

# Aberrant plumage in the Yellow-billed Pintail

## *Anas georgica*

ROBERT E. WILSON<sup>1</sup>, THOMAS H. VALQU<sup>2</sup> &  
KEVIN G. MCCRACKEN<sup>1</sup>

<sup>1</sup>Institute of Arctic Biology, Department of Biology and Wildlife & University of Alaska Museum, University of Alaska Fairbanks, Fairbanks, AK 99775, USA.

Emails: ftrew1@uaf.edu & fnkgm@uaf.edu

<sup>2</sup>Louisiana State University Museum of Natural Science, 119 Foster Hall, Louisiana State University, Baton Rouge, LA 99775, USA.

Email: tvalqu1@lsu.edu

### Abstract

Plumage aberrations are common, particularly in waterfowl. There have been numerous proposed causes including the retention of ancestral plumage characters that contain phylogenetic information. A partial white neck ring was observed in Yellow-billed Pintail *Anas georgica spinicauda* near Cusco, Peru. Non-typical white neck rings have been reported in other waterfowl species. Although the exact cause is unclear, its reoccurrence in other species and the consistent placement suggest that this unusual plumage could be of evolutionary significance.

**Key words:** plumage aberration, Yellow-billed Pintail, *Anas georgica*, Peru.

Plumage aberrations that deviate from typical plumage colour patterns are common, and their prevalence varies among species (Hicks 1934; Michener & Michener 1936; Nero 1954; Gross 1965; Jehl 1985). Multiple causes of plumage aberrations have been proposed. These include injury, disease, diet, partial leucism, recurrent mutation, infrequent expression of genes that have low expressivities, pigment concealment, or atavistic retention of ancestral traits (Hubbs

& Bartholomew 1951; Nero 1954, Harrison 1955; Gross 1965; Enders & Post 1971).

Waterfowl (Anseriformes: Anatidae) have been well documented to show unusual plumage patterns. In some cases, these abnormal plumages resemble characters of other closely related species (Harrison 1953, 1955). For example, Northern Shoveler *Anas chrypeata* males in eclipse plumage have a white facial crescent that resembles the facial pattern of the Blue-winged Teal *A. discors*

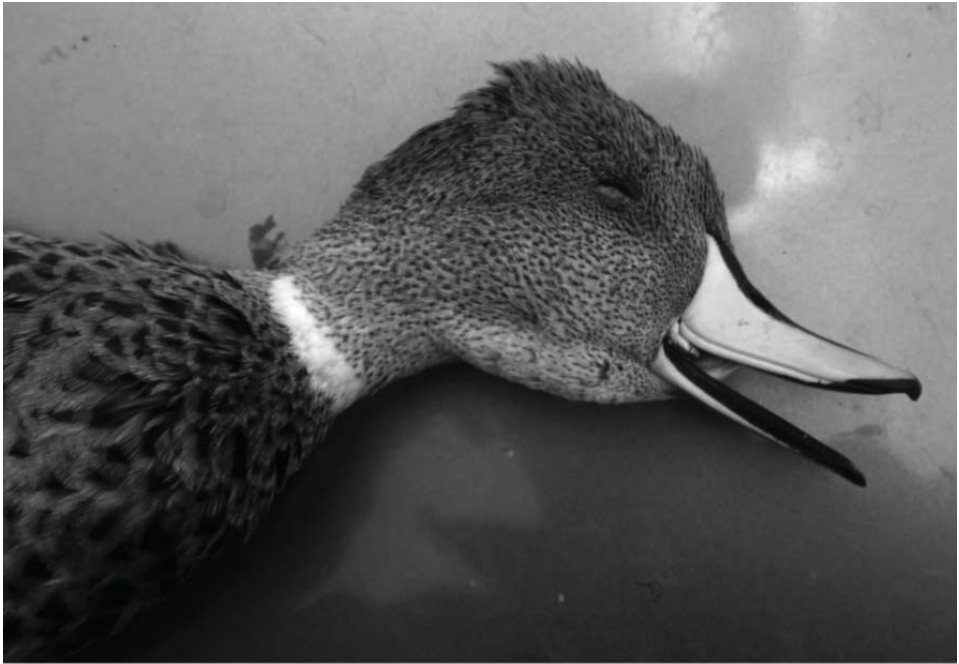
and the Australasian Shoveler *A. rhynchos*. But in cases of hybridisation, plumage patterns also can resemble non-parental species (e.g. Harrison 1954; Harrison & Harrison 1959a,b).

