

BREEDING THE WATTLED JAÇANA *Jacana jacana* AT BARCELONA ZOO

by Miguel Sierra, Rosana Gallego and Maribel Fernández

The Wattled Jaçana *Jacana jacana* is a South American species which inhabits open freshwater wetlands with floating plants on which it walks in its characteristic way with its exceptionally long toes and nails.

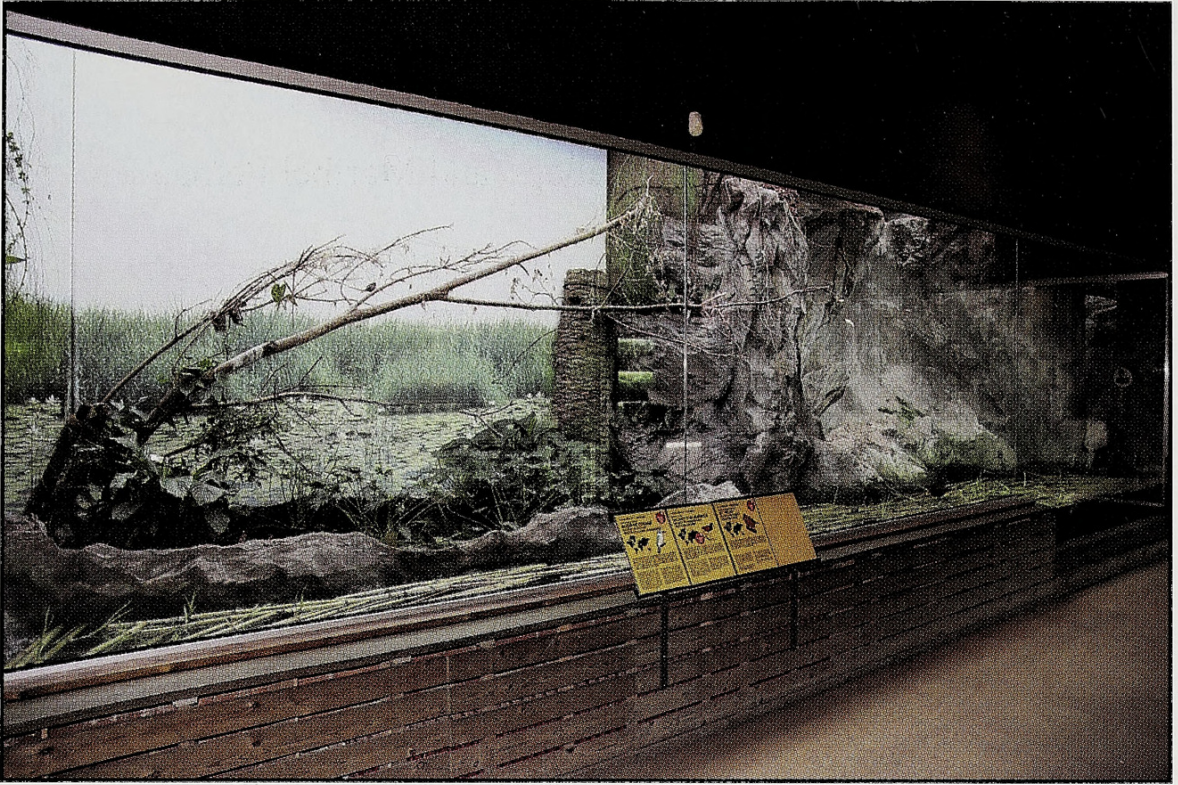
The Wattled Jaçana is 21cm-25cm (approx. 8¼in-9¾in) in length. Both sexes look alike, however, the female is larger and heavier than the male (the latter weighs 89g-118g, whereas the female weighs 140g-151g). The adults have a red bi-lobed frontal shield and lappets which contrast with the yellow bill. The iris is black. The head, neck, breast and belly are black, with the mantle, back and wings chestnut brown in five out of the six subspecies (see below). The flight feathers are yellow to pale greenish yellow with dark brown to black tips (del Hoyo et al. 1996). A carpal spur on the bend of the wing can be seen when they open their wings. The legs and exceptionally long toes (which the chicks have from the moment they hatch) are bluish-grey.

The juvenile lacks the bi-lobed frontal shield and rectal wattles. It has a dull brown crown and upperparts and a dark brown hindneck. A conspicuous white stripe extends from the forehead to the nape. The cheeks, chin, throat and underparts are white. The iris is black.

