

Insect taxa named for the Rev. John H. Keen, early naturalist on the Queen Charlotte Islands and at Metlakatla, British Columbia

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ABSTRACT

The Reverend John Henry Keen (1851–1950) spent nearly 20 years serving Anglican missions in British Columbia, at Masset on the Queen Charlotte Islands/Haida Gwaii in the 1890s, and on the adjacent mainland at Metlakatla, during the summer of 1890 and for several years in the early 1900s. Despite leading the busy life of a clergyman, Keen assembled extensive collections of natural history specimens, particularly of insects and mammals. He was spurred on by the likelihood that many specimens would represent species new to science, predictions that were later borne out. Keen initially sent specimens to the Natural History Museum in London, but later sent most of them to Dr. James Fletcher, Dominion Entomologist, in Ottawa, who forwarded many specimens to specialists in the United States and France for identification. Keen was among the first collectors of natural history specimens on the north coast of British Columbia and, in recognition of his contributions, eight insect taxa were named after him, based on the type specimens he collected in this region.

Key words: British Columbia; Masset; Metlakatla; Queen Charlotte Islands/Haida Gwaii; *keenii*; type specimens

Among the members of the clergy whose early entomological contributions in British Columbia were chronicled by Riegert (1991) in *Entomologists of British Columbia* was the Rev. John Henry Keen (1851–1950). Keen was an Anglican missionary who served at missions on the Queen Charlotte Islands/Haida Gwaii at Massett (hereafter the modern spelling of Masset is followed; 54.0115°N, 132.1472°W) in the 1890s, and on the mainland coast at Metlakatla (54.3373°N, 130.4447°W) for several years in the early 1900s. Keen arrived in British Columbia in the early summer of 1890 and worked for several weeks on the mainland (Sealy 2016a, b), where he wasted no time in assembling the first collection of beetles from this region (Keen 1891). Keen finally arrived in Masset in mid-September 1890 and began his clerical duties, but also continued what would become a productive period in the history of natural history in this region (Sealy 2015, 2016a, 2017).

Prior to leaving England, Keen prepared for the upcoming challenges of serving a people with which he was unfamiliar, but he was also filled with anticipation of working in a region whose natural history was relatively unexplored. Keen's letters to Albert K. L. G. Günther (1830–1914), Keeper of Zoology at the British Museum (Natural History), London, from 1875 to 1895 (Gunther 1930), now the Natural History Museum (NHM), revealed his anticipation of reaching the Queen Charlotte Islands and the discoveries he felt sure would follow. Shortly before arriving at Masset, Keen wrote to Günther, "As I remember you said that almost anything from [the Queen Charlotte Islands] would be of interest, I shall hope to send you a good deal from time to time" (Keen 1890). Upon his arrival, he re-iterated his awareness of the value of specimens from this new locality, again in a letter to Günther: "The productions of the island, one would think, ought to be of considerable interest as it is separated from the mainland by a channel [Hecate Strait] about 60 miles wide" (Keen 1890). Keen's work on the natural history of the Queen Charlotte Islands had begun, and recognition of the results soon followed.

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In the years that followed, Keen assembled extensive collections of insects and other animals, particularly of mammals, and some plants. Although Keen collected the specimens and made notes on the behaviour and habitat of many of the species (Sealy 2015, 2017), he had to rely on specialists to identify them. Specimens collected at Metlakatla and during the first year or so of service at Masset were sent to Günther at the British Museum (Sealy 2015, 2016c). By late-1892, impatient with delays in receiving determinations from busy curators in England and the irregular mail service, Keen began sending most specimens of insects and a few other invertebrates and mammals to the Central Experimental Farm in Ottawa. There, entomologist James Fletcher (1852–1908) identified some of the insects, but sent the other specimens to specialists in France and the United States. Fletcher, a highly acclaimed entomologist (Gibson and Groh 1909), recognized the seriousness and energy that Keen brought to his observations and collections and, thus, both contributed importantly to knowledge of the natural history in a region that was almost completely unexplored biologically at the time.

Keen's contributions to knowledge of the insect fauna of the coastal region of central British Columbia took three forms: (1) published lists of beetles identified by specialists, frequently annotated with notes on behaviour and seasonal habitats (Sealy 2015); (2) specimens, mostly of beetles, incorporated into catalogues, taxonomic revisions, and distributional works published by other entomologists and in museum reports (e.g., Harrington 1894, Fannin 1898, Kavanaugh 1992); and (3) eight taxa, including two taxa that Hatch (1957b) considered to be *nomen nuda*, described from specimens collected by Keen. These specimens were catalogued in the National Collection of Insects (Ottawa), the Natural History Museum (London, UK), Provincial Museum of British Columbia (now Royal British Columbia Museum, Victoria), and Biological Survey of the U.S. Department of Agriculture (U.S. National Museum, Washington).

