

WORLD DISTRIBUTION OF THE *VANESSA CARDUI*  
GROUP (NYMPHALIDAE)

**Additional key words:** biogeography, migration, dispersal, *Vanessa kershawi*.

*Vanessa cardui* (Linnaeus) and *V. kershawi* (McCoy) together comprise the *cardui* group of the genus *Vanessa* (Field 1971). The two species are morphologically similar and are allopatric in distribution. *Vanessa cardui* is undoubtedly the most widespread butterfly in the world and is purportedly "cosmopolitan;" *Vanessa kershawi* is restricted to the Australian region. The purpose of this paper is to review and detail the distributions of these two species. The data for this review represent a variety of previously published sources too numerous to enumerate.

**North, Central, and South America.** *Vanessa cardui* is found throughout the United States from sea level along the California coast up to 3960 m on Pike's Peak in Colorado. It occurs sporadically across southern Canada from Newfoundland to British Columbia and rarely in northern Quebec (Fort Chimo), southeastern Northwest Territories (Baker Lake), and extreme southern Yukon (Carmacks). It is absent from Alaska, except in the extreme southeast (Chickamir River), and it does not occur above the Arctic Circle in the Western Hemisphere, except for one record from northern Greenland (Scott 1986). It is absent from all of the North American Arctic islands, including the Pribilofs and Aleutians. *Vanessa cardui* is found throughout Baja California and much of Mexico, especially the northern part (also Aguascalientes, Distrito Federal, Morelos, Vera Cruz, and Guerrero). In Central America it occurs in Guatemala (common in montane areas), Honduras, Costa Rica (rare in montane areas), and Panama (rare). It apparently is absent from most of South America; however, there are two records from high inter-Andean valleys in Ecuador (Scudder 1876, Brown & Heineman 1972).

Along the American west coast, *V. cardui* has been collected on the Queen Charlotte Islands, Vancouver Island, throughout the California Channel Islands, and several islands off the coast of Baja California, including San Martin, Cedros, and San Jose. It is apparently absent from Isla Guadalupe (Baja California), Islas Revillagigedos (Colima), and the Galapagos Islands (Ecuador).

In the Caribbean region, *Vanessa cardui* occurs on Bermuda (resident but rare), the Florida Keys (Siesta Key, Paradise Key, and Key West), the Bahamas (New Providence Island and San Salvador Island), Cuba (rare), Grand Cayman, Jamaica (rare), Hispanola (uncommon in montane areas), Puerto Rico (rare), and Mona (rare). In the lesser Antilles it occurs on Montserrat and rarely on Dominica, Martinique, St. Lucia, St. Vincent, Barbados, Grenada, Trinidad, Tobago, and San Andres Island.

**Africa.** *Vanessa cardui* frequently is cited as ranging throughout Africa and the Ethiopian region, but it is absent from Rio Muni and the Gulf of Guinea Islands. It has been reported from Morocco, Algeria, Tunisia, Libya, Egypt, Ethiopia (up to 3350 m), Sudan (up to 3050 m), Dakar, Senegal, Liberia, Sierra Leone, Ghana, Nigeria, Congo, Kenya, Uganda, Rhodesia, Nyasaland, Malawi, Mozambique, Bechuanaland, South-West Africa, and South Africa (to the Cape of Good Hope at Cape Town, Port Elizabeth, and East London). Records from the Sahara region include northwest Sahara, Ahaggar, Air, and Tibesti.

**Mediterranean, African, and Indian islands.** *Vanessa cardui* is found throughout the Mediterranean and many of the Aegean islands, the Azores, Madeira, Canary Islands, Cape Verde Islands, Ascension, St. Helena, Tristan da Cunha (one record), Madagascar (common), Reunion, Mauritius (rare), Seychelles (Mahe, St. Anne, Aldabra, Assumption, Coetivy, Desroches), Socotra (common), Bahrain, Maldives (North Male Atoll, Hulule Island, Addu Atoll), Sri Lanka, Andamans (South Andaman), Nicobars (Nancowry), and Christmas Island. In the South Atlantic it is absent from Fernando Noronha, and it is unreported from the Comoro Islands.

