, 2005. Entomology Newsletter March 2005](#)

Summary: Available from: <http://www.smsl.co.nz/biosecure/NZB/Newsletters/2005/newsletter%20March%202005.pdf> [Accessed 8 March 2008]

Oliver, Joanne and John J. Howard., 2005. Fecundity of Naturally Blood-Fed *Ochlerotatus japonicus*. *Journal of Medical Entomology* Volume 42, Issue 3 (May 2005) pp. 254-259

Sardelis, Michael R.; Turell, Michael J., 2001. *Ochlerotatus j. japonicus* in Frederick County, Maryland: Discovery, distribution, and vector competence for West Nile virus. *Journal of the American Mosquito Control Association*. 17(2). June, 2001. 137-141

Scott, Jamesina J.; Crans, Scott C.; Crans, Wayne J., 2001. Use of an infusion-baited gravid trap to collect adult *Ochlerotatus japonicus*. *Journal of the American Mosquito Control Association*. 17(2). June, 2001. 142-143.

Scott, Jamesina J.; Crans, Wayne J., 2003. Expanded polystyrene (EPS) floats for surveillance of *Ochlerotatus japonicus*. *Journal of the American Mosquito Control Association*. 19(4). December 2003. 376-381.

Spurr, E. B. 2004. Preliminary risk assessment for the establishment of West Nile virus in New Zealand / Eric B. Spurr & Graham R. Sandlant. Lincoln, N.Z. : Manaaki Whenua Press, 2004.

[Washington State Department of Ecology., 2004. Best Management Practices for Mosquito Control. Washington State Department of Ecology Water Quality Program](#)

Summary: Available from: <http://www.ecy.wa.gov/pubs/0310023.pdf> [Accessed 11 March 2008]

General information

Andreadis, T.G., Anderson, J.F., Munstermann, L.E. Wolfe, R.J & Florin, D.A. 2001. Discovery, distribution, and abundance of the newly introduced mosquito *Ochlerotatus japonicus* (Diptera: Culicidae) in Connecticut, USA. *Journal of Medical Entomology* 38: 774-779.

Andreadis, T.G. & Wolfe, R.J. 2010. Evidence for reduction of native mosquitoes with increased expansion of the invasive *Ochlerotatus japonicus japonicus* (Diptera: Culicidae) in the northeastern United States. *Journal of Medical Entomology*, 47:43-52.