Insect taxa named for John H. Keen. The dates of collection of Keen's insect specimens, types and otherwise, are generally not known except for the year or the season ("February", "summer"). It is known with certainty, however, that specimens were collected on the Queen Charlotte Islands between mid-September 1890 and late-1898, during Keen's residency at Masset (Sealy 2016a). Specimens were collected at Metlakatla in June and July 1890, while Keen waited for the steamer to transport him to Masset, and again after settling at Metlakatla in late summer of 1899 (Sealy 2016a). Specimens were collected year-round on the Queen Charlotte Islands, within "a circle of five miles' radius from Massett" (Keen 1895), and at Metlakatla, mainly at settlements along the Nass River (Sealy 2016c). Unlike descriptions of new taxa of mammals from the Queen Charlotte Islands that were based on Keen's specimens, in which each was accompanied by a type specimen and institutional registration number (Sealy 2015, 2017), catalogue numbers of type specimens of insects were generally not available. The new taxa listed below are presented in chronological order of the date of description, with the exception of two species considered by Hatch (1957b) to be *nomen nuda*, which are presented at the bottom of the list.

***Pezomachus keenii* (Harrington 1894) (Hymenoptera: Ichneumonidae).** Among a collection of several undescribed ichneumonids assembled by the Rev. G. W. Taylor near Victoria, British Columbia, and entrusted to W. H. Harrington, were two new species of wasps collected by Keen near Masset. Regarding the first species, *Cremnodes canadensis*, Harrington (1894) noted that it was "[d]escribed from one ♀ specimen from Queen Charlotte Islands, sent by the Rev. J. H. Keen to Mr. Fletcher. A very interesting wingless species, with rufous head and abdomen, and testaceous thorax and legs ..." This species now resides in the genus *Polyaulon* Foerster. It took only seven lines for Harrington (1894) to describe the second species, this one placed in the genus *Pezomachus*, based on four females collected at Masset by Keen, "... after whom I have much pleasure in naming the species, as a recognition of his efforts to advance our knowledge of the insect fauna of this distant portion of the Dominion." *Pezomachus* was synonymized with the genus *Gelis* by Viereck (1914).

[George W. Taylor (1854–1912) was another among several early clergymen who collected insects in British Columbia. He became a sought-after expert on the Geometridae and exchanged specimens with collectors and identified moths for others (Riegert 1991). William H. Harrington (1852–1918) was one of the founders of the Ottawa Field-Naturalists Club, a still-active organization that publishes the *Canadian Field-Naturalist*. His entomological contributions focused on systematics and economic entomology, particularly of the Hymenoptera and Coleoptera (Gibson 1918).]

***Platyceropsis keeni* (Casey, 1895) (Coleoptera: Lucanidae).** This is the first of three species of beetle that Capt. Thomas L. Casey (1857–1925) named in honour of Keen, based on a single female specimen (Benesh 1946). Casey noted (1895) “This interesting species was discovered by Rev. J. H. Keen [at Masset], and the original specimen kindly given me for description by Mr. [H. F.] Wickham, with permission of Mr. James Fletcher, of Ottawa. It has recently been taken in abundance.” This species had been collected only on the Queen Charlotte Islands (Wickham 1899) and, with specimens of *Haida keeni* (see below), were part of a collection of 141 species of beetle that Keen presented to the British Columbia Provincial Museum in Victoria (now Royal British Columbia Museum). The list of Keen’s specimens was included in Fannin’s (1898) preliminary catalogue of collections deposited in the Museum. This species belongs to the genus *Platyceropsis* (Benesh 1946).

[Henry Frederick Wickham (1866–1933), professor of entomology at the State University of Iowa (now Iowa State University), was a specialist in the Coleoptera (Anonymous 1934). He described many new species of beetle, including fossilized species, and was among several specialists to whom James Fletcher forwarded Keen’s specimens for identification and whom Keen acknowledged (Keen 1895). Wickham’s field experience extended to British Columbia, where he collected insects for one month near Victoria on Vancouver Island in 1889 (Wickham 1890) and, in 1891, collected them in Alaska and the adjacent portions of British Columbia (Wickham 1893).]