**Europe.** *Vanessa cardui* ranges throughout Europe. Although it is more common in the southern portion of the continent, it is known from Scandinavia and Finland to above the Arctic Circle in Lapland. In the North Atlantic it occurs throughout Great Britain, on the Scilly Islands, Channel Islands, Isle of Wight, Isle of Man, Ireland (rare), Outer Hebrides, Orkneys, Shetlands, Faeroes, Iceland (rare), and Spitsbergen.

**Middle East and Asia.** In the Middle East, *Vanessa cardui* is known from throughout the Arabian Peninsula, Kuwait, Iraq, Jordan, Israel, Lebanon, Syria, Turkey, Transcaucasia, and Iran (up to 3350 m). On the Asian continent it occurs in Afghanistan, Pakistan (up to 5180 m), India (throughout), Nepal (3960 m on Mount Everest), Sikkim, Bhutan, Himalayas, Burma, Thailand (rare), Laos (rare), North Vietnam, Malay Peninsula (sporadic), northeastern Sumatra (common in montane areas), Nias, Java, Singapore Island, Palawan, the Philippines, Taiwan, and Hainan. *Vanessa cardui* is absent east of Wallace's Line. It occurs throughout Russia (including Siberia and Far East USSR, sporadic in places) except for the Far North, and ranges above the Arctic Circle in western Siberia. It also is found in Tibet (up to 5030 m), Yunnan (2900 m), central, west, and north China (including Manchuria and Amur), Hong Kong, Mongolia, Korea, Quelpart Island, Chejudo, many small islands along the west coast of South Korea, Ryukyu Islands, Japan, Sakhalin, and the Kurils.

**Pacific Islands.** With the exception of its introduced and naturalized status on Hawaii (Kauai, Oahu, Molokai, Maui, Lanai, and Hawaii), it is conspicuously absent from Pacific Islands, including Micronesia, Melanesia, and Polynesia. The male and female genitalic structures of specimens from Hawaii are identical to those of *V. cardui* and differ from *V. kershawi* (Zimmerman 1958, Field 1971), thus casting doubt on the theory that Hawaiian stock is intermediate between the two (Walker 1919, Scott 1986).

**Australia.** *Vanessa cardui* is unknown from Australia except in the extreme southwest corner at Bunburg and Rottne Island (Barrett & Burns 1951) near the major seaport of Perth—most likely the result of an introduction.

**Migrations at sea.** Migrating *V. cardui* sometimes are observed from aboard ships crossing the ocean; flights have been reported from various locations in the Mediterranean Sea. A huge migration appeared suddenly along the Riviera in May 1918 (Morris 1919), and NW migration was noted flying out over the Mediterranean from Gaza in April 1917 (Pendlebury 1921). Small groups sometimes fly in from the north in September along the Egyptian coast, and there was a sudden appearance of a migration on Malta in 1952 (Valletta 1952). Singletons have been observed in the Indian Ocean 400 km SE of Arabia; 400 km NNW of Cape Amber, Madagascar; 190 km W of Bombay; and 515 km W of the Laccadives. About 100–190 km off the African coast, migrating individuals were sighted at numerous locations between Morocco and Portuguese Guinea in September 1943 (Williams 1945). Other sightings include numerous individuals 965 km from Gambia and 320 km from the Cape Verde Islands. One individual was observed alive and floating on the water and another flying around a ship 800 km E of Newfoundland in August 1865, and six were seen 2250 km W of the Saharan coast (23°N, 41°W) in October 1950 (Williams 1965).

