

Paul de Arzila nature reserve. Site visit 20th November 2006.

One of several SPAs managed by SPEA. Others nearby include Paul do Taipal (233ha) to the west and Paul da Madriz (89ha) to the southwest. Paul de Arzila, 11km west of Coimbra and two hours drive north of Lisbon @ 535ha is one of the largest and it contains one of the largest *Phragmites* reedbed (c150ha) in the country. A branch of the Rio Mondego floodplain (15,000ha), it has been a nature reserve since 1988.

- 126 bird species includes a small colony of Purple Heron (increased from 2 in 2003 to 6 pairs in 2005 and similarly 6-13 young since the LIFE work), 2 pairs Marsh Harriers and a stable population of 5-6 pairs of reintroduced Purple Gallinules.
- 12 mammal species including Otters & Genets.
- >200 species invertebrates recorded.
- 13 fish species but including one American introduced to control mosquitoes (malaria), which is now common throughout.
- 10 reptilian species and a good variety of amphibians but two species of frog in decline due to predation from non-native Louisiana Crayfish ('Red Crayfish'), *Procambarus clarkii* which arrived in the 1960s. One of the frogs, *Discoglossus gadgamoii* is now thought to be extinct in the marsh and only survives in pools on higher ground around the perimeter. The other frog species, *Rana perezi* is also in decline.
- Other non-native species include Parrot-feather although this never becomes fully established as it is a plant of stagnant water and the strong winter flows keep it in check.

Current management

To date little reedbed management has been undertaken at the site. Some limited reedcutting has taken place "but the reed always comes back". Local people harvest "Bunho" which is used to weave mats and baskets. A LIFE project 2002-04 has introduced more open water and in winter, water levels can rise to 3m. These pools have varying depths and have provided open water within an otherwise fairly dry *Phragmites* reedbed with summer levels estimated at 1.5-2.0m. The spoil from the excavations has been used to raise access points, existing paths and low islands in the reedbed, as it was uneconomical to take off-site. All pools and dykes now interconnected – good for fish movement but has allowed the non-native fish and crayfish to access the whole site (this would happen anyway in winter flooding). Pools have scalloped edges – looked great at the time of my visit.

Threats

- Above non-native species already mentioned.
- Water quality. This was examined under the LIFE programme and surprisingly found to be much better than expected "compared to 20 years ago". Two large factories (one for sausage making) discharge into the system up-river but no evidence of contamination from these. In 2006, a new sewage treatment works has been introduced at the northern end to tackle sewage from surrounding

villages (with capacity to take more in future). However, this has primary, secondary and tertiary treatment and in any case discharges away from the reserve. At the time of my visit, rice and maize stubble fields were flooded with recent rainwater but any chemical pollution is taken quickly away through the reserve to the north and away from the reedbed area. Two Purple Gallinules were feeding in the maize stubble. pH of water is 7-8. Therefore, in conclusion, in contrast to most wetlands, water quality is probably not a major issue here.

- Scrub encroachment has not been addressed to date and already poses a threat in a few places. The white willow, *Salix alba* is considered to be the main problem in the natural succession process.
- Lack of reedbed management leading to natural succession

Possible recommendations to consider

1. Update maps of habitat to include new pools constructed under LIFE. Identify % cover open water, *Phragmites* reedbed, *Scirpus* and *Typha* beds, *Salix* etc. Current estimates *Phragmites* extent >90%, open water <5%.
2. Identify target species – prioritise. Likely to be Purple Heron and Purple Gallinule (+ Marsh Harrier?).
3. Install water gauge boards across the length of the reserve to allow for water levels to be ascertained. Take readings fortnightly/monthly for at least one calendar year. Set base of gauge boards at reedbed litter level (not hard ground) to measure depth of water across surface of reedbed throughout the year.
4. Following 3 above calculate % dry and wet reedbed areas in summer. At present, it is considered area of wet reedbed is <10%. It is thought this area is summer flooded to 0.5m however.
5. Water control. At present only one “dam” has been constructed. Consideration should be given to introduce a sluice/weir on at least one of the three ditches/rivers to facilitate summer flooding and autumn drawdown. *Control* is the key.
6. Eradicate alien species. This may be impossible. Consideration should be given to establishing isolated pools on higher ground where possible to attract threatened frog species mentioned above – away from the Louisiana crayfish in the lower reaches.
7. For Purple Heron, an “interior” reedbed species, care should be taken not to dramatically change the nesting habitat eg. no cutting should take place here. Apparently PH are now spending “more time on the reserve (and around the newly created water areas) than they used to”. This suggests the pools have improved the food resource for this species (and probably others). Consideration should be given to create more open water if resources allow.
8. For Purple Gallinule the areas of *Typha* and *Scirpus* should be increased either by sacrificing areas of *Phragmites* by summer cutting or actively

introducing these species from plants within the reserve i.e. spreading the resource. Burning parts of the reedbed was discussed but probably impractical due to (a) standing crop of green, growing stems not easily burnt in summer, (b) impact on other nesting reedbed species, (c) water levels too high Jan-Feb, the “ideal” time to burn.

9. Cutting reedbed in summer will eventually eradicate it. This will provide new areas for *Typha* and *Scirpus* for gallinules, pools in winter for ducks/visitor viewing. In Great Britain RSPB cut reedbeds on 7-year rotation to maintain *Phragmites* vigour and dominance (by winter cutting), to address natural succession and improve reedbed structure. However, this is done mainly for Great Bitterns (as well as maintaining reedbed for above reasons). Much discussion took place on this subject and the reserve needs to firmly establish its priority species before deciding how much could be cut each year. Without any management, however, the reedbed will eventually deteriorate via natural succession and build up of leaf litter and phytotoxins in the water. Perhaps small areas could be cut on a ten-year rotation, avoiding the Purple Heron nesting site and creating additional habitat eg reed fen and pools as discussed above. Underwater cutting with an amphibious vehicle (such as the Truxor discussed) in winter would help provide more open water across the site.
10. *Salix* scrub control. Not yet a serious problem but areas need monitoring. In particular, a large area (1.0ha?) of willow scrub has appeared in front of one of the hides in the middle of the reedbed. Judged to be c3 years old, this should be removed as soon as possible whilst still manageable.
11. Community engagement. Currently the reserve receives practical help from university students but it would be beneficial if volunteers from the local community could be recruited. This is what RSPB do in GB and we have found engaging in this manner highly beneficial for the local reserve with the volunteers feeling pride and a sense of ownership for their adopted site. At Marazion, we have 30 volunteers ‘on our books’ although only 6-7 attend the work sessions (every Tuesday and on the first and last Saturday in each month) at any one time. We have found it essential to obtain this local support and if your biologist Mario Reis could find the time to lead such a group, I am sure it would be a great help. I shall send some information from RSPB Headquarters on this subject.
12. Advertising the reserve. Review black and white leaflet. I can help with this if needed – some of the English is incorrect and does not make sense. Are there plans to update this?

David Flumm
28th November 2006.

Encl. CD with photographs of reserve taken 20th November 2006.
The Bittern in Europe: a guide to species and habitat management. RSPB
Reedbed management for commercial and wildlife interests. RSPB

RSPB Manual – working with Volunteers

RSPB leaflet – Volunteer policy

RSPB leaflet A little time makes a great difference. Volunteering information.

RSPB volunteer handouts – various.