- Andreadis, Theodore G.; John F. Anderson, Leonard E. Munstermann, Roger J. Wolfe, and David A. Florin., 2001. Discovery, Distribution, and Abundance of the Newly Introduced Mosquito *Ochlerotatus japonicus* (Diptera: Culicidae) in Connecticut, USA. *Journal of Medical Entomology* Volume 38, Issue 6 (November 2001) pp. 774-779
- Armistead, J. S., Arias, J.R., Nishimura, N. & Lounibos, L.P. 2008. Interspecific larval competition between *Aedes albopictus* and *Aedes japonicus* (Diptera: Culicidae) in Northern Virginia. *Journal of Medical Entomology*, 45: 629-637.
- Bevins, N. Sarah., 2007. Establishment and Abundance of a Recently Introduced Mosquito Species *Ochlerotatus japonicus* (Diptera: Culicidae) in the Southern Appalachians, USA. *Journal of Medical Entomology* Volume 44, Issue 6 (November 2007) pp. 945-952
- Burger, J.F. & Davis, H. 2008. Discovery of *Ochlerotatus japonicus* (Theobald) (Diptera: Culicidae) in southern New Hampshire, U.S.A. and its subsequent increase in abundance in used tire casings. *Entomological News*, 119: 439-444.
- Caldwell, Nathan D.; Reid R. Gerhardt, and Carl J. Jones., 2005. First collection of *Ochlerotatus japonicus japonicus* in the state of Tennessee. *Journal of the American Mosquito Control Association* Volume 21, Issue 3 (September 2005) pp. 322-324
- Dunphy, B. M., Tucker, B.J., Peterson, M.J., Blitvich, B.J. & Bartholomay, L.C. 2009. Arrival and establishment of *Ochlerotatus japonicus japonicus* (Diptera: Culicidae) in Iowa. *Journal of Medical Entomology*, 46:1282-1289.
- Falco, Richard C.; Thomas J. Daniels, and Michael C. Slamecka., 2002. Prevalence and Distribution of *Ochlerotatus japonicus* (Diptera: Culicidae) in Two Counties in Southern New York State. *Journal of Medical Entomology* Volume 39, Issue 6 (November 2002) pp. 920-925
- Fonseca, D.M., Campbell, S., Crans, W.J., Mogi, M., Miyagi, I., Toma, T., Bullians, M., Andreadis, T.G., Berry, R.L. Pajac, B., Sardelis, M. & Wilkerson, R. C. 2001. *Aedes (Finlaya) japonicus* (Diptera: Culicidae) a newly recognized mosquito in the USA: first analyses of genetic variation in the US and putative source populations. *Journal of Medical Entomology*, 38:133-146.
- Fonseca, D.M., Widdel, A.K., Hutchinson, M., Spichiger, E. & Kramer, L.D. 2010. Fine-scale spatial and temporal population genetics of *Aedes japonicus* a new US mosquito, reveal multiple introductions. *Molecular Ecology*, 19:1559-1572.
- Gallitano, Stephanie; Blaustein, Leon; Vonesh, James., 2005. First occurrence of *Ochlerotatus japonicus* in Missouri. *Journal of Vector Ecology*. 30(2). DEC 2005. 347-348.
- Gray, Elmer W., Bruce A. Harrison, Michael L. Womack, Jerry Kerce, C. John Neely, and Ray Noblet ., 2005. *Ochlerotatus japonicus japonicus* (Theobald) in Georgia and North Carolina. *Journal of the American Mosquito Control Association* Volume 21, Issue 2 (June 2005) pp. 144-146
- Grim, D.C., B.T. Jackson and S.L. Paulson. 2007. Abundance and bionomics of *Ochlerotatus j. japonicus* in two counties in southwestern Virginia. *Journal of the American Mosquito Control Association* Volume 23, Issue 3 (September 2007) pp. 259-263
- Harrison, B.A., Whitt, P.B., Cope, S.E., Payne, G.R., Rankin, S.E., Bohn, L.J., Stell, F.M. & Neely, C.J. 2002. Mosquitoes (Diptera: Culicidae) collected near the Great Dismal Swamp: new state records, notes on certain species, and a revised checklist for Virginia. *Proceedings of the Entomological Society of Washington*, 104: 655-662.
- Heung Chul Kim, Richard C. Wilkerson, James E. Pecor, Won Ja Lee, John S. Lee, Monica L. O Guinn, Terry A. Klein., 2005. New Records and Reference Collection of Mosquitoes (Diptera: Culicidae) on Jeju Island, Republic of Korea. *Entomological Research* 35 (1) , 55-66
- Holman, S. Mary., Richard, F. Darsie Jr., and Kimberly A. Foss., 2006. A checklist of the mosquitoes of Maine with new state records. *Journal of the American Mosquito Control Association* Volume 22, Issue 2 (June 2006) pp. 327-329
- Hughes, T.H., Irwin, P.M., Kaufman, A., Sage, H., Pagac Jr., B.B. & Paskewitz, S.M. 2008. First records of *Aedes japonicus japonicus* in Wisconsin. *Journal of the American Mosquito Control Association*, 24: 583-584.
- Joy, J. E., Hanna, A.A. & Kennedy, B.A. 2003. Spatial and temporal variation in mosquitoes (Diptera: Culicidae) inhabiting waste tires in Nicholas County, West Virginia. *Journal of Medical Entomology*, 40: 73-77.
- Kutz, Frederick W.; Wade, Timothy G.; Pagac, Benedict B. 2003. A geospatial study of the potential of two exotic species of mosquitoes to impact the epidemiology of West Nile virus in Maryland. *Journal of the American Mosquito Control Association*. 19(3). September 2003. 190-198.
- Larish L.B, Savage H.M 2005. Introduction and establishment of *Aedes (Finlaya) japonicus japonicus* (Theobald) on the island of Hawaii: Implications for Arbovirus transmission. *Journal of the American Mosquito Control Association*: Vol. 21, No. 3 pp. 318-321
- Moberly, Steven P; Lalor, Craig; McDonough, Mollie; Foster, Brad; Estes, Adam; Bentfield, Douglas J. 2005. Discovery of an exotic Asian mosquito, *Ochlerotatus japonicus*, (Diptera: Culicidae) in southern Indiana *Proceedings of the Indiana Academy of Science*. 114(1). 2005. 62-64.
- Molaei, G., Farajollahi, A., Scott, J.J., Gaugler, R. & Andreadis, T.G. 2009. Human bloodfeeding by the recently introduced mosquito, *Aedes japonicus japonicus* and public health implications. *Journal of the American Mosquito Control Association*, 25(2): 210-214.
- Morris, J.A., Lampman, R.L., Ballmes, G., Funes, J., Halvorsen, J. & Novak, R.J. 2007. First record of *Aedes japonicus japonicus* in Illinois: defining its spatial distribution and associated mosquito species. *Journal of the American Mosquito Control Association*, 23(3): 243-251.
- Mullen, G.R. 2005. First report of *Ochlerotatus japonicus* in Alabama. *Alabama Vector Management Society Newsletter* 15(2):2.
- Neitzel, D.F., Johnson, K.A., Brogren, S. & Kemperman, M.M. 2009. First collection records of *Aedes japonicus* in Minnesota *Journal of the American Mosquito Control Association*, 25: 367-369.
- Oliver, Joanne; Means, Robert G.; Howard, John J. 2003. Geographic distribution of *Ochlerotatus japonicus* in New York State. *Journal of the American Mosquito Control Association*. 19(2). June 2003. 121-124.
- Peyton, E.L., Campbell, S.R., Candeletti, T.M., Romanowski, M. & Crans, W. 1999. *Aedes (Finlaya) japonicus japonicus* (Theobald), a new introduction into the United States. *Journal of the American Mosquito Control Association*, 15: 238-241.
- Qualls, W.A. & Mullen, G.R. 2006. Larval survey of tire-breeding mosquitoes in Alabama. *Journal of the American Mosquito Control Association*, 22:601-608.
- Reeves, W. K.; Korecki, J. A. 2004. *Ochlerotatus japonicus japonicus* (Theobald) (Diptera: Culicidae), a new invasive mosquito for Georgia and South Carolina. *Proceedings of the Entomological Society of Washington*. 106(1). January 2004. 233-234.
- Roppo, Monica R; Lilja, Jack L.; Maloney, Francis A; Sames, William J. 2004. First occurrence of *Ochlerotatus japonicus* in the state of Washington. *Journal of the American Mosquito Control Association*. 20(1). March 2004. 83-84.
- Saenz, L. Virna., Lee H. Townsend, Robert M Vanderpool, Mike J Schardein, Rebecca T. Trout and Grayson C. Brown., 2006. *Ochlerotatus japonicus japonicus* in the state of Kentucky. *Journal of the American Mosquito Control Association* Volume 22, Issue 4 (December 2006) pp. 754-755



