

# Birds with badges

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*Porphyrio porphyrio melanotos*. Credit: Wikipedia

A New Zealand bird that conspicuously displays its status on the top of its head can provide valuable insight into the social conventions of all creatures, including humans, scientists have found.

Research led by McMaster's Cody Dey and Jim Quinn shows that the

size of the "badge", a fleshy red wedge extending from the beak and over the forehead of the pukeko, is an accurate indicator of the bird's status – and that it apparently grows and shrinks in keeping with the bird's standing in its social group.

"A lot of animals signal dominance or fighting ability to one another and some of them use these types of conventions," Dey says. "It's like a karate belt color. There's no reason that a fighter wearing a black karate belt should be ranked any higher than a white belt, but that's the convention, and everybody knows it and abides by it."

The research opens a window into the sophisticated social order of the [birds](#), which has implications for other species, including humans, explains Dey, a PhD candidate who worked with Quinn, a biology professor, and James Dale of Massey University in Auckland, NZ. The research appears in the prestigious biology journal *Proceedings of the Royal Society B*.

"I think people have this perception that humans have super-complex social lives and animals don't. That's absolutely not true. The social lives of many species of animals are very rich and very complex," Dey says. "We have these types of signals of dominance. We don't have red shields on our heads, but things like bicep size are known to be a signal of dominance in humans."

To test the relationship between badge size and dominance, Dey and his colleagues traveled to New Zealand to observe these rail birds, similar to North American coots, in their habitat. They measured the distinctive badges on the birds' heads and found wide variations among members of the same group, even though the birds were all about the same size.

The red badges stand out very distinctly against the birds' black and indigo feathers and serve no physical purpose, leading the researchers to

suspect that their function must be social.

Birds with larger badges played more dominant roles in the social hierarchies of their groups, and were challenged less frequently by birds of lower status.

The researchers took high-ranking birds and painted over the edges of their badges with black paint to make the badges appear smaller.

The birds with the altered badges experienced much more aggression from other members of their groups, and soon their badges shrank to reflect their newly diminished status. The change showed not only the connection between badge size and status, but that the status marker is a true indicator of a bird's dominance.

"What keeps the system honest? It's the interplay between the physical structure and the social encounters that keeps it honest," Quinn says.

**More information:** Manipulating the appearance of a badge of status causes changes in true badge expression, Published 27 November 2013. [DOI: 10.1098/rspb.2013.2680](https://doi.org/10.1098/rspb.2013.2680)

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