

APPARENT OBJECT PLAY IN THE NORTHERN HARRIER

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Animal play is notoriously difficult to describe, particularly in birds (Ficken 1977). Play is most common in the young of a species (Loizos 1966), a life stage when conflicting environmental pressures are reduced by parental care. In 11 of the 13 orders of birds for which play has been reported, the young are altricial (Ortega and Beckoff 1987). Beckoff and Byers (1981) classified avian play into three categories: locomotor play (primarily play in flight), object play, and social play. Play with objects, reported for eight avian orders (Ortega and Beckoff 1987), is widespread in wild populations of birds of prey (see Ficken 1977) and may involve manipulating prey animals or inanimate objects such as twigs or stones. During play, an object is often carried into the air, dropped, and then caught with the feet, with the act repeated many times (Ficken 1977). We report here on object play by the Northern Harrier (*Circus hudsonius*). Ours is not the first report of play in the Northern Harrier (Sumner 1931), nor of harriers playing with inanimate objects (Bildstein and Hamerstrom 1980, Bildstein 1992). We describe repeated acts that constitute the first report of play by a Northern Harrier with an unknown inanimate object, and speculate on why this activity may lend fitness to an individual harrier.

On 4 August 2022, within Point Reyes National Seashore in Marin County, California, we were examining coastal breeding habitat for the California Red-legged Frog (*Rana draytonii*). Afterward, along the Abbott's Lagoon Trail, we hiked over sand dunes along the western edge of the northern arm of the lagoon until we came to a cove. Within several minutes of our arrival, Myers interrupted a discussion to point out a juvenile Northern Harrier flying perpendicular to, and 50 meters to the north of us, carrying what appeared to be (as viewed through 8× binoculars) a small rodent in its talons. We aged the bird by its streaked breast and tawny wash over the ventral surface (Figure 1) (Smith et al. 2020). We first sighted it gliding (rectrices closed) east, descending and paralleling a low sand ridge (~5° slope). It braked slightly and dropped the object it had been carrying (Figure 2), which fell nearly straight, and at such velocity that we began to question whether it was a rodent or something offering less air resistance. A second after releasing the object, the harrier rolled into a stoop (Figure 3) to pursue the dropped object, assuming a steep descent and dropping out of sight behind willow trees (*Salix* sp.), which formed a dense canopy along the ridge about 10 meters below the harrier's flight path. Within seconds it was pumping back up to resume its altitude and flight path with the object in its grasp, apparently having retrieved it before it was lost in the dense, wind-stunted willows, or fallen to the ground. It repeated this drop-and-catch pattern 4 times over approximately 100 meters until it flew out of sight.

Sumner (1931) observed a Northern Harrier of unknown age manipulating a live Horned Lark (*Eremophila alpestris*) by repeatedly dropping it to the ground from a meter or two in the air. On a few occasions the harrier landed beside the Horned Lark and then pounced on it with one foot. After the harrier had picked up and dropped the lark seven to eight times, the two disappeared into tall grass. After waiting 10

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FIGURE 1. Juvenile *Circus hudsonius* gliding along a low sand ridge holding an apparent stone with its right foot. Abbott's Lagoon, Point Reyes National Seashore, 4 August 2022.

Photo by Luc Myers

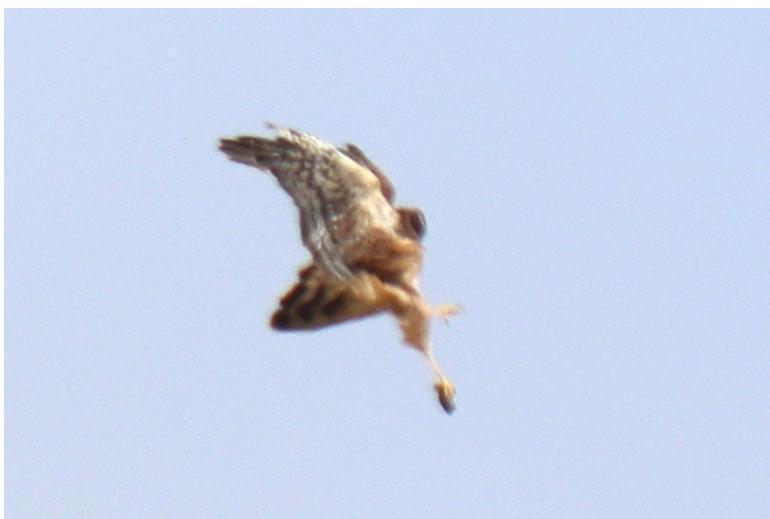


FIGURE 2. Juvenile *Circus hudsonius* braking to release an inanimate object before pursuing it as it falls. Note that it appears the object is being held in the left foot but it is in free-fall behind the left foot. Abbott's Lagoon, Point Reyes National Seashore, 4 August 2022.

Photo by Luc Myers

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FIGURE 3. Juvenile *Circus hudsonius* mid-stoop, pursuing the object just released from its talons. Abbott's Lagoon, Point Reyes National Seashore, 4 August 2022.

Photo by Luc Myers

minutes, Sumner approached the spot and found the Horned Lark mostly consumed. Bildstein (1992) observed recently fledged juvenile Northern Harriers pounce on, and play with, inanimate objects, primarily corn cobs. Ultimately, our observation of object play by a Northern Harrier also involved an inanimate object. Although Myers's photos of the object leave its true nature a bit ambiguous, from study of the digital images and the apparent velocity at which the object fell when dropped, we conclude that it was most likely an oblong stone. Thus our observation differed from those described above in that during the time we witnessed the play behavior, the object was never allowed to hit the ground. In fact, that seemed to be the purpose of dropping and catching, and since the object was never grounded, we did not observe the pouncing behavior described by Sumner (1931) and Bildstein (1992).

In predatory birds, object play may be an important way by which the young acquire skills in catching and manipulating prey (Ficken 1977). For fledgling harriers, catching prey in flight is critical to obtaining food because parents feed fledglings by transferring prey to them in flight (Bildstein 1992). In fact, Bildstein observed that fledgling harriers spent little to no time hunting; he never observed a fledgling capture live prey. Instead, most flights were either for exercise, or directed toward returning parents carrying food. Thus repeatedly dropping and catching inanimate objects, especially those that fall quickly, may be a way for young to develop the motor skills needed for successful prey transfer. Such prey transfer increases fitness for young and adults alike and ensures juvenile harriers that survive to reproduce have acquired a skill necessary to feed their own offspring. Our observations of object play in harriers differ from those of Sumner (1931) and Bildstein (1992) in that

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theirs seem to have been practice for killing prey, whereas the harrier we observed appeared to be focused solely on practicing prey transfer.

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