There are six subspecies recognised: *J. j. hypomelaena* which occurs from west-central Panama to northern Colombia. This subspecies is markedly different in that it has the upperparts and underparts black; *J. j. melanopygia* which occurs from western Colombia to western Venezuela; *J. j. intermedia* which occurs in northern and central Venezuela; *J. j. jacana* which is found from south-east Colombia eastwards through southern Venezuela to the island of Trinidad, the Guianas and southwards through most of Brazil to eastern Bolivia, northern Argentina and Uruguay; *J. j. scapularis* occurs from western Ecuador to north-west Peru; and *J. j. peruviana* occurs in north-east Peru and adjacent north-west Brazil (del Hoyo et al. 1996).

Housing

Barcelona Zoo keeps two breeding pairs of Wattled Jaçanas in two different kinds of exhibit. However, both are glass-fronted, have skylights protected by welded wire mesh which can be opened in the summer and have the floors covered with a mixture of earth and turf. The jacanas are kept in indoor exhibits all year round. During the winter the temperature is maintained at 20°C-24°C (68°F-75.2°F).



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The aquatic exhibit which houses a pair of Wattled Jaçanas at Barcelona Zoo.

The first of the two exhibits, the aquatic exhibit, is 35m x 35m (approx. 115ft x 115ft) and has a pond 10m x 10m x 43cm deep (approx. 33ft x 33ft x 1ft 5in deep). Both sides of the exhibit and half of the rear walls are decorated to resemble a rock cliff and have been planted mainly with bromeliads, while the other half of the back of the exhibit has a photo poster.

One-third of the exhibit has underwater viewing and visitors can watch the Guppies *Poecilia reticulata* swimming about in the pond. The exhibit is planted with *Philodendron xanadu*, *P. scandens* and *Monstera* sp, and *Parsiflora* on the ground. Several bromeliads are used on the rock cliff: *Ananas comosus*, *Guzmania*, *Tillandsia*, *Vriesia*, *Nidilarium*, *Aechnea fasciaba*, as well as other plants such as *Rosellia*, *Columnea* and *Cissus*. There are also a number of floating water plants; Duckweed *Lemna minor*, Water Lettuce *Pistia stratiobes*, Water Hyacinth *Eichornia crassipes* and, sometimes, water lilies *Nymphaea*. Water Lettuce is preferred because the jaçanas find it easier to walk over. When floating plants are not available lengths of Giant Cane *Arundo donax* are placed over the surface of the water and the jaçanas walk over these.

The jaçanas have shared the exhibit with a number of other species: Green-backed Heron *Butorides striatus*, Golden-headed Quetzal *Pharomachros auriceps*, White-naped Pheasant Pigeon *Otidiphaps nobilis aruensis*, Boat-billed Heron *Cochlearius cochlearius*, Sunbittern *Eurypyga helias*, Green Jay *Cyanocorax yncas*, Red-crested Finch *Coryphospingus*



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Adult Wattled Jaçana.

cucullatus and Screaming Piha *Lipangus vociferans*. The only problem we have had was with the Screaming Pihas during the breeding season. They had to be removed because they attacked the jaçana chicks and the male jaçana when he tried to defend them.

Diet

Our Wattled Jaçanas are fed once a day in stainless steel food trays which are placed on the ground. They are offered fruit diced into small pieces, lettuce, Witte Molen egg-rearing food with hedgerow plants, chicken meal, smelt cut into small pieces and, during the period October-June, hard-boiled egg (this is withheld during the summer months as the egg spoils very quickly in the hot weather). They also receive livefood in the form of mealworms *Tenebrio molitor*, crickets *Acheta domestica* and *Gryllus bimaculatus* and fruit flies *Drosophila melanogaster*. All of the food is sprinkled with calcium.

The jaçanas have been seen eating Duckweed from the pond and actively fishing for Guppies. They also take prey from the aquatic vegetation and upturn the roots of the aquatic plants to reach invertebrates.

