

A young man with short blonde hair, wearing a dark grey and tan jacket and light-colored pants, is kneeling outdoors. He is wearing clear plastic gloves and holding a small, brown frog in his right hand. He is looking down at the frog with a focused expression. In front of him is a large black bucket. The background shows green foliage and a clear blue sky. The image is partially covered by a semi-transparent circular graphic on the left side.

# PROTECTION OF SPECIES

Amphibian resettlement  
into the Spree flood plane

## CAUSE

The Lakoma ponds in the north of Cottbus will be drained due to scheduled mining activity. This pond group which was managed for centuries as a commercial fish raising area provided valuable habitats for amphibians especially the fire-bellied toad (*Bombina orientalis*) and other species such as tree frog (*Hyla arborea*), spadefoot toad (*Pelobates fuscus*), water frog (*Rana kl. esculenta*), common toad (*Bufo bufo*), moor frog (*Rana arvalis*), common frog (*Rana temporaria*) and smooth newt (*Triturus vulgaris*).

In order to compensate for the encroachment into this natural landscape Vattenfall Europe Mining AG supports extensive nature protection measures. New stepping stone biotopes in the surrounding fields near the mining area were created and the management in the southern Peitz pond area and a new pond group was created in the Spree flood plane to promote amphibian habitat. Since in the surrounding fields near Lakoma

ponds no longer provide sufficient habitat, the amphibians are being resettled to the Spree flood plane ponds.

### SPREE FLOOD PLANE PONDS

Eight fish ponds with a total water surface of 21 hectares were established in 2007/2008 in the Spree flood plane north of Cottbus. Their small structure with shallow water areas and islands, as well as damp biotopes and swamp forests are similar to the ponds in Lakoma. The ponds were managed according to nature protection and technical criteria for raising carp. In more than two thirds of the ponds one year old carp are raised. This management meets the requirements of the fire-bellied toad and promotes their development.



## RESETTLEMENT OF THE AMPHIBIANS

Fire-bellied toad, tree frog, spadefoot toad, water frog, common toad, moor frog, common frog, smooth newt, tadpole shrimp (*Triops cancriformis*), ringed snake (*Natrix natrix*), slow worm (*Anguis fragilis*) all these species are resettled to the Spree flood plane. In the summer of 2007 the first 52,000 amphibian larvae and juveniles in the Lakoma ponds were caught and resettled to the Spree flood plane. All animals were examined, counted and transplanted into suitable ponds. In September 2007 the resettlement of adult and juvenile amphibians took place using 500 catch buckets to collect the animals along a 6.5 km fence. This measure was repeated in the spring 2008 in Lakoma. In order to prevent the adult amphibians from leaving their new habitat, individual ponds were fenced in with the adjacent land habitat at the Spree flood plane.

A total of nearly 82,000 amphibians were resettled into the Spree flood plane until mid May 2008 of which 56,000 were fire-bellied toads. This represents one of the largest resettlement actions ever accomplished. The resettlement of the amphibians will continue until 2010.

### MONITORING

The proof of the successful development of the amphibian larvae is done using control catches of young animals. The long-term proof of the development and increase of the amphibian population in the Spree flood plane is evidenced by hearing the calls of amphibians in the spring. In addition, an annual report must be filed to the authorizing agency.



## AMPHIBIANS IN THE SPREE FLOOD PLANE



### FIRE-BELLIED TOAD (*BOMBINA BOMBINA*):

#### Habit:

- Maximum size 45-50 millimeters
- Warty skin, light to dark gray
- Short fore and hind legs
- Lower surface orange to red colored
- Heart-shaped to triangular formed pupil slots

#### Habitats:

- Standing, sun-exposed flat waters with close aquatic plants
- Hides during daytime in mouse or mole courses, under wood, stones
- Hibernation in rodent holes, cavities or cracks in the earth

#### Individual development and walking behavior:

- Migration from the hibernation to the breeding area from March-April
- Mating / Reproduction predominantly in May-June, part of July
- Migration to the hibernation in September-October, Walking distance up to 1000 meters
- Maximum age more than 10 years



#### **TREE FROG (HYLA ARBOREA):**

##### **Habit:**

- Small frog, rarely larger than 50 millimeters
- Smooth skin, top side usually full-green, lower surface whitish or yellowish
- Fore and hind legs relatively long, widened toe and fingertips with detention padding
- Horizontally elliptical pupils, iris gold-yellow with blackish specks

##### **Habitats:**

- Mating and breeding areas are sunny waters with weeded shallow water zones
- Summer habitats are reed belts, damp meadows, bushes and edges of forest
- Hibernation in earth caves, under stones, compost and heaps of leaves

