

Betta mating and raising

Reagents and equipment needed (end of document)

Pre-mating

- Keep females and males visually isolated in individual tanks (WDXH: 9X9X20cm) with RO water at a height of 12cm, salinity at 250ppm, temperature at 28-29°C, a layer of activated ceramics in the bottom and a 5X3cm ceramic shelter (**Fig. 1**). Label each tank with fish ID, sex (if visible), and species/strain code (**Table 1**). Clean individual tanks every 2 weeks, replacing 2/3 of water. Filter the previous water for debris with the 800 (15µm) metallic sieve and adjust salinity if needed. Feed with Diet 5. Cross at 6-12 month old.



Fig. 1 - Individual tanks.

- Pre-set outdoor larvae outgrow tanks 100X50X50cm 1-2 weeks before mating (200 larvae will be added to each tank). RO water with 250 ppm salinity at a height of 30 cm. Add plants. Add sponge filter with activated ceramics and heater set to 28°C (**Fig. 2**).



Fig. 2 - Fibreglass outdoor growing tanks.

Mating

- Prepare a mating box (WXDXH: 35X25X15 cm) with semi-opaque walls and a semi-opaque cover. Alternatively, set up an aquaria (WXDXH: 50X25X20cm) with similar settings. May add plants (**Fig. 3**).
- Use RO water with salinity set at 250 ppm and water level at no more than 10 cm. Add a heater if needed to set the temperature to 28-29°C.
- Add a dry and clean large indian almond leaf for the male to build the nest under it.
- Add a perforated transparent box (12 cm cube, **Fig. 3**) and a 5X3cm ceramic shelter for the female to hide after egg laying, placed opposite to the indian almond leaf.
- Place a female inside the transparent chamber and a male outside.
- After male has built the bubble nest (usually within 24-48h), release the female during the morning period.
- Remove female after egg laying (usually within 24-48h). The male will be constantly below the bubble nest and the female hiding after eggs have been laid.
- Eggs take about 48-72h to hatch. Allow the male to take care of the larvae for 48h after egg hatching.