**Broodedness and overwintering.** *Vanessa cardui* is continuously brooded and does not diapause. During the winter months its huge range contracts to below about 35°N latitude in the North Hemisphere, at least in Europe and North America; it recolonized northward by migration again each spring. It overwinters along the extreme north African coast in Morocco and northern Algeria, and more extensively along the western margin of the Red Sea and in Saudi Arabia (Baker 1978). In North America it overwinters in the Sonoran and Chihuahuan deserts (C. J. Durden & K. Roever pers. comm., Bender 1982). It also overwinters in southern Africa, at least in Malawi and Rhodesia, migrating southward in the spring.

***Vanessa kershawi.*** *Vanessa kershawi* is common throughout southern Australia below the Tropic of Capricorn, occurring less commonly to 20°S in the west, 23°S in the center, and 16°S in the east of Australia. It is uncommon in Queensland and absent in the far north and in the Torresian faunal province, except in the SE part (Common & Waterhouse 1972). The butterfly is found in Tasmania (up to 915 m), including Hobart. Two worn "waifs" were collected in May 1906 on Cocos-Keeling Atoll in the Indian Ocean (Jones

1909). On the Great Barrier Reef, Queensland, it is known from Lindeman Island north of 21°S, and from Percy, North West, and Wiggins Islands south of 21°S (Duckworth & McLean 1986). In New Zealand, it probably is not resident, but it becomes common and widespread there occasionally following periodic migrations from Australia. It is recorded from North Island, South Island, and Stewart Island. It also has been reported from Lord Howe Island (sometimes common), Norfolk Island (in 1968), New Caledonia and New Hebrides (Walker 1919), Lifu in the Loyalty Islands (Walker 1902), and Suva on Viti Levu, Fiji (Robinson 1975). There are few observations of *V. kershawi* at sea, although multitudes were seen off Cape Otway in the Bass Strait in November 1860, and one was sighted at 35°10'S, 155°40'E off New South Wales in November 1904 (Williams 1930). In late September to early October 1889, they covered "the gear and decks of ships many miles out to sea" from a large migration flying SE from Victoria (Rainbow 1907).

**Summary and conclusions.** The incredibly vast range of *V. cardui* lies primarily within the Northern Hemisphere, extending substantially into the Southern Hemisphere only on the African continent; it occurs from sea level to about 5200 m in elevation. *Vanessa kershawi* is confined to the Australian continent where it completely replaces *V. cardui*. Their closest geographical approach is on Cocos-Keeling Atoll (*V. kershawi*) and Christmas Island (*V. cardui*) as waifs. The frequent claim that *V. cardui* is a cosmopolitan, worldwide butterfly is unwarranted, although it certainly is the most widely ranging species known.

Neither *V. cardui* nor *V. kershawi* is polytypic, i.e. there are not recognized subspecies. This probably reflects the fact that both are strongly migratory, a behavior that acts to inhibit localized population differentiation.

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#### LITERATURE CITED

- BAKER, R. R. 1978. The evolutionary ecology of animal migration. Holmes & Meier, New York. 1012 pp.
- BARRETT, C. & A. N. BURNS. 1951. Butterflies of Australia and New Guinea. N. H. Seward, Melbourne. 187 pp.
- BENDER, G. L. 1982. Reference handbook on the deserts of North America. Greenwood Press, Westport, Connecticut. 594 pp.
- BROWN, F. M. & B. HEINEMAN. 1972. Jamaica and its butterflies. E. W. Classey, London. 478 pp.
- COMMON, I. F. B. & D. F. WATERHOUSE. 1972. Butterflies of Australia. Angus & Robertson, Sydney. 498 pp.
- DUCKWORTH, B. G. & J. MCLEAN. 1986. Notes on a collection of butterflies from the islands of the Great Barrier Reef, Queensland. Austr. Entomol. Mag. 13:43-48.
- FIELD, W. D. 1971. Butterflies of the genus *Vanessa* and the resurrected genera *Bassaris* and *Cynthia*. Smithsonian Contrib. Zool. 84:1-105.
- JONES, F. W. 1909. The fauna of the Cocos-Keeling Atoll, collected by F. Wood Jones. Proc. Zool. Soc. London 1909:132-160.
- MORRIS, C. E. 1919. Invasion of the Riviera by *Pyrameis cardui*. The Entomologist 52:20.
- PENDLEBURY, W. M. 1921. Daily migrations against a land- and sea-breeze by *Pyrameis cardui*. Trans. Entomol. Soc. London 69:xvi-xviii.
- RAINBOW, W. J. 1907. A guide to the study of Australian butterflies. T. C. Lothian, Melbourne. 272 pp.
- ROBINSON, G. S. 1975. Macrolepidoptera of Fiji and Rotuma. E. W. Classey, Oxon. 362 pp.
- SCOTT, J. A. 1986. The butterflies of North America. Stanford Univ. Press, Stanford. 583 pp.
- SCUDDER, S. H. 1876. A cosmopolitan butterfly. Am. Nat. 10:392-396.
- VALLETTA, A. 1952. *Vanessa cardui* Linn. and other migrants in Malta in 1952. Entomol. Rec. 64:279-280.

