How-To-Do-It

Videotape for the Behavior Lab

A Useful Tool

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Observing, recording and interpreting animal behavior firsthand is most efficient when the observor and the organism are close in time and space, an instructional encounter sometimes difficult to orchestrate. Field observations are not always possible because of bad weather or because some behaviors occur at times and places that prevent inclusion in lab activities.

This is especially true of behaviors associated with reproduction, which are fascinating to beginning animal behavior students. Even if such experiences can be arranged, student inexperience may preclude meaningful observation and data gathering. Finally, students may complete a series of lab exercises with a fragmented view of behavior rather than seeing it as an integrated whole. Not only may some of these problems be alleviated, but using videotapes can enrich behavior labs also.

Videotapes of events recorded in natural settings provide the instructor with a versatile tool for designing laboratory exercises. Individual behaviors and group interactions can be observed, quantified and analyzed from videotapes. Students can go back over behavioral sequences in slow motion or frame by frame to analyze in detail rapid action sequences (see Carpenter 1983).

Early models of video recording equipment were bulky and not well suited for field use. However, recent models produce very high quality visual records and are easily field portable. Internal nickel cadmium batteries (provided with most portable systems), which last a maximum of one and a half hours, are suitable for taping events of short duration. For longer recordings in the field, video equipment may require minor equipment modifications. To allow continuous recordings of up to seven hours, the recording system can be powered by a car battery. Most systems come with an adapter cable which plugs into a car cigarette lighter. We purchased a cigarette lighter assembly in an autoparts store and attached it across the terminals of a car battery. This adapter cable we then plugged into the lighter assembly. The battery then powered the camera and recorder for a full seven and a half hours. Batteries can be recharged at most service stations or by the generating system of a car. Alternating batteries between the video equipment and the car works effectively if no service station is handy.

Figure 1. Video camera, recorder and battery set to record behavior in a cormorant colony. The equipment is protected by garbage bags to prevent splattering by gulls.

We have used video systems to record the behavior of colonial water birds and small nocturnal mammals. Colonial waterbirds such as gulls, terns and cormorants quickly habituate to dummy cameras placed in colonies prior to clutch initiation. We use small boxes on posts for this purpose.

We used two strategies to increase

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the scope and usefulness of videotapes recorded in Double-crested Cormorant (*Phalacrocorax auritus*) and California Gull (*Larus californicus*) colonies in central Alberta. First, we focused the camera on a large portion of the colony (Figure 1). This way we could view several territories simultaneously, including both interspecific behaviors (e.g. reactions to predators) and individual behaviors (e.g. food begging or preening). Secondly, we focused the camera on one or two individual nests. This made it easy to observe individual behaviors such as incubation, nest relief, feeding, etc. in greater detail. These strategies can be used during the entire nesting period, allowing both individual and colonial behavior to be collected. Edited tapes can combine behavior sequences over the duration of the nesting period and give the student a feel for the continuity of behavior while at the same time emphasizing changing patterns (e.g. feeding behavior of nestlings).

In order to collect data on the grooming behavior of the deer mouse (*Peromyscus maniculatus*), we modified an aquarium to form an arena. Two mirrors, placed in the aquarium at an angle to each other and cemented in place with silicone, allowed the mouse to be viewed from all sides (Figure 2). Using a red 15-watt light and a video camera sensitive to low light levels, it was possible to observe grooming and wheel running behavior under close to natural light levels (Figure 3). The videotapes we then used to construct time budgets and to analyze activity sequences. Other applications of data such as the construction of ethograms, determination of rates of behavior and statistical testing of hypotheses can be incorporated into laboratory exercises (Kisiel 1975).

Although quality photographic prints of video images are not readily obtainable, which is a small disadvantage, videotapes have several advantages over field experiences. All students are exposed to the same behaviors from exactly the same point of view and in exactly the same time frame. The instructor can evaluate descriptive and quantitative data obtained by the student. Instructional opportunity is provided by the easy review and stop-action features of most systems. Compared to conventional photography, video systems, in addition to being less expensive, can be used for recording long sequences of continuous behavior. Video systems may include internal clocks, or clocks may be placed within the field of view of the camera. This facilitates temporal analysis of observed behaviors. Since our system lacked internal timers, we placed clocks in the field of view of the camera. The simultaneous recording of audio events and images permits the easy linkage of vocalizations and behaviors. Complex behaviors such as agonistic encounters, locomotion, displacement and intention movements can be studied in stop action detail (Lehner 1979).

While observing a video recording cannot replace the essential quality of hearing, seeing and smelling the events as they happen in the field, it is the next best thing to being there. Indeed, behavior labs using this technique may provide introductory experiences which can make subsequent field experience more efficient and enjoyable.

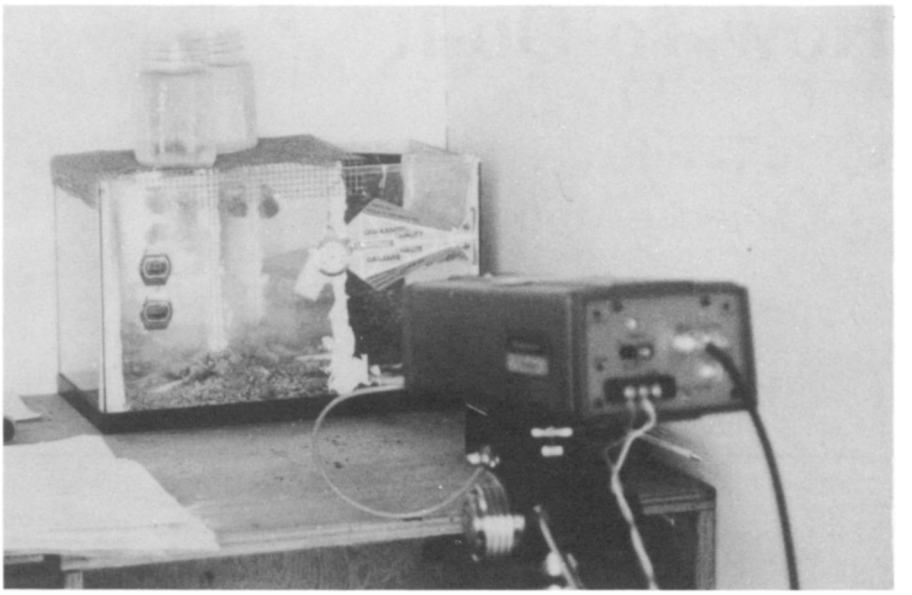

Figure 3. Video camera and area for recording *Peromyscus* grooming behavior. The watches allow activities to be timed.

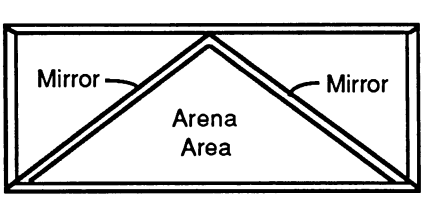

Figure 2. Top view of a modified aquarium used in an arena for video recording *Peromyscus* behavior. The mirrors may be placed at any suitable angle which permits viewing the subject from all sides simultaneously.

References

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