

**AGGREGATION OF *COELOPA* (*NEOCOELOPA*) *VANDUZEEI*
CRESSON ON THE MONTEREY PENINSULA COAST,
CALIFORNIA, AND NOTES ON THE FAMILY
(DIPTERA: COELOPIDAE)**

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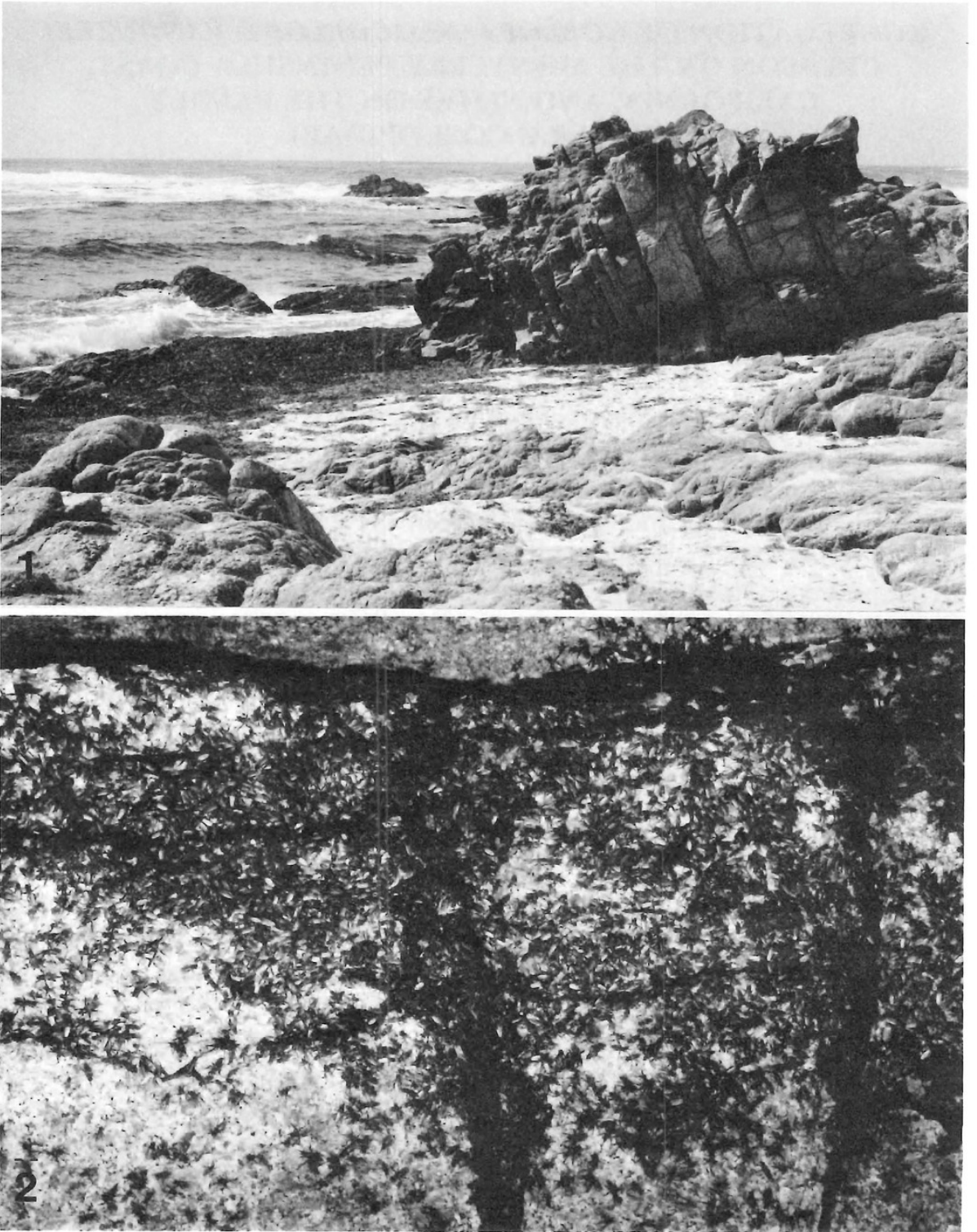
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The kelp fly, *Coelopa* (*Neocoelopa*) *vanduzeei* Cresson is found along our Nearctic Pacific coast beaches from Baja California north to Alaska. Poinar (1977:81, 83) has observed that adults are more abundant on beaches in southern California in the summer than in the winter. Adults may swarm over stranded kelp on beaches and literally darken the adjacent sand with their numbers. Observations on a natural aggregation of *C. vanduzeei*, independent of a kelp or sand matrix, along the central California coast, during the late spring of 1973, illustrated with photographs, are here documented, and observations made by two colleagues are also recorded.

On June 9, 1973, at the Seal and Bird Rocks, located on the 17 Mile Drive of the private Del Monte Properties Company, Monterey County, California, at about 1600 hours daylight standard time, in clear weather, a large aggregation of *C. vanduzeei* was observed and photographed. The aggregation was located on the then lee side of a granitic rock outcrop. The rock outcrop, oriented somewhat at right angles to the incoming surf, measured about 15 meters in length and three meters in height, and even though separated from the shore line, supported a limited vegetation that included the natives *Eriogonum parvifolium* Sm. in Rees and *Spergularia macrotheca* (Hornem.) Heynh., and the introduced *Cakile maritima* Scop. The seaward side of the rock outcrop was bordered by an extensive wrack deposit. The kelp flies in the aggregation were quiescent at the time of my observations.