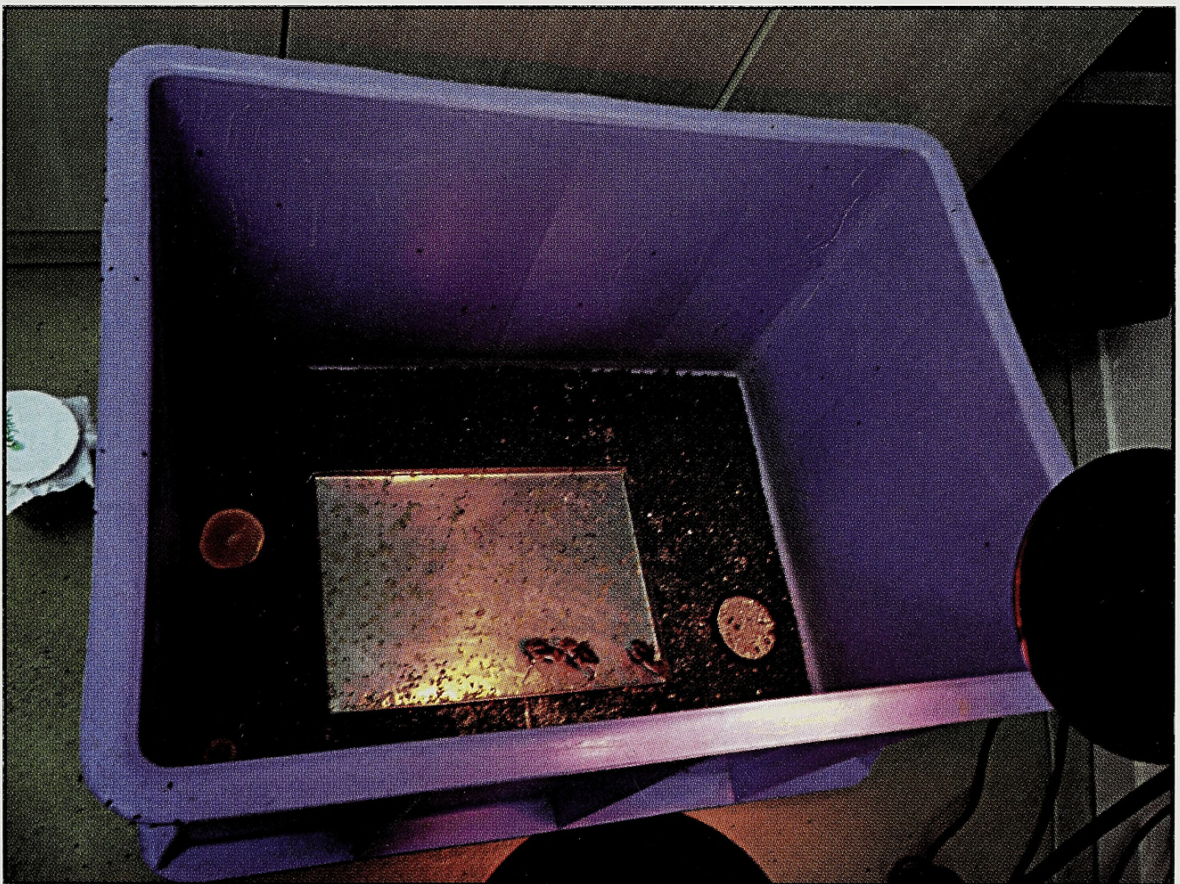
Breeding

As a general rule species of jaçana are polyandrous and one female may mate with two or more males, but this is not always possible. If the breeding habitat is too small or if an area is long and narrow, only one male can establish a territory. Also, if the quality of the habitat is sub-optimal and male territories are large, the female has no opportunity to breed with



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The male watches over the chick. Note also the unhatched egg.



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Plastic containers are used as hand-rearing units. The heat lamp is in the lower right-hand corner.

more than one male (del Hoyo et al. 1996).

Here at Barcelona Zoo our Wattled Jaçanas have always bred in pairs. Because of the limited size of our exhibits no attempt has been made to keep more than one male and female together. Due to the female's territorial behaviour care must be taken when pairing Wattled Jacanas. The male is always introduced into the exhibit first and given plenty of time to become well acclimatised.

The nest is small and is built in the middle of the pool and is made from aquatic plants. It is close to where visitors walk by and far away from the door used by the keepers. To avoid the sitting bird being disturbed a fence is set up in front of the exhibit to prevent visitors getting too close.

Due to the speed at which the plant material rots, a polystyrene foam platform is set up beneath the nest to avoid it sinking into the water. In the terrestrial exhibit the nest is made of pieces of plants including leaves and, here again, is built far away from the door used by the keepers.

A clutch of four eggs is laid, one egg each day. They are glossy olive green with black markings and have measured 29mm x 22mm, 28mm x 22mm, 29mm x 22mm and 28mm x 21mm. Four chicks have hatched in March; three chicks have hatched in April; one chick has hatched in June and two have hatched in December. The incubation period is 28 days and the chicks are cared for by the male. At this point it is obviously important to keep a close watch on the chicks, especially in view of the female's territorial behaviour.

