ARIZONA GAME AND FISH DEPARTMENT
HERITAGE DATA MANAGEMENT SYSTEM

Invertebrate Abstract **Element Code:** IIEPH39160
Data Sensitivity: No

CLASSIFICATION, NOMENCLATURE, DESCRIPTION, RANGE

NAME: *Rhithrogena plana*
COMMON NAME: A Mayfly
SYNONYMS: *Rhithrogena vitta*
FAMILY: Heptageniidae

AUTHOR, PLACE OF PUBLICATION: Allen and Chao, 1978.

TYPE LOCALITY:

TYPE SPECIMEN: Holotype: CAS-13609 for *plana* by R.K. Allen (female nymph, 23 Jan 1980), and CAS-13610 for *vitta* by R.K. Allen (female nymph, 22 Jan 1980).

TAXONOMIC UNIQUENESS: In North America there are 14 genera and 126 species in this family.

DESCRIPTION: In general mayfly adults have elongate, soft bodies about the same length as the larvae, not including the tails. Mayfly adults can be distinguished from all other aquatic adult insects by the following combination of characteristics: all wings are membranous and have many veins, wings are held together extended above the body when not flying, front wings are large and somewhat triangular in shape, while the hind wings are much smaller and usually rounded, hind wings are missing in some kinds, two or three long, thin tails extend from the end of the abdomen. Distinguishing characteristics of the larvae of this family are there are no thick, plate-like gill protectors on the abdomen. The body length is 5-20 mm (mature larvae, not including antennae and tails). The body and legs are distinctly flattened. The head is especially flat, with the eyes on top and the mouthparts out of sight on the bottom. There are gills on top of most of the abdomen segments at the sides. The gills are thin, flat disks that are round to oval and never have any forks or long pointed filaments.

AIDS TO IDENTIFICATION: See above.

ILLUSTRATIONS: Color drawing of family (Voshell 2002, Plate 55).
Color drawing of family (Borror 1970)
Color photo of family (McGavin 2002)

TOTAL RANGE: New Mexico and Arizona.

RANGE WITHIN ARIZONA: Apache and Navajo Counties.

SPECIES BIOLOGY AND POPULATION TRENDS

BIOLOGY: Mayflies are often an important source of food for fish in streams. Because of the wide range of dissolved oxygen requirements among species, mayflies are very important in biological monitoring of streams because they are sensitive to dissolved oxygen. Some species that develop in lakes or large rivers may be sufficiently abundant that emerging pre-adults and adults can create nuisance problems. Flathead mayflies are clingers. The larvae hold on to surfaces very tightly by means of their flat bodies and legs. They hold on to substrates so tenaciously that they are difficult to remove when collecting specimens. Larvae move on the substrate in a crab-like manner and can walk in any direction with equal ease. Larvae of flathead mayflies are very poor swimmers and if they become dislodged they can only wiggle their bodies awkwardly until they reach another surface. Flathead mayfly larvae demonstrate a behavior pattern called positive thigmotaxis. Organisms with this behavior are stimulated to be continuously in contact with some solid surface. If several larvae are placed in a container of water with no other objects, they will hold on to each other in lieu of any other solid surface.

REPRODUCTION: For the family, subimagoes (pre adults) emerge from the surface of the water. Different species have one or two generations per year. Adults have been collected from March through October. The females always lay eggs in the water. They have the distinction of shedding their skin more times than any other aquatic insect (between 12 and 27).

FOOD HABITS: Herbivorous and detritivorous. The flathead mayflies are primarily scrapers, but also collector-gatherers. The flat head, especially the large upper lip, shields the mouth underneath the head from the current, allowing the larvae to ingest the food dislodged by the mouthparts before it is swept away.

HABITAT: For the family they are primarily lotic-erosional, some lentic-erosional. Flathead mayflies can be found from cool fast-flowing streams to warm slow waters. Flathead mayfly larvae are found in all sizes of flowing waters from brooks to large rivers. Larvae are most common on solid, firmly anchored objects that do not have excessive growths of algae or fungi or accumulations of fine sediments. Preferred substrates are large stones (cobble, boulder, or bedrock) and water soaked wood and leaves.

ELEVATION:

PLANT COMMUNITY:

POPULATION TRENDS: Unknown.

SPECIES PROTECTION AND CONSERVATION

ENDANGERED SPECIES ACT STATUS: None
STATE STATUS: None
OTHER STATUS: None

MANAGEMENT FACTORS:

PROTECTIVE MEASURES TAKEN:

SUGGESTED PROJECTS: Life history studies, population surveys and range distribution studies need to be performed.

LAND MANAGEMENT/OWNERSHIP:

SOURCES OF FURTHER INFORMATION

REFERENCES:

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MAJOR KNOWLEDGEABLE INDIVIDUALS:

ADDITIONAL INFORMATION:

The only common name that is widely recognized for the entire order is mayflies. The explanation of the common name is that many of the species of Ephemeroptera emerge from the water as adults during the month of May. They may be called a number of different common names in certain localities or regions. Some of the local names for mayflies are shadflies, willowflies, duns, and spinners. Shadflies and willowflies probably refer to the fact that many mayflies emerge in the spring, which is when shad migrate upstream into freshwater rivers to spawn and the willows growing along the streams are in bloom. Duns and spinners are common names used by fly-fishing anglers for certain stages in the life history of mayflies. Dun refers to a mayfly in the subimago stage, which is a state that is unique to mayflies. Spinner is the name used by anglers for mayfly adults. The scientific name of the order is a combination of two Greek words: *ephemeros*, meaning lasts a day, and *ptera*, meaning wings. The scientific name refers to the short duration of the adult stage.

Revised: 2005-10-02 (AMS)