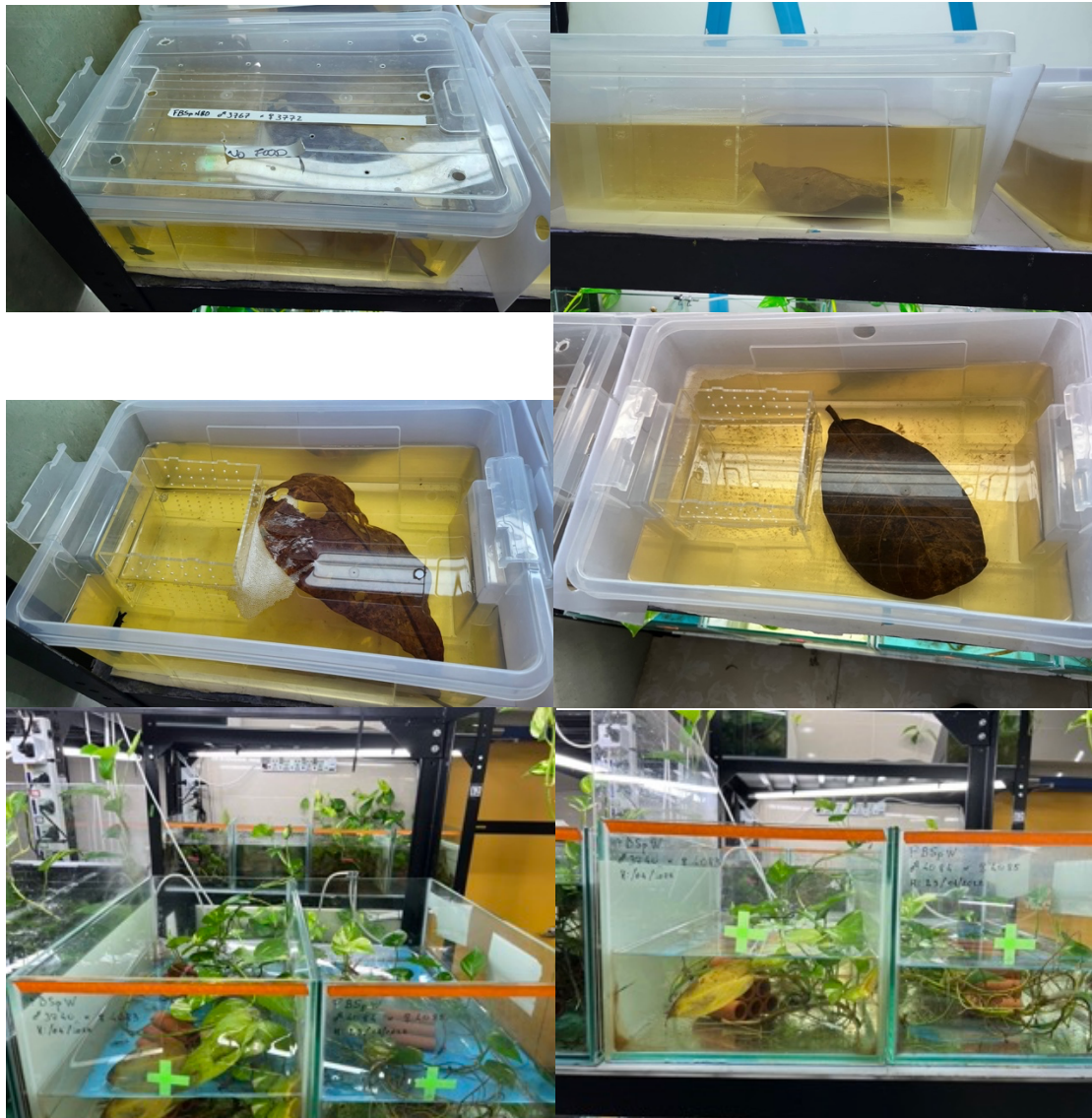


Fig. 3 - Mating box or aquaria.

Raising

- 48h after hatching, larvae should be swimming horizontally and dispersing from the nest. Remove the male. Start feeding larvae with Diet 1.
- Transfer larvae at 2W old to the outdoor tanks (200 per tank) or to other outgrow tanks with a density of app. 1 larvae per L. Label each tank with parental male and female ID, hatch date, batch number and species/strain code (**Table 1**). Change to Diet 2.
- Change to Diet 3 at 4W old.
- Isolate at 10W old into individual tanks as described above. Change to Diet 4.
- Change to Diet 5 at 16W old.
- Use fish in experiments at 6-12M old and discard to junk tank afterwards

Diet (for details see Betta food preparation document)

Diet 1 (2 days post hatching to 2 weeks)

- Paramecia every 2 days.
- Mix of Golden Pearl GP5 5-50 and Zeigler Larval Diet AP 100-1 <50 (50/50%) in the morning
- Newly hatched San Francisco Artemia in the afternoon

Diet 2 (2-4 weeks)

- Mix of Golden Pearl GP 100-200 and Zeigler Larval Diet AP 100-1 <50 (50/50%) in the morning
- Newly hatched San Francisco Artemia in the afternoon
- At weekends, feed only once per day, dry food on one day and artemia on the other day

Diet 3 (4-10 weeks)

- Mix Golden Pearl 200-300 and 300-500 (50/50%) in the morning
- Newly hatched San Francisco Artemia in the afternoon
- At weekends, feed only once per day, dry food on one day and artemia on the other day

Diet 4 (10-16 weeks)

- Mix Golden Pearl 300-500 and 500-800 (50-50%) in the morning
- Taobao Artemia in the afternoon
- At weekends, feed only once per day, dry food on one day and artemia on the other day

Diet 5 (>16 weeks)

- Atison's Betta Pro in the morning
- Taobao Artemia in the afternoon
- At weekends, feed only once per day, dry food on one day and artemia on the other day

Table 1. Betta species and strain code.

