Date: Mon, 13 Mar 2000 09:41:31 -0000
From: "Whitfield, John" <J.Whitfield@nature.com>
To: 'Alex Roulin' <ra241@hermes.cam.ac.uk>
Subject: RE: from Nature News Service

Dear Dr Roulin,

The story will appear on our website, rather than in the magazine, but this also goes to the New York Times syndication service, gets translated into japanese for our website over there, etc., so there is a chance that it will be poppilng up elsewhere.

Best wishes,

John.

nature sciencenupdate Friday 17 March 2000

lifelines : Owl play

JOHN WHITFIELD

Everyone knows that you should only thump your little sister when your parents aren't looking. Baby barn owls, however, are made of nobler stuff. Working at the University of Bern in Switzerland, Alexandre Roulin and colleagues have found that, when their parents leave them to go hunting, chicks use the time to negotiate who gets the next meal.

Unlike most other birds, barn owl (*Tyto alba*) chicks make begging calls even when their parents are out of earshot. Normally, nestlings only yell 'feed me' when their parents show up with food, to let them know how hungry they are, and to compete with each other over who gets the morsel.

In *Proceedings of the Royal Society B*, Roulin and colleagues describe how they tested whether between-meal begging really was barn owl chicks' way of communicating with one another.

Taking broods of two, they gave one chick extra mice during the day, while the other went hungry. Then they measured how this difference in hunger affected the chicks' vociferousness.

Barn owls deliver about one food item every hour, giving each mouse, vole or whatever to a single chick. Before a parent arrived with the first meal of the night, chicks with a well-fed nest mate made more noise than those in broods where both had gone hungry.

In nearly all cases, the pushier chick got fed. When mum or dad disappeared, it piped down, whereas the chick that had missed out piped up, and tended to get the next prey item. Thus, the food was shared out through the night.

So it seems that in barn owls at least, chicks beg to each other, as well as to their parents. This lets them tell each other how badly they want the next meal, and modify their behaviour accordingly when it arrives.

Barn owls lay anything from two to nine eggs, and so, with the parents' one-at-a-time method of sharing food, chicks in large broods may have a

lengthy wait for a meal. Roulin and colleagues temporarily increased or decreased brood size, to see how it affected negotiations.

They found that chicks became less vocal in larger broods and more vocal in smaller broods. It seems counterintuitive that an increase in competition should result in a decrease in between-chick begging. The researchers believe that chicks are quieter because the next prey item has become more valuable to their nest mates.

"It would be best for nestlings to know whether they have a chance of getting the prey item," says Roulin, "otherwise they will spend hours competing for nothing."

Although begging is tiring, it may be better to settle contests before food arrives, keeping violence and wasted energy to a minimum. A continual process of low-key communication might prevent competition becoming too intense.

"I think that nobody realized that negotiation may take place simply because researchers concentrate on nestling behaviour in the presence of the parents," says Roulin.

Negotiation could be widespread: in a great-tit nest, the chick closest to the entrance is most likely to be fed, suggesting that they jockey for position. And in some species, such as the western grebe, older chicks seem to punish their younger siblings if they beg too vigorously. In future, researchers may be more wary of turning their backs on the nest.

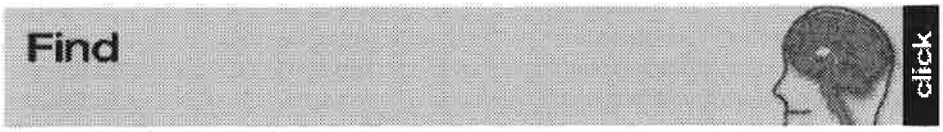
nature sciencenupdate

Monday 20 March 2000

home
search
help
feedback

current stories
stories by category
stories by date

The latest research reported by Nature's science writing team. Now updated daily at midnight GMT.



today's news:

earth : Fossils of forgotten fires
Charcoal in the sediments at the bottom of a US lake, Philip Ball explains, points to increased perils of fire in a warmer world.

this week:

lifelines : Owl play
Barn owl chicks avoid fights by working out who most deserves the next meal while mum and dad are away catching it. Very wise, says John Whitfield.

physics : Too darn hot
Why do carefully engineered systems sometimes fail catastrophically? Physicists have attempted to explain why no design is ever perfect, Philip Ball reports.

Thursday 16 March 2000

ecology : Fouling the nest
A fungus prevents cherry trees from growing too close to home. As John Whitfield reports, this could help explain why different tree species can live together.

physics : Quantum juggling
US physicists have shown the way forward towards the quantum computer, by keeping four atoms balanced in a delicate entanglement. Philip Ball explains.

evolution : Counting the cost of sex
Henry Gee reports on a possible solution of one of the great puzzles of biology: why did sex evolve?

technology : Flameless fuels
Fuel cells power spacecraft but produce astronomical electricity bills. Cheaper models to run computers and mobile phones could be right under our noses, discovers David Adam.

Wednesday 15 March 2000