***Oxypsylla keeni* (Baker, 1896) (Siphonaptera: Ceratophyllidae).** Keen collected fleas secondarily as they escaped from the pelage of Keen’s Mouse (*Peromyscus keeni* (= *Sitomys keeni* Rhoads) and from mouse nests, while recording notes on this species’ behaviour (Keen 1896; also see Sealy 2015). From “several [male and female] specimens taken on *Sitomys keeni* at Masset... in August of 1895, by Rev. J. H. Keen”, Baker (1896) described a new species, *Pulex keeni*, and named it in honour of Keen. He also acknowledged his indebtedness to James Fletcher “... for the opportunity of examining this very interesting and well-marked form.” Baker (1904) supplemented the original description of *Pulex keeni* with figures and re-assigned it to the genus *Ceratophyllus*.

Jordan (1933) re-assigned *Ceratophyllus* to the genus *Opisodasys*. A lectotype male was designated by Smit and Wright (1978), and the species was placed in the subgenus, *Oxypsylla*, by Smit (1983), where it resides today. The preferred host of *Oxypsylla keeni* is the deer mouse genus *Peromyscus* in south-central British Columbia, on Vancouver Island and other coastal islands, including Haida Gwaii, and north along the panhandle of Alaska (Holland 1985), as well as deer mice throughout the northwest United States, including western Montana and northern Nevada and Utah (Lewis 2008).

Baker benefited further from Keen’s collecting skills, with his description of another new species of flea taken from a deer mouse nest at Masset in 1898. Two females provided the basis for Baker’s (1898) description of *Typhlopsylla charlottensis*, based primarily on account of its reduced eyes. Further study prompted Baker (1904) to expand “the meagre original description” of this new species, and he re-assigned it to the genus *Ceratophyllus*. Rothschild (1915) later designated the genus as *Catallagia*, thus, *Catallagia charlottensis*.

After a furlough in England, Keen resumed his duties in mid-July 1899, this time at the mission at Metlakatla, where he continued to collect specimens, including fleas. Holland (1985) included two species that included specimens collected by Keen: *Hystrihopsylla occidentalis occidentalis* Holland (from Norway Rat [*Rattus norvegicus*]

at Metlakatla), and *Monopsyllus ciliatus protinus* Jordan (from Red Squirrel [*Tamiasciurus hudsonicus*] at Metlakatla and *Tamiasciurus* sp. at Inverness).

***Haida keeni* Keen 1897; Brown 1944 (Coleoptera: Staphylinidae).** The history surrounding the naming of *Haida keeni* may be unique. Among Keen's beetle specimens sent by Fletcher to Mons. Albert Fauvel, of Caen, France, a specialist on the Coleoptera (e.g., Fauvel 1889), was a specimen collected at Masset on 18 October 1893 (Figure 1; also figured by Keen (1897) and frontispiece in Campbell 1978: facing p. 1) that was recognized as a new taxon. Fauvel suggested it be named *Haida keeni*, the genus suggested in honour of the Haida people, the traditional inhabitants of Haida Gwaii with whom Keen was working, and the species after Keen, the collector. But Fauvel never published a formal description of *Haida keeni*, although he is sometimes named as the author of the genus (e.g., Fannin 1898, but see Armett and Thomas 2000). As Hatch (1957a) noted, this resulted in Keen's (1897) "interesting but taxonomically most inadequate remarks constitut[ing] the original description of both genus and species, and resulted in Keen being in the anomalous position of naming a species after himself!" Forty-five years later, *Haida keeni* was accurately described by Brown (1944), based on three additional specimens collected at Masset in 1893 and catalogued in the National Insect Collection in Ottawa. But Keen, not Brown, is still recognized as the species' author (e.g., Hatch 1957b, Campbell 1978, Bosquet *et al.* 2013; also see Hatch 1957a).

Keen (1895) noted this species is "Not common. Found in moss at roots of trees, in December." He did not collect this species at Metlakatla (Keen 1905), although specimens have been taken subsequently from the mainland, from southeast Alaska to southwestern British Columbia (Campbell 1978).



Figure 1. *Haida keeni* registered in the Canadian National Collection of Insects, Ottawa, Ontario, collected by the Rev. J. H. Keen on 18 October 1893 near Masset, Queen Charlotte Islands, British Columbia. Photo credit: Serge Laplante, courtesy of the Canadian National Collection of Insects, Arachnids and Nematodes, Agriculture and Agri-Food Canada, Ottawa.