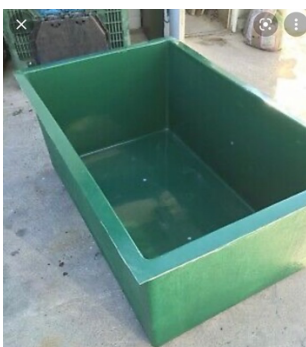
Wild-type Betta splendens Chiang Rai	WTBSpCR
Wild-type Betta splendens Bang Sapham	WTBSpBS
Wild-type Betta splendens Ang Thong	WTBSpAT
Wild-type Betta splendens Phitsanulok (X)	WTBSpPS
Wild-type Betta splendens Nakhon Nayok (X)	WTBSpNN
Fighter Betta splendens L1	FBSpL1
Fighter Betta splendens S (X)	FBSpS
Fighter Betta splendens N80	FBSpN80
Fighter Betta splendens W	FBSpW
Fighter Betta splendens E (X)	FBSpE
Fighter Betta splendens M (X)	FBSpM
Fighter Betta splendens N	FBSpN
Fighter Betta splendens TH1 (X)	FBSpTH1
Domesticated Betta splendens Transparent	DBSpTr
Domesticated Betta splendens Short Tail	DBSpST
Domesticated Betta splendens Veil Tail	DBSPVT
Wild-type Betta mahachaensis Bangkok	WTBMBK
Wild-type Betta imbellis Patalung	WTBIPT
Wild-type Betta smaragdina Bueng Kan (X)	WTBSmBK
Wild-type Betta smaragdina Kanchanaburi	WTBSmKCB
Wild-type Betta siamorientalis Prachin Buri (X)	WTBSiPB

REAGENTS AND EQUIPMENT NEEDED

- Individual glass tanks (WXDXH: 9X9X20 cm)



- Ceramics previously activated with aquaria water
- Ceramic shelters 5X3cm
<https://item.taobao.com/item.htm?spm=a1z09.2.0.0.1e5b2e8dUIVWxd&id=546661919549&u=6201j735roee1e>
- Outdoor fibreglass tanks
<https://m.tb.cn/h.flwjSN3?tk=YoZi2jCuHPv> 「河北玻璃钢鱼苗孵化池」



- Sponge filter
<https://m.tb.cn/h.fsxPGXq?tk=TW4G2jCuQxU> 「时代水宠水妖精生化过滤器 鱼缸水族箱增氧培菌可装滤材海绵静音」



- Air pump with tubing
- Heater
<https://m.tb.cn/h.fsxPgF1?tk=L8Z52jCvI43> 「鱼缸加热棒自动恒温加热器变频加温器水族养鱼外置温控小型加温棒」

- Mating box
- Transparent and perforated box
- Instant Ocean salt
<https://www.instantocean.com/products/sea-salt-mixes/sea-salt-mixture.aspx>
- Salinity meter
<https://m.tb.cn/h.fJCBY1u?tk=a8fz2jCwc10> 「tds水质检测笔」
- Indian almond leaves
- Metallic sieves



FOOD

- Golden Pearls
<https://www.brineshrimpdirect.com>



- San Francisco Artemia
<https://www.brineshrimpdirect.com>



- Zeigler larval diet
<https://www.zeiglerfeed.com/research-diets/larval-ap-100/#>



- Taobao artemia

<https://m.tb.cn/h.flwGChp?tk=XuML2jygbmK> 「红姐牌大红卵丰年虾卵可孵化新卵观赏鱼七彩孔雀鱼粮鱼苗开口饲料」



- Atison's Betta Pro

<https://m.tb.cn/h.fsmQWMm?tk=aYsz2QF9C8B> 「美国海洋牌ocean泰国进口赛级斗鱼高营养易消化增色增体上浮饲料」



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