Plumage series and variants have been thought to be evolutionarily significant because different plumage states may reflect phylogeny (Harrison & Harrison 1959b; Olson 1973; Hosner & Lebbin 2006). Therefore, closely related species such as Mallard *A. platyrhynchos* and Northern Pintail *A. acuta* may be more likely to produce common features of the other species occasionally (e.g. white neck ring) that are not necessarily due to recent hybridisation. One of the most well documented cases of aberrant plumages in waterfowl is the presence of a white neck ring. Unusual white neck rings have been described in Green-winged Teal *A. crecca*, Speckled Teal *A. flavirostris*, Blue-winged Teal, Gadwall *A. strepera*, and Northern Shoveler (Harrison 1946; Harrison & Harrison 1958, 1959a,b,c; Trauger 1976). These white neck rings have been proposed to be analogous to the white neck ring of the male Mallard, a typical plumage character that also is common in several other species of waterfowl (Harrison & Harrison 1959b). However, Trauger (1976) suggested that the white neck ring of Blue-winged Teal was due to leucism – complete loss of pigmentation in birds ranging from just one feather to the entire body (Buckley 1982) – because it was found in both males and females along with unusual white feathering on other parts of the body.

A Yellow-billed Pintail male *A. georgica spinicauda* was collected in a flock of approximately 15 individuals on 15 October

2002 in the Department of Cusco, Peru (UAM-20670, Field catalogue number: REW-251). This individual had an incomplete white neck ring, which did not connect on the nape. This unusual plumage has not previously been reported in this species (Fig. 1). Typically, the throat area is pale brown or white and finely mottled (Blake 1977; Madge & Burn 1988). Three other specimens also were collected from this locality and, in total, 86 Yellow-billed Pintails were collected elsewhere in Argentina, Bolivia and Peru from 2001 to 2003. None of the other specimens collected had a white neck ring. However, Yellow-billed Pintail has been known to occasionally exhibit a partial white neck ring in captivity at the Wildfowl & Wetlands Trust (N. Jarrett, pers. comm.). Additionally, a photograph of a South Georgia Pintail *A. g. georgica* shows a male with a faint partial neck ring (Ogilvie & Young 1998). White neck rings have been observed in other pintail species. Northern Pintail have been observed with a transient white neck ring during eclipse moult (Harrison 1978).

Most cases of plumage aberrancy have been reported as partial leucism. Individuals with abnormal plumages typically do not resemble plumage characters of other species. The amount and location of white spotting can be quite variable, as seen in the Eared Grebe (*Podiceps nigricollis*; Jehl 1985). It is evident in these cases that the cause is leucism. However, the recurrence and consistent placement of non-typical white neck rings in several waterfowl species is noteworthy, and researchers should not dismiss the possible phylogenetic significance of this character. It could be that the expression of a set of genes for this



**Figure 1.** Male Yellow-billed Pintail *Anas georgica* with aberrant white neck ring (University of Alaska Museum catalogue number: UAM-20670, Field catalogue number: REW-251).

common colour pattern has been activated but its expression is low outside the few species that retain this character. The retention of ancestral plumage traits has been proposed in the Red-legged Seriema *Cariama cristata*. For example, an aberrant individual had dark, streaky plumage that was thought to be ancestral to the typical light-tone plumage that is seen as an adaptation to arid grasslands (Olson 1973).

Another mechanism that might indicate that there is a phylogenetic component responsible for aberrant plumages is that expression of darker pigments could mask expression of lighter pigments. For example, Nero (1954) argued that the aberrant

plumages (red on the metacarpal) of the Red-winged Blackbird *Agelaius phoeniceus* are a regular occurrence but are normally masked by a darker pigment. When expressed, this plumage variant showed similarities to closely related South American blackbirds, where the colouration is normal.

The mechanism producing the aberrant white neck ring in waterfowl is still not clear. Harrison (1946, 1953) suggested that it was due to an autophoric reverse mutation, the recombination of gene(s) resulting in a mutation that causes characters (e.g. plumage features) to resemble a different species in the absence of hybridisation. Whether it is due to the low expression of a

set of genes, mutation or pigment masking, these aberrant plumages cannot be solely seen as abnormalities and warrant further investigation.

## Acknowledgements

We thank Rosario Acero, Yanina Arzamendia, Daniel Blanco, Guillermo Cao, Raúl Cardón, Sonia Chavarra, Claudio Chehébar, Raúl Clarke, Mike Christie, Adrian Contreras, Victor Hugo Eztellan, Martin Funes, Sergio Goldfeder, Alejandro Gonzalez, Mauricio Herrera, Gordon Jarrell, Kevin Johnson, Cecilia Kopuchian, Antony Lancaster, Dario Lijtmaer, Pamela McCracken, Rodolfo Miatello, Manuel Nores, John O'Neill, Carmen Quiroga, Daniel Ramadori, Karina Ramirez, Abraham Rojas, Pablo Rubaro, Alejandro del Valle, Marolyn Vidaurre, and several agencies in Argentina (notably Dirección de Fauna Silvestre – Secretaría de Ambiente y Desarrollo Sustentable de la República Argentina, Museo Argentino de Ciencias Naturales, Dirección de Fauna Santa Cruz, Ministerio de la Producción Chubut, Secretaría de Estado de Producción Río Negro, Centro de Ecología Aplicada y Dirección Provincial Recursos Faunísticos y Areas Naturales Protegidas Neuquén, Dirección de Ordenamiento Ambiental-Área Técnica de Fauna Cordoba, Secretaría de Medioambiente y Desarrollo Sustentable Salta and Dirección Provincial de Recursos Naturales y Medioambiente Jujuy), in Bolivia (Colección Boliviana de Fauna), and in Peru (Instituto Nacional de Recursos Naturales del Perú and Museo de Historia Natural de la Universidad de San Marcos). Expedition

