

### Introduction

The rabbit and rodent bot flies<sup>1</sup> have interested entomologists and parasitologists for many years because of their bulky bodies, and because of the large boil-like swellings (warbles) that the larvae cause beneath the skin of their hosts, various lagomorphs (rabbits and hares) and rodents. The warbles have also attracted the attention of mammalogists, veterinarians, and hunters who have handled these animals (Figs. 1-4). The story of the "emasculating bot"—a misinterpretation (see discussion under *Cuterebra emasculator*)—has intrigued many people and has been cited on numerous occasions. In recent years, in particular, cases of human myiasis, including even ophthalmomyiasis and warbles in very young infants, have attracted the attention of medical doctors (Baird et al. 1982). Finally, a species of *Cuterebra* has been used to parasitize white mice in the laboratory for screening systemic insecticides (Drummond et al. 1970, Gingrich et al. 1972). In the last three decades, at least nine doctoral dissertations have been devoted to one or more species of *Cuterebra* (e.g., Haas 1957, Smith 1975), as well as ten dealing with mammals but recording information on *Cuterebra* as parasites of the host species.

Swenk (1905), in the first revision of the genus in this century, recognized 20 species of *Cuterebra* from "the mainland of North America," but one of those was strictly Neotropical and four names are now in synonymy. Townsend (1917) recognized 15 species, but he was dealing only with material in the U.S. National Museum, apparently about 108 specimens. Chillcott (1965), in the "Catalog of the Diptera of America North of Mexico," listed 26 species, but 10 of these are now placed in synonymy (including one as a subspecies and one as a variety); on the other hand, three of his synonyms are here recognized as distinct species. The present revision has a total of 34 named species (12 new), three subspecies (two new), and one variety, and is based on a total of 3,196 specimens, of which 800 had been reared (Table 1). Of the 52 available names (including synonyms and new species) of *Cuterebra* s. str. (i.e., the Nearctic group), I have studied the types of all but five (*buccata*, *cuniculi*, *emasculator*, *enderleini*, and *subbuccata*), and of these only that of *enderleini* is known to exist.

In spite of the interest and attention that these flies have received, identification of the species has not been satisfactory. Comprehensive keys to the Nearctic Cuterebridae were published by Brauer (1863), Swenk (1905), Townsend (1917), and Bau (1929a, 1931b), each in turn reflecting

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<sup>1</sup>The expression "bot flies" is commonly applied to adults of the broad and thick, grublike dipterous larvae that parasitize mammals. Perhaps it would be more logical to distinguish between warble flies (*Cuterebra*, *Hypoderma*), with larvae living in boil-like swellings beneath the skin, and bot flies (*Oestrus*, *Cephenemyia*, *Gasterophilus*), with larvae attached to or living in the host but not ensconced in a warble, but virtually universal usage calls them all bot flies. The terms "bot" and "warble" are certainly not interchangeable: a bot is a larva, whereas a warble is a subcutaneous swelling in which a larva lives.