The chicks spend the first day at the nest drying out under the male. On the second day the chicks are more active and may be carried by the male under his wings. It is at this stage that we remove the chicks from the parents. They can be difficult to catch because not only are they well camouflaged and blend in with their surroundings but are also able to submerge themselves beneath the water.

We received our first pair of Wattled Jaçanas from Zurich Zoo in October 2001. The pair bred for the first time in March 2006. The two chicks were left with their parents but unfortunately both died. In April 2006, another chick hatched, but unfortunately it too died. Following the loss of these three chicks, when a further chick hatched in 2007, it was removed and successfully hand-reared (see Table 1 & Fig.1) A further two chicks were hand-reared in 2011.

As hand-rearing units we use plastic containers measuring 71cm x 51cm x 42cm high (approx. 2ft 4in x 1ft 8in x 1ft 4½in high), with an artificial grass floor covering. We use an Osram heat lamp to heat part of the container, so that the chicks are able to stand beneath the lamp or move away to a cooler part of the container and can, therefore, choose wherever the temperature

is most comfortable for them. Water is provided in a container measuring 36.5cm x 26cm x 1cm deep (approx. 1ft 2¼in x 10¼in x just under ½in deep).

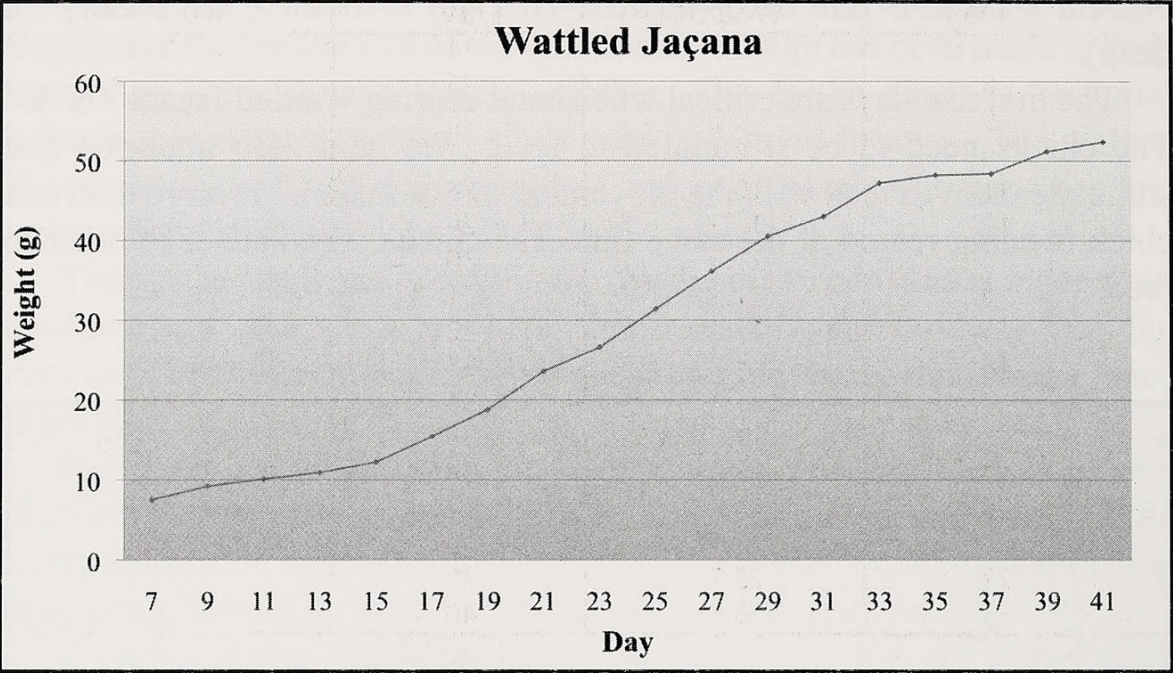
The first few days are critical when hand-rearing Wattled Jaçana chicks. The chicks need to be stimulated to feed. We gain their attention and stimulate them to feed with the movement of our fingers. If more than one chick is being reared at the same time, the chicks stimulate each other to feed.



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Juvenile Wattled Jaçana.

Fig. 1. Chick weight gain day seven to day 40.



During the first few days we offer the chicks fruit flies, mosquito larvae *Artemis* sp. and *Daphnia* sp., small pinhead crickets, Duckweed and Astra Aquaristic Tropical Flakes in the water and small quantities of dry chicken meal in a separate tray. A good supply of insects, especially *Drosophila*, is offered continuously.

