

BLOW FLIES (DIPTERA, CALLIPHORIDAE) OF IDAHO: AN ANNOTATED CHECKLIST

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ABSTRACT.—A total of 33 species of blow flies (Diptera: Calliphoridae) are recorded from Idaho. They include 1 species each of *Cochliomyia*, *Phormia*, *Protophormia*, *Trypocalliphora*, *Cyanus*, *Cynomya*, and *Melanodexia*; 12 species of *Protophormia*; 5 species of *Lucilia*; 6 species of *Calliphora*; and 3 species of *Pollenia*. Other calliphorid species that may also occur in the state include 5 species of *Protophormia* and 3 species of *Calliphora*. Known distribution, periods of activity, abundance within the state, and biological notes are provided.

Key words: Diptera, Calliphoridae, blow flies, Idaho, distribution.

Many blow flies (Diptera: Calliphoridae) are of economic importance because of their effects on public health (James 1947, Greenburg 1971), livestock (Williams et al. 1985), and wildlife (Baumgartner 1988, Sabrosky et al. 1989). In addition, an interest in blow flies as forensic indicators has become increasingly popular in recent years (Smith 1986, Greenburg 1991, Catts and Goff 1992). Therefore, information about these flies is important.

In 1948, Hall's monograph, *The blowflies of North America*, provided comprehensive coverage of the calliphorid fauna. Hall (1965) cataloged the blow flies in *A catalog of the Diptera of America north of Mexico*, Cole (1969) included information about the family in his general work on western flies, and Shewell (1987) provided identification keys, illustrations, and brief comments pertaining to Nearctic species. From the Rocky Mountain states and westward, only 2 works cover the blow flies at the state level, James (1955) for California and De Jong (1994) for Colorado. This work adds to localized knowledge by providing information about the distribution, periods of activity, abundance, and biology of blow flies known to occur or which may occur in Idaho. This checklist is a preliminary step toward a more detailed publication on Idaho blow flies (primarily on synanthropic species) containing biological notes, identification keys, and illustrations.

The present records are based on intermittent collections by the author throughout much

of Idaho since 1968 utilizing general collecting techniques and fly traps, sweeping over bait stations and road-killed animals, and rearing to adults larvae taken from carcasses; literature reports by Hall (1948), Linam and Rees (1957), Horning and Barr (1970), and Sabrosky et al. (1989); and specimens examined by the author from the following institutions: U.S. National Museum of Natural History (Systematic Entomology Laboratory, Agricultural Research Service, USDA), Smithsonian Institution (USNM), University of Idaho (WFBM), Albertson College of Idaho (CIDA), Washington State University (WSUC), Utah State University (EMUS), and Brigham Young University (BYUC). Excluding the genera *Protophormia*, *Trypocalliphora*, and *Melanodexia*, voucher specimens of 17 species from the author's collection have been deposited at USNM.

The taxonomic contribution of Rognes (1991) suggests that the synonymy of Hall (1965) and Shewell (1987) for North American calliphorids is out of date. Therefore, the arrangement of genera and species in this text is as presented by Rognes (1991) and subsequently listed for the Nearctic region by Poole (1996). Species are listed alphabetically within genera. Because of long-standing use in earlier works, some generic and specific names are included in this list for reference. An asterisk (*) identifies calliphorid species which currently are not reported from Idaho but which may occur in the state based

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on collection records in proximity to state boundaries. Periods of activity are based on earliest and latest collection dates in the calendar year. Abundance is based on relative abundance at collection sites.

SUBFAMILY CHRYSOMYINAE

Genus *Cochliomyia* Townsend

Cochliomyia macellaria (Fabricius). Canyon, Oneida, and Washington counties. August–October. Rare. The Canyon County record involved myiasis in a dog (O’Keeffe 1970), and the Washington County record involved myiasis in a human (Portman 1954).

