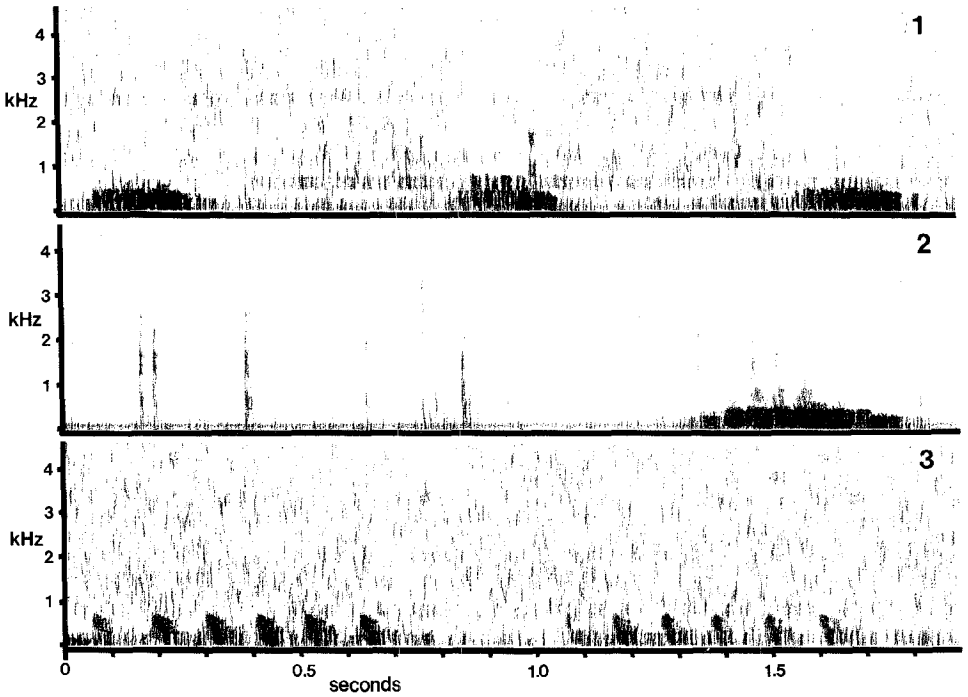
A COMMON METHOD OF SOUND PRODUCTION BY COURTING JUMPING SPIDERS (ARANEAE, SALTICIDAE)

There have been only a few reports of sound production by salticids (Bristowe 1929; Edwards 1981; Maddison 1982; Gwynne and Dadour 1985), spiders which have been thought to rely heavily on visual communication (Jackson 1982:246). Our recent recordings of jumping spider courtship have now confirmed that the behavior of abdomen twitching, widespread in the family, produces a sound, as anticipated by Jackson (1978, 1982:218), which is easily recorded and possibly significant. To record both sound and behavior, spiders were placed on a piece of light cardboard taped over a Pressure Zone Microphone® ("Sound Grabber", Crown, Inc.) connected to a Pentax™ Video Recorder which also received video input from a JVC™ color video camera (Model 6X-N74™ with 105 mm macro lens). Eighteen North American species were recorded: six *Habronattus* species (see Maddison and Stratton 1988), *Maevia inclemens* (Walckenaer), the dendryphantines *Eris aurantia* (Lucas), *Eris limbata* (Banks), *Metaphidippus watonus* Chamberlin & Ivie, *M.* cf. *manni* (Peckham & Peckham), *M.* cf. *galathea* (Walckenaer), *Phidippus* cf. *comatus* Peckham & Peckham, *Sassacus papenhoei* Peckham & Peckham, *Tutelina elegans* (Hentz), and *T. formicaria* (Emerton), and the euophryines *Habrocestum pulex* (Hentz) and *Tylogonus*



Figs. 1-3.—Sonagrams of sounds made by abdominal twitching during dendryphantine courtship: 1, *Metaphidippus cf. manni*, showing sounds from three abdominal twitches; 2, *Phidippus cf. comatus* (the vertical streaks at left result from the palp hitting the substrate; the dark spot at right results from abdomen twitching); 3, *Sassacus papenhoei*, showing sounds from 11 abdominal twitches. Analyzed using a Kay Sonagraph 6061B®.

morosus (Peckham & Peckham). These species are all found frequently on foliage or leaf litter. In nine of these species, *E. aurantia, M. watonus, M.* cf. *manni, P.* cf. *comatus, S. papenhoei, Habronattus cognatus, H. conjunctus, H. elegans, H. borealis*, the males would occasionally twitch the abdomen down and up during courtship, at the same time emitting a buzzing or purring sound at frequencies mostly below 500 Hz (Figures 1-3; suitable sonagrams were not obtained for *M. watonus* and *E. aurantia*). Though one would have expected the abdominal twitches to generate some vibrations, it was surprising that they were strong enough to be recorded as airborne sounds by our relatively crude equipment. The other species were not seen to twitch the abdomen nor were they heard to make such noises, except one subadult female of *Eris limbata* who buzzed her abdomen while a male was courting. In all species the abdomen contacts neither the substrate nor the carapace while twitching. The sound may be produced by the legs recoiling and striking the substratum on each of the abdominal twitches, although in most species these twitches appear gentle. Because this abdominal twitching is hidden and seems unlikely to function as a visual stimulus to the female (Jackson 1982), if it has a communicatory function at all it is probably via the vibrations produced and transmitted through the substrate, though this has yet to be tested experimentally. Given the ubiquity of abdominal twitching in salticid courtship, it therefore appears that acoustic communication in salticids may be the rule, rather than the exception.

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Wayne P. Maddison, Museum of Comparative Zoology, Harvard University, Cambridge, Massachusetts 02138 USA; **Gail E. Stratton**, Department of Biology, Bradley University, Peoria, Illinois 61625 USA (present address: Department of Biology, Albion College, Albion, Michigan 49224 USA).

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