At the beginning, at six days of age, the chicks developed crooked toes, a problem which we suspect was nutritional and/or metabolic in origin. Therefore, we decreased the amount of livefood and offered the chicks dry chicken meal, Witte Molen egg-rearing food with hedgerow plants and a calcium supplement. In addition, we provided them with a UV lamp for a couple of hours each day. Another possible cause may have been that the bedding we provided for them was unsuitable. To stimulate their ability to walk we provided them with lettuce leaves to walk on. By the time they were 19 days old their toes had corrected themselves and they were walking perfectly normally. When the outdoor temperature was at least 20°C (68°F) we gave them access to an outdoor exhibit so they could sunbathe. Depending on the size of the clutch, the chicks can either be reared alone or in a group without any competition developing between them.

At the age of 40 days they are moved to bird house exhibits. They are ringed (banded) with 5mm (inner diameter) coloured plastic rings (bands).

Hand-reared jaçanas can breed without any problems.

Table 1. Weight of chick day seven to day 40.

Day	Weight (g)	Day	Weight (g)
7	7.5	24	28.6
8	8.1	25	31.4
9	9.2	26	34
10	9.8	27	36.1
11	10.1	28	39.3
12	10.7	29	40.5
13	10.9	30	41.5
14	11.3	31	43
15	12.2	32	45.5
16	14.2	33	47.2
17	15.4	34	47.6
18	17	35	48.2
19	18.8	36	48.6
20	21	37	48.4
21	23.6	38	50.3
22	25.7	39	51.2
23	26.6	40	52.4

Transport

One jaçana has been transferred by road from Barcelona to Munster Zoo in Germany. It was transported in a travelling box which measured 38cm x 27cm x 26cm high (approx. 1ft 3in x 10½in x 10¼in high) in accordance with IATA regulations. It had no perches and on the inside of the box the roof was padded with foam in order to avoid head injuries.

Veterinary procedures

Jaçanas can tolerate being handled for a short time in order to undergo minor veterinary procedures such as having a wound cleaned or to be given oral medication. For all other veterinary procedures they are anaesthetized to minimise the risk of shock. Anesthesia is induced by mask at a 5% concentration and maintained at 2.5%-3% with an 0.6-0.8 litre oxygen per minute flow rate. Blood samples are taken mainly from the ulna vein. Their sex is established using DNA analysis from blood samples.

The problem most frequently encountered in our group of jaçanas has been post natal mortality a few days after hatching. As no lesions have been found during necropsies and laboratory results have shown nothing of pathological origin, in view of the young age of the chicks, in all cases the cause of death has been attributed to issues concerning incubation or management. Aggression between partners has been witnessed.

Acknowledgements

Very special thanks to the bird department staff at Barcelona Zoo for taking such good care of the birds. We also wish to thank Marta Santmartin DMV for the information she provided about the veterinary procedures.

Products mentioned in the text

Egg-rearing food with hedgerow plants: Witte Molen B. V., Moleneind 2, 4268 GD Meeuwen, the Netherlands.

OSRAM heat lamps: 250w SICCATHERM. Sicca Red HG, 230V-E27/ES. Made by OSRAM, Slovakia.

UV lamp: Powersun UV 160w, Professional series. Zoo Med Europa, Klein Hagelkruis, 13; 2.180 Ekeren (Antwerpen) Belgium.

Astra Aquaristic Tropical Flakes: a complete food for all ornamental fish. Astra Aquaria GmbH, 49143 Bissendorf, Germany.

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NEWS OF SPIX'S MACAW *Cyanopsitta spixii* BREEDING

Simon Matthews writes to say that over the past months they have had specialists in parrot reproduction from Germany join them at Al Wabra Wildlife Preservation. They have been working on artificial insemination in Spix's Macaw to boost the breeding success of the species.

Al Wabra has released news that they currently have four Spix's Macaw chicks, two of which were produced by artificial insemination. A total of seven eggs were laid after AI, two of which were fertile and successfully hatched, along with two eggs which were fertilised by natural copulation. The two AI chicks are from different hens, one of which is an F2 bird.

**FIRST EUROPEAN BREEDING SUCCESS OF THE
GOLDEN-HEADED QUETZAL *Pharomachrus auriceps* IN
WELTVOGELPARK WALSRODE**

by Anne Hoppmann

Observing Trogons in the wild requires a lot of patience and persistence. Trogons are calm and confiding members of the bird world that inhabit the treetops. Here they can sit motionless on a branch for many hours, only moving for a short time in order to search for food. Short rounded wings



Female Golden-headed Quetzal.



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