Genus *Phormia* Robineau-Desvoidy

Phormia regina (Meigen). Ada, Adams, Bannock, Blaine, Boise, Bonner, Bonneville, Butte, Camas, Canyon, Cassia, Clark, Custer, Elmore, Franklin, Gem, Gooding, Idaho, Jefferson, Kootenai, Latah, Lemhi, Lewis, Nez Perce, Oneida, Owyhee, Shoshone, Teton, Twin Falls, Valley, and Washington counties. January–November. Very common. Adults overwinter. This species is generally the 1st fly species to appear at a fresh carcass and will be the most common species at the carcass initially. The fly is often involved in wound myiasis and sheep strike (James 1955).

Genus *Protocalliphora* Hough

All species of *Protocalliphora* are parasitic on birds. Because adults are not typically attracted to carrion (which is normally a major source of blow flies), adults of all species are scarce in collections and are not commonly observed in nature. Sabrosky et al. (1989) provides the sole source of information for species records included in this checklist.

Protocalliphora aenea Shannon and Dobrosky. Shoshone County. Known hosts that occur in Idaho include American Dipper, Say’s Phoebe, American Robin, Barn Swallow, and House Wren.

Protocalliphora avium Shannon and Dobrosky. Ada, Bear Lake, Franklin, Nez Perce, Latah, Oneida, and Owyhee counties. This species is parasitic on the American Crow and raptorial birds.

Protocalliphora beameri Sabrosky, Bennett, and Whitworth. Butte County. This species is known only to parasitize swallows.

Protocalliphora brunneisquama Sabrosky, Bennett, and Whitworth. Butte County. Only known host of this species is the Chipping Sparrow.

**Protocalliphora chrysorrhoea* (Meigen). This species has been recorded in Cache County, Utah, and Ravalli County, Montana. The chief host is the Bank Swallow. This species probably occurs in Idaho.

Protocalliphora cuprina (Hall). Franklin County. Hosts include the dove and passeriform birds.

**Protocalliphora halli* Sabrosky, Bennett, and Whitworth. This species has been recorded in Box Elder, Cache, and Rich counties, Utah, and in British Columbia. The chief hosts are Say’s Phoebe and Barn Swallow. This species probably occurs in Idaho.

**Protocalliphora hesperia* Shannon and Dobrosky. This species has been recorded in Box Elder and Cache counties, Utah, and in British Columbia. Known hosts include several passeriform birds. This species probably occurs in Idaho.

Protocalliphora hirundo Shannon and Dobrosky. Bear Lake, Bonner, and Custer counties. Although chief hosts are swallows, several other passeriform birds are parasitized.

**Protocalliphora interrupta* Sabrosky, Bennett, and Whitworth. Recorded from Cache County, Utah, and British Columbia. Known hosts are chiefly Yellow-headed, Brewer’s, and Red-winged Blackbirds, Song Sparrow, and Marsh Wren. This species probably occurs in Idaho.

Protocalliphora lata Sabrosky, Bennett, and Whitworth. Franklin County. Known hosts include Red-tailed Hawk, American Kestrel, and Northern Goshawk.

Protocalliphora metallica (Townsend). Caribou, Latah, and Oneida counties. Known hosts include numerous passeriform species.

**Protocalliphora parorum* Sabrosky, Bennett, and Whitworth. Recorded from Box Elder and Cache counties, Utah. Known hosts are chiefly chickadee species. This species probably occurs in Idaho.

Protocalliphora seminuda Sabrosky, Bennett, and Whitworth. Butte and Oneida counties. Known hosts include Brewer’s Blackbird, Horned Lark, and Barn Swallow.

**Protocalliphora shannoni* Sabrosky, Bennett, and Whitworth. Recorded from Cache County, Utah; Ravalli County, Montana; and near Vernon, British Columbia. Known hosts include a number of passeriform birds. This species probably occurs in Idaho.

Protocalliphora sialia Shannon and Dobrosky. Bear Lake, Franklin, and Latah counties. Known hosts include numerous passeriform species.

Protocalliphora spatulata Sabrosky, Bennett, and Whitworth. Latah County. Sabrosky et al. (1989) reported Rosy Finch, Horned Lark, and Water Pipit as hosts. Fair and Miller (1995) added Savannah Sparrow and White-crowned Sparrow.