When *C. vanduzeei* was described by Cresson (1914:457-458) from La Jolla, California, only four specimens were known. Aldrich (1929:1-6) revised *Coelopa* for the Nearctic Region and knew of 119 museum specimens of *C. vanduzeei* from the California coast. Kompfner (1974:44-51) described and illustrated the third instar larva and puparium and provided biological information on *C. vanduzeei* from the population at Pacific Grove on Monterey Bay. Poinar (1977:81-86) studied its biology on a San Diego County beach at Solana Beach and reported differences in the utilization of beach wracks by this southern population from those reported from Monterey Bay.

A review of this small family Coelopidae (with less than two dozen world



Figs. 1, 2. Fig. 1. Granitic rock outcrop, at Seal and Bird Rocks, site of aggregation of *Coelopa* (*Neocoelopa*) *vanduzeei* Cresson. Fig. 2. Aggregation of *C. (N.) vanduzeei* Cresson located near center of granitic rock outcrop illustrated in Figure 1.



Fig. 3. Aggregation of *Coelopa* (*Neocoelopa*) *vanduzeei* Cresson located about a meter and a half from left end of granitic rock outcrop illustrated in Figure 1.

species)—their great abundance, on occasions, and their biology—include the following references. In the Palearctic region Ringdahl (1921:66–67) discussed four species of Coelopidae in southern Sweden. Karl (1931:198) in his paper on Diptera of Amrum and Helgoland Islands, of the North Frisian Islands, Germany, discussed *Coelopa frigida* (Fabricius). Hennig (1937:16) in his fine overview of the Coelopidae revised the Palearctic species, and provided additional information on adult and larval morphology. Oldroyd (1954:198–202) has provided an excellent account of the exceptionally abundant occurrence of *C. frigida* on the south coast of England and their large numbers far inland, chiefly in the London area, and Taylor has discussed their occurrences inland at Oxford (1955a:97) and along the coast at Dawlish, South Devon (1955b:107). Oldroyd reported that *C. frigida* is irresistibly attracted to organic solvents such as trichloroethylene, chloroform, and carbon tetrachloride, and certain paints and a few detergents as well as odors from pharmacists shops. Egglisshaw (1960:109–140) has provided a detailed study of the larval stages and the biology of the five British species of Coelopidae, and reported (1961:11–17) mass migrational flights of *C. frigida* and *C. pilipes* Haliday. In the Australian region, Scotti, Gibbs, and Wrigley (1976:1) report that on the South Australian Coast in New South Wales adults of *Chaetocoelopa sydneyensis* Schiner “. . . congregate during winter in large numbers on the spindrift-moistened undersurfaces of overhanging rocks near the high water level.”

The mechanisms by which the aggregation at the Seal and Bird Rocks could have formed are not known. Possible mechanisms could consist of an independent and individual response to an environmental gradient (or gradients) leading to aggregation in an environmentally optimum location, or individual response to some stimulus (or stimuli) provided by other individuals, leading to aggregation at a common location, or a combination of both as suggested by Kavanaugh (1977:27–31) with an aggregation of the carabid genus *Scaphinotus*. The length of time that such aggregations remain intact is not known but due to the flight capabilities of the kelp flies they could be rapidly decreased in size or terminated in response to some new stimulus (or stimuli). The flies did not seem to be disturbed by my close proximity in their observation or by the taking of the flash pictures. Considerable dispersal did occur, however, when a net was used to collect voucher specimens. J. R. Vockeroth (in a letter dated March 17, 1975) reported that on July 4, 1973, at the base of low cliffs at Carmel, California that several feet of the cliff were virtually black with *C. vanduzeei*, but in contrast they all flew as he approached. V. F. Lee (in conversation) reports observations of kelp flies thought to be *C. vanduzeei*, made near Bolinas Point, Marin County, California, on October 5, 1979. He noted some individuals along the beach cliff flying into the prevailing wind, others flying into the eddy of the lee, and many present on the lee surface of the cliff, crawling toward the windward edge.

Scotti, Gibbs, and Wrigley also report that adult *Chaetocoelopa sydneyensis* carry a virus, which they named kelp fly virus (KFV). It appears to be distinct from other previously described viruses. As mentioned by Poinar (1977:85), adults of *C. vanduzeei* in California can "... become a general nuisance to people, alighting on their bodies and are sometimes seen around the eyes of children." A study of the kelp fly virus, relative to our kelp flies, has not been made.

Acknowledgments

The author acknowledges with thanks the aid of: Brian H. Cogan and James P. Dear, British Museum (Natural History), for furnishing a copy of the Oldroyd reference; Maurice C. Giles, California Academy of Sciences, for the photographic prints used in Figures 1 to 3, made from negatives on Kodak Panatomic-X film; John T. Howell, California Academy of Sciences, for plant identifications; Vincent F. Lee, California Academy of Sciences, and J. R. Vockeroth, Canadian Department of Agriculture, for sharing information on their observations of California kelp flies; George O. Poinar, Jr., University of California, Berkeley, for supplying a copy of the Scotti et al. reference and other information; George C. Steyskal, United States Department of Agriculture, for the confirmation of the identification of the *Coelopa* and for references; and Madeline M. Arnaud and Nicole van Baal for their interest and participation in this and other fieldwork.

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