and laboratory costs were funded by the Institute of Arctic Biology at the University of Alaska Fairbanks, Alaska EPSCoR (NSF EPS-0092040). Grants were received from the Delta Waterfowl Foundation, the Frank M. Chapman Fund at the American Museum of Natural History and NSF (DEB-0444748). Nigel Jarrett and Glyn Young provided helpful comments and suggestions.

## References

- Blake, E.R. 1977. *Manual of Neotropical Birds*. University of Chicago Press, Chicago, Illinois.
- Buckley, P.A. 1982. Avian genetics. In M. Petrak (ed.), *Diseases of cage and aviary birds*, 2nd edition, pp. 21-110. Lea & Febiger, Philadelphia, Pennsylvania.
- Enders, F. & Post, W. 1971. White-spotting in the genus *Ammodramus* and other grassland sparrows. *Bird-Banding* 42: 210-219.
- Gross, A.O. 1965. The incidence of albinism in North American birds. *Bird-Banding* 36: 67-71.
- Harrison, J.M. 1946. Exhibition of two varieties of the teal. *Bulletin of the British Ornithologists' Club* 66: 24.
- Harrison, J.M. 1953. On the significance of variations of patterns in birds. *Bulletin of the British Ornithologists' Club* 73: 37-40.
- Harrison, J.M. 1954. Further instances of aberrations of pattern and colour in the Anatidae. *Bulletin of the British Ornithologists' Club* 74: 52-53.

- Harrison, J.G. 1955. Further comments on teal variation. *Bulletin of the British Ornithologists' Club* 75: 120-121.
- Harrison, J. 1978. Hybridisation in wild-fowl. In J. Gooders (ed.), *The Orbis Encyclopaedia of Birds of Britain and Europe. Vol. 1. Birds of ocean and estuary*, pp. 248-253. Orbis Publishing, London.
- Harrison, J.M. & Harrison, J.G. 1958. The white neck spot variant in the European Green-winged Teal and the Yellow-billed Teal. *Bulletin of the British Ornithologists' Club* 78: 104-105.
- Harrison, J.M. & Harrison, J.G. 1959a. Further remarks on the white neck-spot variant in the European Green-winged Teal. *Bulletin of the British Ornithologists' Club* 79: 25-27.
- Harrison, J.M. & Harrison, J.G. 1959b. Evolutionary significance of certain plumage sequences in Northern Shoveler. *Bulletin of the British Ornithologists' Club* 79: 135-42.
- Harrison, J.M. & Harrison, J.G. 1959c. Plumage variants in drake Gadwall. *Bulletin of the British Ornithologists' Club* 79: 78-79.
- Hicks, L.E. 1934. Individual and sexual variations in the European Starling. *Bird-Banding* 5: 103-118.
- Hosner, P.A. & Lebbin, D.J. 2006. Observations of plumage pigment aberrations of birds in Ecuador, including Ramphastidae. *Boletín Sociedad Antioqueña de Ornitología* XVI: 30-43.
- Hubbs, C.L. & Bartholomew, G.A. Jr. 1951. Persistence of a rare color aberration in the Heermann Gull. *Condor* 53: 221-227.
- Jehl, J.R. Jr. 1985. Leucism in Eared Grebes in western North America. *Condor* 87: 439-441.
- Madge, S., & Burn, H. 1988. *Waterfowl: An identification guide to the ducks, geese and swans of the world*. Houghton Mifflin, Boston, Massachusetts.
- Michener, H. & Michener, J.R. 1936. Abnormalities in birds. *Condor* 38: 102-109.
- Nero, R.W. 1954. Plumage aberrations of the redwing (*Agelaius phoeniceus*). *Auk* 71: 137-155.
- Ogilvie, M. & Young, S. 1998. *A photographic handbook of the wildfowl of the world*. New Holland, London.
- Olson, S.L. 1973. A plumage aberration of *Cariama cristata*. *Auk* 90: 912-914.
- Trauger, D.L. 1976. Plumage aberrancy in Blue-winged Teal. *Auk* 93: 646-650.