Protocalliphora spenceri Sabrosky, Bennett, and Whitworth. Nez Perce County. Known hosts include American Redstart, Warbling Vireo, Yellow Warbler, and Slate-colored Junco.

Genus *Protophormia*

Townsend

Protophormia terraenovae (Robineau-Desvoidy). Ada, Adams, Benewah, Blaine, Boise, Bonner, Bonneville, Butte, Camas, Canyon, Cassia, Clark, Custer, Elmore, Franklin, Fremont, Gem, Idaho, Jefferson, Latah, Lemhi, Lincoln, Nez Perce, Oneida, Shoshone, Twin Falls, and Valley counties. January–October. Common. This species overwinters as adults. It is most abundant during the spring and fall.

Genus *Trypocalliphora*

Peus

Trypocalliphora braueri (Hendel). Hall (1965) and Sabrosky et al. (1989) placed the species in the genus *Protocalliphora*. Nez Perce and Oneida counties. Known hosts include Golden Eagle and passeriform birds. Maggots of this species are often found beneath the skin, causing true myiasis (Sabrosky et al. 1989).

SUBFAMILY LUCILIINAE

Genus *Lucilia*

Robineau-Desvoidy

Lucilia elongata Shannon. Hall (1965) placed the species in the genus *Bufolucilia*. Elmore County. Rare. The single specimen from Idaho was collected 22 August 1974 in the Trinity Lakes area. James and Maslin (1947) and Briggs (1975) reported the species as a parasite on toads.

Lucilia illustris (Meigen). Ada, Adams, Bannock, Benewah, Blaine, Boise, Canyon, Custer, Elmore, Franklin, Gem, Gooding, Idaho, Latah, Lemhi, Lewis, Nez Perce, Shoshone, Twin Falls, and Valley counties. April–November. Common. Although this is primarily a silvan species, in Idaho the species is a competitor with *L. sericata* for decaying meat and carrion in many cities.

Lucilia sericata (Meigen). Hall (1965) placed the species in the genus *Phaenicia*. Ada, Adams, Ban-

nock, Bingham, Blaine, Boise, Bonneville, Camas, Canyon, Cassia, Custer, Elmore, Jefferson, Jerome, Latah, Nez Perce, Owyhee, Twin Falls, and Washington counties. April–September. Very common. This species is the most common metallic-colored fly in residential communities. Food range of the larva is wide, enabling it to develop commonly in garbage.

Lucilia silvarum (Meigen). Hall (1965) placed the species in the genus *Bufolucilia*. Ada, Bonneville, Camas, Canyon, Cassia, Elmore, Franklin, Fremont, Gem, Jerome, Latah, Lincoln, Madison, Minidoka, Nez Perce, Oneida, Owyhee, and Twin Falls counties. April–November. Moderately common. Although recognized as parasitic on frogs and toads (Hall 1948, Bleakney 1963), Brothers (1970) found the species to be more commonly a saprophage.

Lucilia thatuna Shannon. Hall (1965) placed the species in the genus *Bufolucilia*. Ada, Boise, Idaho, Latah, Nez Perce, and Washington counties. May–September. Scarce. The biology of this fly is not known.

SUBFAMILY CALLIPHORINAE

Genus *Calliphora*

Robineau-Desvoidy

**Calliphora alaskensis* (Shannon). Hall (1965) placed the species in the genus *Acronesia*. Recorded from Lake Junction, Yellowstone National Park, Wyoming, during the month of August 1927 (Hall 1948). This fly probably occurs in Idaho as a rare species.

**Calliphora aldrichia* (Shannon). Hall (1965) placed the species in the genus *Acronesia*. Recorded from Lake Junction and Old Faithful, Yellowstone National Park, Wyoming, during August 1927 (Hall 1948). Although rare throughout its range (Alaska to Colorado), this species probably occurs in Idaho.

