

ALLOPARENTAL CARE OF DUCKLINGS BY UNRELATED MALE SPECKLED TEAL *ANAS FLAVIROSTRIS* IN EASTERN ARGENTINA

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Observations of alloparental behaviour by male Speckled Teal (Anas flavirostris) toward unrelated ducklings in a eucalyptus grove near Santa Teresita, Argentina. Males assisting their mates in nest prospecting were observed defending, and ultimately escorting away from the nest site, unrelated ducklings abandoned at the nest site by the brood female. This is the first recorded observation of alloparental care in this species and provides additional support for the existence of male parental care in this species.

Key Words: Speckled Teal, dabbling ducks, alloparental care

Alloparental care, (i.e. care of young by non-parental conspecifics), has been widely reported in some groups of birds. A number of studies have also documented the adaptive nature of helper systems in rearing young (e.g. Gray-crowned Babblers, Brown *et al.* 1982; Florida Scrub Jays, Woolfenden & Fitzpatrick 1984; Acorn Woodpeckers, Koenig & Mumme 1987; White-fronted Bee-eaters, Emlen 1990). In nearly all of these cases however, the alloparental care has been performed by either kin or with a demonstrated benefit to the fitness of the helper in terms of future compensation. In contrast, several non-adaptive explanations of alloparental care have been proposed including reproductive errors (Roberts & Hatch

1994), non-recognition of visitors as strangers (Poole 1982; Holley 1984), unusually high breeding pair densities (Patterson *et al.* 1982; Donazar & Ceballos 1990), and brood mixing with accidental adoption (Pienkowski & Evans 1982; Tella *et al.* 1997). In these cases, alloparental care and even adoption (movement by young into new families and acceptance of adoptee by parents) typically occurs when foster parents have young of their own or have recently lost a clutch and may be hormonally 'primed' to perform parental behaviours.

Two cases of alloparental care were observed, of non-offspring by male Speckled Teal *Anas flavirostris* while observing a study population on the

Estancia Los Yngleses in central Buenos Aires province, Argentina between 1991 and 1994. Biparental care has been documented in this species (Port 1998a) and teal pairs preferentially select arboreal cavities in which to nest. In both cases, the males were believed to be prospecting for nest sites with their mates when the alloparental care behaviour occurred. Also described are protective behaviours by non-parental males in response to aggression by females and perceived threats to ducklings by human observers.

Results

On 8 October 1992, five ducklings hatched in a nest belonging to marked female GyRy. During nest exodus, two ducklings were late in emerging from the cavity and were abandoned. These two ducklings remained at the base of the nest tree for several minutes, each attempting to follow several adult birds present in the area. When one duckling was pecked repeatedly by a female, a male approached and proceeded to lead the duckling away from the female. When an observer attempted to approach the lone male and duckling, the male performed a distraction display until the observer retreated. This display, accompanied by vocalisations in a manner similar to that described for female *Anas* by Johnsgard (1968), consisted of exaggerated wing flapping and repeated attempts to lead the observer away from the duckling. The lone male then led the duckling across the pasture to a nearby wetland where they disappeared. It is very unlikely that this male was the parent of the duckling. While the location of the putative biological father was not known at the time of nest exodus, males present during exodus always accompanied their

departing mates (Port 1998b).

On 28 September 1994, female RoRΔ departed from the study grove with a brood. Exodus occurred prior to sunrise and was not observed but the female was radio marked and was located subsequently on a nearby wetland accompanied by three ducklings and her marked mate. All ducklings in the brood had been individually identified with specific combinations of web punches prior to exodus. Shortly after sunrise, a lone duckling was observed in the company of several adult teal near the nest site. When approached, a male performed a distraction display (similar to that described above) for approximately 30 seconds before flying away. The duckling was captured and identified as belonging to RoRΔ female's brood. Since RoRΔ's mate was marked, the male performing the distraction display was not the putative parent of the duckling.

Two additional observations were made involving males and unrelated offspring. On both occasions paired females chased unescorted ducklings while their mates defended the ducklings. The males ultimately followed their mates, leaving the ducklings behind. On 8 October 1992, a brood became separated during nest exodus and several ducklings began following putatively unrelated females. Male A shielded the ducklings from his mate and then performed a Point-Beside display (called Greeting by Lorenz 1971) beside the ducklings toward his mate. The target birds in this behaviour are the ducklings broadside to his display. This display is performed frequently by a male Speckled Teal beside his mate as a greeting, with warning overtones toward the approaching bird. Male A remained with the ducklings briefly following the departure of his mate. When several

ducklings attempted to follow a second female, her mate, Male B, shielded the ducklings from his mate's peck attempts.

On 19 November 1992, a similar observation was made as a brood became scattered during exodus. Several females pecked aggressively at the ducklings and one male attempted to shield a duckling from attacks by his mate. Neither the male nor female was known to be the parent of the duckling.

Discussion

Interest in ducklings by pre- or post-breeding individuals has been noted in several waterfowl species. Brewer (1996) documented the adoption of two White-cheeked Pintail *A. bahamensis* broods by captive, paired male Chiloe Wigeon *A. sibilatrix* during the incubation period. Brood amalgamations were also noted among captive and wild pairs of Chiloe Wigeon with broods of their own. Weatherhead (1979) describes the defense of a female Northern Shoveler *A. clypeata* and brood by Common Eiders *Somateria mollissima* from Herring Gull *Larus argentatus* attacks. In both cases of alloparental care reported here in Speckled Teal, males protected and escorted apparently unrelated ducklings even though they currently had no young of their own and their mates had apparently not yet selected nest sites.

