

**DEPARTMENT OF THE INTERIOR****Fish and Wildlife Service****50 CFR Part 17****RIN 1018-AH01****Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for the Kauai Cave Wolf Spider and Kauai Cave Amphipod****AGENCY:** Fish and Wildlife Service, Interior.**ACTION:** Final rule.

**SUMMARY:** We, the U.S. Fish and Wildlife Service (Service), designate critical habitat for the Kauai cave wolf spider (*Adelocosa anops*) and the Kauai cave amphipod (*Spelaeorchestia koloana*) pursuant to the Endangered Species Act of 1973, as amended (Act). The critical habitat designation consists of 14 units whose boundaries encompass an area of approximately 110 hectares (ha)(272 acres (ac)) on the island of Kauai, Hawaii. This critical habitat designation requires the Service to consult under section 7 of the Act with regard to actions carried out, funded, or authorized by a Federal agency. Section 4 of the Act requires us to consider economic and other relevant impacts when specifying any particular area as critical habitat. We solicited data and comments from the public on all aspects of the proposed rule, including data on economic and other impacts of the designation.

**DATES:** This rule becomes effective on May 9, 2003.

**ADDRESSES:** Comments and materials received, as well as supporting documentation, used in the preparation of this final rule will be available for public inspection, by appointment, during normal business hours at U.S. Fish and Wildlife Service, Pacific Islands Office, 300 Ala Moana Blvd., Room 3-122, Box 50088, Honolulu, HI 96850-0001.

**FOR FURTHER INFORMATION CONTACT:** Paul Henson, Field Supervisor, Pacific Islands Office, at the above address (telephone: 808/541-3441; facsimile: 808/541-3470).

**SUPPLEMENTARY INFORMATION:****Background**

The Hawaiian archipelago consists of eight main islands and the numerous shoals and atolls of the northwestern Hawaiian Islands. The islands were formed sequentially by basaltic lava that emerged from a hot spot in the earth's crust located near the current southeastern coast of the island of

Hawaii (Stearns 1985). Kauai is the oldest of the main islands, with most of its land mass being formed between 3.6 and 5.6 million years ago (MYA) from a single, large shield volcano, now represented by the Alakai Plateau and adjacent ridges. Younger, secondary eruptions occurred over the eastern portion of the island as recently as the Pleistocene era (approximately 0.6 MYA). Due to the age of the island, the terrain is heavily eroded, with steep water-carved valleys and gulches characterizing the slopes of the Alakai Plateau and other isolated ridges. The Alakai Plateau is one of the wettest places on earth, receiving an average of 1.3 meters (m) (444 inches (in)) of rain annually (Juvik and Juvik 1998). Rain is delivered to the island by prevailing trade winds which come from the northeast. Southern and southwestern portions of the island lie in the rain shadow of the Alakai Plateau, ridges, or other uplands, and receive relatively little rain (NOAA 1990-1999).

The Koloa District lies in the southeast corner of Kauai and includes the town of Koloa and the community and resort area of Poipu. The area is dry to mesic (moderate rainfall), receiving an average of 107 to 223 centimeters (cm) (42 to 88 in) of rain annually. Although the Koloa District includes upland areas such as ridge lines derived from the Alakai Plateau and Haupū ridge, most human-occupied areas lie between sea level and about 183 m (600 feet (ft)) in elevation.

The Koloa area is composed of the youngest rock on Kauai, the Koloa Volcanics (MacDonald *et al.* 1960; Langenheim and Clague 1987), with flows dating from between 0.6 and 1.4 million years. Younger, consolidated marine deposits and lithified sand dunes lie on top of some coastal portions of the older Koloa Volcanics. The great age and subsequent weathering that has occurred on Kauai has resulted in most lava tubes having been collapsed or filled with sediments (MacDonald *et al.* 1960; Howarth 1973; Berger *et al.* 1981; Howarth 1987b), relative to younger islands (*e.g.*, Hawaii) where lava tubes are common features (Howarth 1983a). It is only in portions of the Koloa District, with its younger, cave-bearing rock, relative lack of developed soils, and minimal rainfall and subsequent sedimentation, that caves are known to be relatively common features on Kauai (Howarth 1981).

**Kauai Cave Wolf Spider**

The Kauai cave wolf spider (*Adelocosa anops*) is a member of the wolf spider family (Lycosidae). Spiders

in this family are characterized by a distinctive eye pattern, including two particularly large eyes located within the middle row of eight eyes (Foelix 1982). While wolf spiders are typically visual predators, the most conspicuous physical character of the Kauai cave spider is its complete lack of eyes. This character is unique among wolf spiders and, in part, provides justification for the recognition of a separate genus for this taxon (Gertsch 1973). A few species of wolf spider have reduced eyes, including another cave-adapted species on the island of Hawaii, but only in the Kauai cave wolf spider are the eyes entirely absent. Adults of the Kauai cave wolf spider are about 12.7 to 19.0 millimeters (mm) (0.5 to 0.75 in) in total body length with a reddish-brown carapace, pale to silvery abdomen, and beige to pale orange legs. The hind margin of each chelicera (biting jaw) bears three large teeth, two situated basally, and the third at the outer end of the chelicera. The tibiae (the fifth segment of the leg) of the two front pairs of legs have four pairs of ventral spines, and the tarsi (ultimate segments) and metatarsi (penultimate segments) of all legs bear unusually long, silky, and shiny trichobothria (sensory hairs) (Gertsch 1973).

Dr. Frank Howarth, of the Bishop Museum, first discovered the Kauai cave wolf spider in Koloa in 1971, and it was formally described by Willis Gertsch of the Bishop Museum (Gertsch 1973). The Kauai cave wolf spider is a predator, and although blind, can detect the presence of potential food items through chemo-tactile sensory organs and actively stalks its prey (Howarth 1983a). Although predation has not been observed in the field, the spider probably feeds on the Kauai cave amphipod, other cave-inhabiting arthropods, and alien species of arthropods that enter the cave system. Compared to most wolf spiders, the reproductive capacity of the Kauai cave wolf spider is extremely low, with only 15 to 30 eggs produced in each egg sac (Wells *et al.* 1983; Howarth 1991). Newly hatched spiderlings are unusually large for wolf spiders, and are carried on the back of the female for only a few days (Howarth 1991; Howarth and Mull 1992). Other species of wolf spider may have in excess of 100 offspring per clutch and the newly hatched spiderlings are relatively small (Foelix 1982; Howarth 1991; Howarth and Mull 1992).

**Kauai Cave Amphipod**

The Kauai cave amphipod (*Spelaeorchestia koloana*) was discovered in some of the same caves as