

## PLAY BEHAVIOR BY AN ANHINGA (*Anhinga anhinga*)

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The various behaviors called play, so prominent and widespread among humans, have also been observed in a growing number and variety of other animals (Burghardt 2005). Here I report a previously undescribed behavior of an Anhinga (*Anhinga anhinga*) that appears to qualify as play.

Sandra Marraffino of Rainbow Springs was kayaking near the headsprings of the Rainbow River, Marion County, Florida at about 1000 on 5 February 2017 when she observed an Anhinga repeatedly tossing a feather into the air. The Anhinga threw the feather upward and caught it three times (Figs. 1, 2). On the fourth toss the feather fell into the water and the Anhinga picked it up (Fig. 3). Marraffino then lost sight of the Anhinga as the current moved her kayak away (S. Marraffino, pers. comm.).

The Anhinga appears to have been in a plumage preceding the definitive adult feathering acquired in the third calendar year (Frederick and Siegel-Causey 2020). The feather it threw resembles a tail feather of an Anhinga.

This behavior exhibits some of the dozen or so characteristics used by various authors to define the term play. According to the most commonly cited of these, play seems to serve no immediate purpose, it is repeated, and it gives the impression of being voluntarily initiated (Burghardt 2005).

The types of play are commonly divided (e.g., Fagen 1981, Burghardt 2005, O'Hara and Auersperg 2017) into three broad categories: locomotor play, such as running and jumping; social play, such as chasing or mock fighting with others, usually conspecifics; and object play, such as picking up and manipulating inanimate materials. These categories are not mutually exclusive.

Object play has been "proposed to constitute an important factor in developing skills concerned with physical problem solving" (O'Hara and Auersperg 2017:119), which is to say, practice. Object play may be useful as well in developing skill at problem solving, especially in generalist large-brained and occasionally tool-using birds such as parrots and corvids (O'Hara and Auersperg 2017).

Play of one kind or another has been claimed for a wide range of non-human mammals (Burghardt 2005) including dolphins (DelFour et al. 2017) and domestic dogs (Bekoff 2015), many species of birds (Ficken 1977, Ortega and Bekoff 1987), fish (Burghardt 2015), possibly invertebrates such octopuses (Burghardt 2005), and even tyrannosaurs (Rothschild 2015). Play is generally more common among juveniles than adults (e.g., Biondi et al. 2013), and adult play seems to occur mainly in species with opportunistic foraging habits (O'Hara and Auersperg 2017).

Ortega and Bekoff (1987) found plausible descriptions of play among 13 orders of birds, including groups as varied as penguins, falcons, swifts, and songbirds. Among these, play was far more common among altricial rather than precocial species, and object play was the most common type reported.

Anhingas have not previously been reported to toy with feathers, but young Anhingas have been seen throwing and catching sticks and other plant material (Stevenson and Anderson 1994, Davis 2015). Object play has been reported a few times among relatives



**Figure 1.** An Anhinga on the Rainbow River, Florida, 5 February 2017, as it throws a feather in the air. Photograph by and courtesy of Sandra Marraffino.

of the Anhinga. Sazima (2019) saw an Australasian Darter (*A. novaehollandiae*), apparently a sub-adult, repeatedly throw and catch a “pod” (seed pod?). Young Great Frigatebirds (*Fregata minor*) pick up floating objects such as leaves and then drop them. Cormorants (*Phalacrocorax* spp.) likewise have been observed playing with fish, rocks (Ficken 1977), and various plant parts such as twigs and leaves (Sazima 2008; S. Marraffino, pers. comm), though not with feathers.

Several more distantly related species have been reported to play in ways similar to the behavior of this Anhinga. Ravens (*Corvus* spp.) drop bits of plants and catch them in the air (Ficken 1977). Swallows are known to play with feathers (Ficken 1977). Kasambe (2011) reported a River Tern (*Sterna aurantia*) repeatedly picking a stick from the water, dropping it, and retrieving it from the water.

Practice play incorporates movement patterns from real functional contexts (O’Hara and Auersperg 2017). The object play Marraffino observed is reminiscent of the way



**Figure 2. The Aninga catches the feather on the Rainbow River, Florida, 5 February 2017. Photograph by and courtesy of Sandra Marraffino.**



**Figure 3. The Aninga retrieves the fallen feather from the water on the Rainbow River, Florida, 5 February 2017. Photograph by and courtesy of Sandra Marraffino.**

in which Anhingas will toss a fish to catch it with the open bill before swallowing it (Frederick and Siegel-Causey 2020). This relatively young Anhinga may have been practicing the finely tuned movements needed to intercept an unpredictably falling object such as a fish.

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