While the period of observation of these individuals was limited, the behaviour of the males and ducklings involved promotes speculation. In Speckled Teal, males are actively involved in nest searching, nest defense, and parental care. Parental care in birds has been demonstrated to be under the partial control of hormones (Buntin 1996) and

during the pre-nesting period males probably have elevated hormone levels similar to those observed in nesting females. Since males do not incubate, they do not form bonds with ducklings prior to hatch, and bonding would normally occur during and after exodus from the nest cavity. A breeding male may reach a hormonal state where he is 'primed' to accept ducklings and perform distraction displays when they are threatened. Interestingly, studies using passerine species in which males provide parental care have found that levels of testosterone are elevated prior to breeding and decrease during the period of parental care. When testosterone levels are elevated experimentally, male parental care decreases (Ketterson *et al.* 1992; Saino & Moller 1995; Schoech *et al.* 1996). During nest prospecting, male Speckled Teal probably have elevated testosterone levels yet performed alloparental care behaviours in response to the presence of unrelated ducklings.

It is believed the observations of defense and alloparental care of ducklings in Speckled Teal are the result of reproductive error, enhanced by an elevated hormonal state maintained during the breeding season and related to the selective pressure for male nest defense and subsequent parental care. Arboreal nesting may select for strong male parental care behaviour in this species (Port 1998b). Weatherhead (1979) attributed interspecific defensive behaviour by post-breeding eider females to high hormonal levels maintained following breeding, and a similar explanation may apply here.

When paired males were present near the nest during exodus, they accompanied their mates and broods to the brood-rearing areas. Several males escorted ducklings that strayed during exodus and

performed distraction displays in response to threats to their broods (Port 1998b). One female performed a distraction display during exodus in response to an attack on the brood by an Aplomado Falcon *Falco femoralis* and male responses may provide the brood with similar protection from predators during exodus. Attacks on ducklings may have a releaser-like effect on males, eliciting defensive behaviour among non-parental males due to its similarity to the correct stimulus in normal brood-rearing situations.

It is believed that several of the hypotheses proposed to explain alloparental care in other species clearly do not apply to Speckled Teal. Pienkowski & Evans (1982) proposed that adoption resulted from accidental brood mixing. In the observations reported here, teal males displayed parental behaviour prior to nesting and lacked broods of their own, thus accidental mixing does not adequately explain their behaviour. Poole (1982) and Holley (1984) explained adoption in Ospreys *Pandion haliaetus* and Herring Gulls, respectively, as the result of non-recognition of visitors to the nest site. Since male teal do not incubate, and teal have precocial young that exit the nest soon after hatch, identification of young through association with a nest site is unlikely, particularly in light of the pre-nesting status of the males.

Unlike males, females establish early bonds with the brood during incubation and brooding. Pre-incubation females lack this early bonding with the brood and may not be hormonally prepared to accept ducklings. The aggressive female responses to unrelated ducklings suggest that females strongly resist accepting strange ducklings. Females never demonstrated an interest in abandoned ducklings and either ran away from or chased and pecked the unrelated

ducklings. This suggests that brood amalgamation may not be advantageous to females in this species and may even be a liability (see Eadie *et al.* 1988 for review of costs and benefits of brood amalgamation).

A final hypothesis attributes accidental adoption to unusually high breeding pair densities (e.g. Patterson *et al.* 1982). Speckled Teal frequently nest in the abandoned nest cavities of Monk Parakeets *Myiopsitta monachus* (Port 1998a) and as is the case at Los Yngleses, Monk Parakeets often nest colonially, so that several or many teal females may be nesting in close proximity. This suggests that high breeding pair densities are not unusual in this population and teal may be adapted to breeding under these conditions.

Ducklings may interpret alloparental behaviours as indicative of a parental bond, particularly when performed by a male. The bonds ducklings form with parents during the first week of life are unstable and ducklings scattered during this period may not reform bonds with parents easily (Schmutz *et al.* 1982). Speckled Teal ducklings scattered during exodus often attempted to follow numerous individuals before successfully rejoining the brood female (Port 1998b).

Newly-hatched Speckled Teal ducklings, like all *Anas* offspring, will not survive independent of their parents. Unescorted ducklings are unlikely to locate wetlands or survive the journey to them, a journey of several hundred meters in most cases. In addition, ducklings require brooding in the first two weeks after hatch to maintain adequate body temperature and provide oils for waterproofing the down (McKinney 1969; Seymour 1982). In the absence of the brood female, ducklings appear to respond to positive male behaviours to the extent of following

unrelated males away from the nest site.

Without further observations it is impossible to conclude whether these unrelated males remained with the ducklings after leaving the nesting area and whether adoption took place. Brood amalgamation itself is well documented among waterfowl but generally has been observed to occur among pairs with broods of their own and not pre-nesting individuals, particularly males. These observations of alloparental care by unrelated male Speckled Teal indicate the need for further investigation.

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