***Atheta (Lamiota) keeni* Casey 1910 (Coleoptera: Staphylinidae).** Describing this species (type, USNM 38480 insects, collected at Metlakatla), Casey (1910) noted, "This strikingly distinct species is dedicated with pleasure to Rev. J. H. Keen, who has made

many interesting discoveries among the small clavicorn Coleoptera of the northern coast of British Columbia.” Considered a valid species, *Atheta keeni* was designated the type species of the subgenus *Lamiota* Casey, although Gusarov (2003), who supplemented Casey’s description of *Atheta keeni* with illustrations of body parts, cautioned that the “Subgeneric assignment of *At. keeni* and the status of the name *Lamiota* require further study.” *Atheta keeni* is known from Alaska, British Columbia and Oregon (Gusarov 2003).

***Gyrophaena keeni* Casey, 1911 (Coleoptera: Staphylinidae).** The description of the third species of beetle named for Keen by Casey (1911) was accompanied only by a brief acknowledgement and statement of the type locality: “British Columbia (Metlakatla), – Keen.” This species, described from a male specimen, and others in the genus *Gyrophaena* proposed by Casey have been confirmed as valid. Seevers (1951) grouped five closely related species of *Gyrophaena* in a “Keeni group” (also see Stace Smith 1957), which is composed of fungus-feeding beetles, obligatory inhabitants of the fungi during the larval and adult stages.

***Bryobiotos keeni* Fauvel (Coleoptera: Staphylinidae).** Hatch (1957b) considered this species to be a *nomen nudum*, and thus not described and not valid. Keen (1895) noted in the entry for this species in his list of beetles from Masset that it was “Occasional in June under stones on sandy beach, between tide marks. Larvae in same place.”

***Anthobium keeni* (Fauvel) (Coleoptera: Staphylinidae).** Keen (1895) listed this species in the genus *Lithrimaeum*, noting “Several in rotten sea-weed, in June”, but Hatch (1957b) considered it to be a *nomen nudum*. Among the locations given by Hatch (1957b) in the description of his new species, *Anthobium sinuosum*, was Metlakatla, where one of the female paratypes was collected, probably by Keen. It is possible that *keeni* was placed with the new species.

CONCLUSIONS

Keen’s collecting career in coastal British Columbia spanned more than 20 years. His last specimen apparently was a sap-feeding beetle (*Fabogethes nigrescens* (Stephens)) taken at Metlakatla in 1915 and catalogued in the British Museum (Easton 1955, also see Hatch 1957b). Osgood (1901), in the first treatise of the fauna and flora of the Queen Charlotte Islands, extolled Keen’s dedication and far-reaching contributions to natural history, acknowledging that the little that was known of the vertebrate fauna of the islands “was entirely due to the zeal of Rev. J. H. Keen ...” Accolades from entomologists followed. Baker (1904) stated “All of our records [of fleas] for the Queen Charlotte Islands are due to this gentleman, and his contributions have been most important ones.” Riegert (1991), in a brief sketch of Keen’s life and accomplishments, noted that “Our knowledge of the original beetle fauna of the northwest B.C. coast is due primarily to the painstaking and energetic collecting of this remarkable clergyman.” This sentiment was echoed by Kavanaugh (1992) who acknowledged that “Development of our present knowledge of the carabid beetle fauna of the Queen Charlotte Islands began with the Reverend J. H. Keen, Anglican missionary to the Haida people ...” In a memoir published following Keen’s death in England in 1950 at the age of 98, Hatch (1957a) acknowledged that entomologists were aware of Keen’s “short series of papers” on the beetles of the Queen Charlotte Islands, but he lamented that there was a “... complete dearth of published information about Rev. Keen.” Hearne (1997) extended Hatch’s (1957a) brief biography of Keen in a tribute to the “forgotten naturalist” of the Queen Charlotte Islands. Recently, photographs of Rev. Keen have been uncovered (Sealy 2016a).

ACKNOWLEDGEMENTS

Serge Laplante provided the photograph of the type specimen of *Haida keeni* in the Canadian National Collection of Insects, Ottawa, Ontario. Daisy Cunynghame and Lorraine Portch (Natural History Museum & Archives, London, UK) provided copies of Keen's correspondence archived in that Institution. Terry D. Galloway (Department of Entomology, University of Manitoba) pointed out several references and commented on an early draft of the manuscript. The reviewers, Robert J. Cannings and Jan Klimaszewski, commented constructively on the manuscript.

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