Calliphora coloradensis Hough. Blaine, Boise, Butte, Gooding, Teton, and Valley counties. June–September. Uncommon.

**Calliphora grahami* Aldrich. Hall (1965) placed the species in the genus *Aldrichina*. Recorded from Logan Canyon, Cache County, Utah, from a single specimen collected 9 July 1954. Introduced from China, this species has spread from California since the 1930s to half a dozen western states (James 1955). The species probably occurs in Idaho.

Calliphora lilaea (Walker). Hall (1965) placed the species in the genus *Eucalliphora*. Ada, Adams,

Bannock, Blaine, Boise, Bonner, Butte, Camas, Canyon, Caribou, Cassia, Clearwater, Custer, Elmore, Gem, Gooding, Idaho, Jerome, Latah, Lemhi, Lewis, Lincoln, Nez Perce, Oneida, Owyhee, Shoshone, Teton, and Twin Falls counties. January–December. Common. Adults of this species overwinter. It is the most common of the “blue bottle” flies attracted to carrion in the early spring.

Calliphora livida Hall. Ada, Blaine, Butte, Camas, Elmore, Latah, and Kootenai counties. January–December. Uncommon.

Calliphora terraenovae Macquart. Ada, Adams, Blaine, Boise, Boundary, Camas, Cassia, Lewis, Lemhi, Nez Perce, Oneida, and Twin Falls counties. February–December. Moderately common.

Calliphora vicina Robineau-Desvoidy. Ada, Blaine, Boise, Bonneville, Butte, Canyon, Gem, Nez Perce, Payette, and Washington counties. April–December. Moderately common.

Calliphora vomitoria (Linnaeus). Ada, Blaine, Boise, Bonner, Butte, Camas, Cassia, Custer, Elmore, Franklin, Gem, Kootenai, Latah, Lewis, Nez Perce, Oneida, and Valley counties. April–October. Especially common during the fall of the year.

Genus *Cyanus* Hall

Cyanus elongata (Hough). Hall (1965) reported the species as *elongatus*. Boise, Canyon, Latah, Oneida, and Owyhee counties. May–November. Rare. Little is known about the biology of this species. Specimens collected in Boise County in September were on broken melons in a garden.

Genus *Cynomya* Robineau-Desvoidy

Cynomya cadaverina Robineau-Desvoidy. Hall (1965) placed the species in the genus *Cynomyopsis*. Ada, Adams, Blaine, Boise, Boundary, Butte, Camas, Canyon, Caribou, Cassia, Custer, Franklin, Fremont, Gem, Idaho, Latah, Lewis, Nez Perce, Oneida, and Owyhee counties. April–December. Moderately common. In addition to being attracted to carrion, this species is also attracted to human and dog excrement and fermenting fruit.

Genus *Melanodexia* Williston

Melanodexia idahoensis (Hall). Latah County. May. Rare. Repeated visits to the vicinity of the type locality during May by the author have produced no specimens. Nothing is known about the biology of this species.

Genus *Pollenia* Robineau-Desvoidy

Hall (1965) listed 2 species of the genus *Pollenia* in North America, the widespread *rudis* (Fabricius) and the European *vagabunda* (Meigen) from British Columbia, the latter species being reported by Shewell in 1961. Rognes (1987, 1991, 1992) expanded the number of species to 5. At least 3 occur in Idaho. However, specimens in most collections checked have not been reviewed in light of the more recent classification. Therefore, distribution of the species in the state is uncertain. Data presented for the 3 reported Idaho species are based only on a limited number of specimens in the author's collection. In general, species of this genus have been collected in nature statewide from January to October. These flies are parasites of earthworms (Yahnke and George 1972, Thomson and Davies 1973). They can be a common pest during the winter in buildings where they overwinter.

Pollenia angustigena Wainwright. Boise County. January, March.

Pollenia pediculata Macquart. Rognes (1987) reported the species as *P. pseudorudis* Rognes. Ada County. July–October.

Pollenia rudis (Fabricius). Ada and Boise counties. February–October.

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