##### **Individual development and walking behavior:**

- Migrations from the hibernation in March-April
- Main spawning season in May, changing to terrestrial life in July-August
- Migration into hibernation in October
- Very wandering, walking a distance of several hundred meters and can travel up to 10 kilometers on return
- Rarely older than 5 years



#### **SPADEFoot TOAD (PELOBATES FUSCUS):**

##### **Habit:**

- Warted gray to brown skin, from almost designless to spotted
- Lower surface whitish-gray, partial gray specks
- Compact body form, large head with vertex peak
- Perpendicularly slit-formed pupils
- Weals for digging at the rear extremities, front extremities strongly developed

##### **Habitats:**

- Prefers agrarian or garden areas with sandy soils
- Spawning water with well pronounced vegetation
- Remains mainly buried during the day out of the reproduction cycle
- Entrenches itself at the beginning of the winter in the ground, winters at depths between 30-60 centimeters

##### **Individual development and walking behavior:**

- Migration from the hibernation to the spawning area at the beginning of March-April, wandering particularly on rainy days
- At least two annual mating / reproduction phases, March-May, and June-August
- Migration into hibernation in November



#### WATER FROG (RANA. ESCULENTA)

##### Habit:

- Hybrid form, a cross between marsh frog (*Rana ridibunda*) and pool frog (*Rana lessonata*)
- Size between 55-85 millimeters
- Top is grass-green with dark-brown or black marks, light green stripes on back
- Lower surface unspotted whitish to blackish veins
- Horizontal ovular pupil slots

##### Habitats:

- Spawning water and summer habitat are waters with dense close vertical plants at the bank, a rich underwater or swimming layer of vegetation
- Live predominantly in or at water
- Some animals winter in water, while others winter in land habitats (tunnel systems and caves, active entrencher)

##### Individual development and walking behavior:

- Migration from the hibernation to the spawning area usually in March or April
- Mating / Reproduction in mid May-mid June, part of July
- September-October migration into hibernation, Travels distances up to 500 meters on open land
- Rarely lives more than 10 years



#### COMMON TOAD (BUFO BUFO):

##### Habit:

- Females larger than males, females up to 120 millimeters, male up to 90 millimeters
- Extremely warty gray to brownish-olive skin, without salient design elements
- Lower surface off-white or yellowish
- Horizontally formed pupils, iris yellowish gold to copper red

##### Habitats:

- Very flexible
- Spawning habitat is preferably constant water
- Summer habitats lies usually several hundred meters from the spawning water, usually forests
- Hide themselves during the day under leaves, stones, wood, holes
- Hibernation, usually in forests in ground holes, or entrenched

##### Individual development and walking behavior:

- Early spawning, Beginning of migration during favorable weather in February, main season in March
- Main mating season / reproduction time in April
- Migration to the summer habitat particularly after rainfalls
- Migrates in the late autumn to hibernation



#### MOOR FROG (RANA ARVALIS)

##### Habit:

- Size between 55-70 millimeters
- Top light to dark brown, partly reddish or strongly black spotted
- Usually broad bright longitudinal volume on the back
- Belly yellowish-white, usually unspotted
- Body slim with short pointed lip, head intensified, horizontal pupils

##### Habitats:

- Prefers settled habitats with high standing ground water, moorlands, swamp forest
- Land habitat; wet meadows, moorlands, flood plane forests, bushes and weed corridors
- Hibernation predominantly in tunnels and cavities ashore

##### Individual development and walking behavior:

- Early spawning at the beginning of migration during favorable weather in February, main season in March
- Main reproduction end of March-beginning of April
- "Explosive spawner", mating / reproduction phase is concentrated in a few days
- Only few days at the spawning water



#### COMMON FROG (RANA TEMPORARIA)

##### Habit:

- Size between 45-90 millimeters, reaching 110 millimeters
- Top yellowish-olive, reddish to dark brown, unspotted or with dark to black marks
- Lower surface whitish, mostly gray to reddish veins
- Slightly pointed lip, blunt and strongly rounded, horizontally elliptical pupils

##### Habitats:

- Spawning water are standing and flowing waters, small ponds or troughs are preferred
- Land habitats; grassland, bushes, waters banks, forests, gardens, moorlands
- Winters partly in water, partly on land

##### Individual development and walking behavior:

- Migration to the spawning water usually mid-end of March
- "Explosive spawner", mating / reproduction phase only a few days
- Settlement of grassland, bushes, banks, forests, gardens and moorlands
- Winters sometimes at areas with water, however predominantly on shore
- Rarely becomes older than 10 years under natural conditions

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