- WALKER, J. J. 1902. Antipodean field notes. I. New Caledonia, the New Hebrides, and adjacent islands. Entomol. Mon. Mag. 38:189-203.
- WALKER, J. J. 1919. The fringes of butterfly life. Trans. Entomol. Soc. London 1919: xci-cxvii.
- WILLIAMS, C. B. 1930. The migration of butterflies. Oliver & Boyd, London. 473 pp.
- WILLIAMS, C. B. 1945. Occurrence of *Vanessa cardui* at sea off the west African coast. Proc. R. Entomol. Soc. London (A) 20:4-5.
- WILLIAMS, C. B. 1965. Insect migration. Collins, London. 237 pp.
- ZIMMERMAN, E. C. 1958. Insects of Hawaii. Vol. 7, Macrolepidoptera. Univ. Hawaii Press. 542 pp.

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#### NOTES ON THE TYPE OF *PAPILIO CRESPHONTES* AB. "MAXWELLI" (PAPILIONIDAE)

**Additional key words:** aberration, holotype, Florida.

*Papilio cresphontes* (Cramer) is a widespread Neotropical species with few associated infrasubspecific names, despite the preponderance of these names employed elsewhere within the Papilionidae. *Papilio cresphontes* ab. "maxwelli" Franck is a rare aberration characterized by elongated yellow spots near the apex of the forewing, described by Franck (1919a) as "giving the specimen a striking tropical appearance." In his description of the taxon, Franck (1919a) figured the holotype of "maxwelli" but omitted data regarding the type locality, sex of the specimen, and the collection in which it was deposited. As a result, this information was unknown to subsequent authors, including Miller and Brown (1981) and Ferris (1989). Kimball (1965), likewise, did not mention *P. cresphontes* ab. "maxwelli", apparently because he was unaware of the Florida type locality. However, Franck (1919b) amended his description with a short note that has been overlooked by researchers for over seventy years.

In a one-sentence emendation, Franck (1919b) designated the type locality as St. Petersburg, Florida, and noted that the description was based upon a single male specimen in the William Barnes collection. The holotype is now located in the collection of the National Museum of Natural History where the Barnes collection is largely deposited. The specimen possesses two labels: a red holotype label affixed in 1990 and an old white label bearing nearly undecipherable handwriting, possibly reading "Mar 29." No additional information is discernable. Clark (1936) figured another male specimen of the "maxwelli" phenotype without providing locality data.

Although infrasubspecific taxa are not subject to rules of the International Code of Zoological Nomenclature, any taxon within such a highly popularized and thoroughly studied family is of special interest.

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#### LITERATURE CITED

- CLARK, A. H. 1936. The swallowtail butterflies. Ann. Rpt. of the Smiths. Inst. for the Year Ending 1935:383-408.
- FERRIS, C. D. (ed.). 1989. Supplement to: A catalogue/checklist of the butterflies of North America, north of Mexico. Lepid. Soc. Mem. No. 3. 103 pp.