GLOBAL INVASIVE SPECIES DATABASE

FULL ACCOUNT FOR: *Ochlerotatus japonicus japonicus*

[Saginaw County Mosquito Abatement Commission. 2007. A new resident in Saginaw County. Saginaw, MI: Saginaw County Mosquito Abatement Commission.](#)

Summary: Available from: <http://www.scmac.org/Biology.htm>. [Accessed 23 June, 2010]

Sames, William J. and David Pehling., 2005. Update on *Ochlerotatus japonicus japonicus* in the state of Washington. Journal of the American Mosquito Control Association Volume 21, Issue 1 (March 2005) pp. 98-99

Sardelis, Michael R.; David J. Dohm, Benedict Pagac, Richard G. Andre, and Michael J. Turell., 2002. Experimental Transmission of Eastern Equine Encephalitis Virus by *Ochlerotatus j. japonicus* (Diptera: Culicidae). Journal of Medical Entomology Volume 39, Issue 3 (May 2002)

Sardelis, Michael R., Michael J. Turell, and Richard G. Andre., 2002. Laboratory Transmission of La Crosse Virus by *Ochlerotatus j. japonicus* (Diptera: Culicidae). Journal of Medical Entomology Volume 39, Issue 4 (July 2002) pp. 635-639

Sardelis, Michael R.; Turell, Michael J.; Andre, Richard G., 2003. Experimental transmission of St. Louis encephalitis virus by *Ochlerotatus j. japonicus*. Journal of the American Mosquito Control Association. 19(2). June 2003. 159-162.

Schaffner, F. Chouin, S. & Guilloteau, J. 2003. First records of *Ochlerotatus (Finlaya) japonicus* (Theobald, 1901) in metropolitan France. Journal of the American Mosquito Control Association, 19:1-5.

Schaffner, F., Kaufmann, C., Hegglin, D. & Mathis, A. 2009. The invasive mosquito *Aedes japonicus* in Central Europe. Medical and Veterinary Entomology, 23:448-451.

Scott, Jamesina J.; Carle, Frank L.; Crans, Wayne J., 2001. *Ochlerotatus japonicus* collected from natural rockpools in New Jersey. Journal of the American Mosquito Control Association. 17(2). June, 2001. 91-92.

[Scott, J.J. 2004. *Ochlerotatus japonicus* \(Theobald\). Rutgers University Entomology/Placer Mosquito. New Jersey Mosquito Control Association Incorporated.](#)

Summary: This is an abbreviated fact sheet for *Ochlerotatus japonicus* made by the Rutgers University Department of Entomology.

Available from: <http://www.rci.rutgers.edu/~insects/ocjap.htm> [Accessed 8 April 2008]

Thielman, Aynsley and Fiona F. Hunter., 2006. Establishment of *Ochlerotatus japonicus* (Diptera: Culicidae) in Ontario, Canada. Journal of Medical Entomology Volume 43, Issue 2 (March 2006) pp. 138-142

[UniProt, 2008. Taxonomy, *Aedes japonicus*](#)

Summary: Available from: <http://beta.uniprot.org/taxonomy/140438> [Accessed 10 March 2008]

Young, Catherine L. E.; Beery, Jesse A.; Sheffer, Robert E.; Rand, Kelly M., 2004. First record of *Ochlerotatus japonicus* (Diptera: Culicidae) in St. Joseph County, Indiana. Great Lakes Entomologist. 37(3-4). FAL-WIN 2004. 196-197.