Department of
Environment and Conservation

*Our environment, our future*

# SUMMARY ANNUAL REPORT
# THREATENED FAUNA RECOVERY TEAM

| PROGRAM INFORMATION | |
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| **Recovery Team name** | Sunset Frog (no recovery team) |
| **Reporting Period (Financial / Calendar Year)** | Calendar year 2009 |

**Current membership**

| Member | | Representing |
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| **1. Chair** | NIL | |
| **2. EXEC OFFICER** | NIL | |
| **3. DISTRICT NC COORD** | Karlene Bain | DEC, Frankland District |

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| **Dates meetings were held** | NIL |
| **One to two paragraph summary of achievements suitable for WATSNU** | Perth Zoo and DEC combined funds and forces to undertake an intensive survey of known populations of Sunset Frog in 2008 in an effort to improve our knowledge of environmental factors affecting detectability of the frogs during population census work. The results were concerning and suggested that low groundwater and subsequent acidification associated with low winter recharge in 2008 had resulted in a low number of calling males and potentially declining populations.<br>The census was repeated at select sites in 2009 following a wet winter and the number of calling males was higher and more consistent with pre-2008 records. Calling behaviour patterns were observed to be influenced by moon phase, cloud cover and water parameters, but the data has yet to be analysed to determine whether the observations are statistically significant. There was no observed relationship between calling behaviour and recently burnt habitat |

**List of actions undertaken by Recovery Team (from the actions in your Recovery Plan)**

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| **Action 1.** Develop predictive models of calling activity | • Automated call recording boxes were placed at five sites in 2000 by a UWA student. Analysis of these data was not able to provide a predictive model of calling activity.<br>• Under Perth Zoo funding, an intensive survey of known populations under various combinations of moon phase, temperatures, water parameters etc was undertaken in 2008. This was repeated for select |

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| | sites in 2009 under DEC funding. Each known population was surveyed at least 3 times each year under each specified combination of factors.<br>• Data has not yet been analysed for the 2009 survey, but there has been observed calling behaviour patterns that link to the moon phase, cloud cover and water parameters. |
| **Action 2** Search for new locations | • UWA students completed surveys between 1996-2001 and located a number of new populations;<br>• Between 2006 and 2009 extensive analysis of mapping software has been undertaken to identify potential peat swamp habitat. Field surveys have been targeted to determine the suitability of habitat and night census work has been completed to determine the presence of calling frogs.<br>• In total, 29 sites containing Spicospina flammocaerulea have been located between 1996 and 2009 and 22 have been substantiated during field census work. Seven sites have been found to be unsuitable habitat and it is suggested that these were located originally from roads with inaccurate bearings and distances. Some of them are close to substantiated habitat. |
| **Action 3** Monitor population size | • Between 1996-2001 known populations were monitored by UWA students in cooperation with DEC; 2002 and 2009 DEC staff have continued to monitor populations.<br>• Of the 29 recorded populations of *S. flammocaerulea* in the DEC corporate data system, only 15 are considered stable although 7 of these are on private property and so are not considered to be within secure tenure.<br>• 5 sites are likely to become extinct in the next 5 years without immediate and significant intervention in relation to habitat quality improvement and threat management, in particular soil and vegetation damage by cattle and feral pigs, nutrient inputs, hydrology alteration and possibly direct predation by feral pigs.<br>• One population has become locally extinct following the construction of a large marron dam, which removed all suitable habitat.<br>• Seven sites listed on the DEC corporate data as known populations of *S. flammocaerulea* have no record of calling males and it is unclear why these sites have been accepted as confirmed populations. In the majority of cases the habitat is unsuitable. Those sites with suitable habitat have been noted as potential habitat, but in the absence of call data or a record of an observed animal, these sites cannot be considered confirmed populations. |
| **Action 4** Fire research | • Fire research has been adaptive management based only, due to funding limitations. Where areas containing Spicospina have been burnt, pre burn population and peat data has been collected and has been followed up with post burn data collections.<br>• Development of Fire management guideline S6 for Sunset Frog by Dr N. Burrows and Dr P. Christensen.<br>• In 2004 a fire trial involving frequent introduction of fire was implemented in the London/ Surprise Forest blocks (Walpole Fire Mosaic Project). Frog and peat monitoring has been completed in association with this burning regime as well as the control fire regime of 6-8year fire |

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| | rotation.<br>• Anecdotal evidence suggests that breeding in *S. flammocaerulea* can be stimulated by the removal of dense vegetation through disturbances such as fire (Roberts et al., 1999). This is based on observations made following a high intensity fire at Middle Rd in October 1994, which burnt all vegetation back to bare earth. Many frogs were observed calling and breeding after this fire but numbers of calling males at this site have not been matched since. Roberts *et al*. (1999) hypothesise that peak numbers of calling males are achieved after fire because the reduced evapo-transpiration generates elevated water tables and more exposed swamps resulting in an increase in water temperature. If this is the case then it would be expected that burning in habitat known to contain *S. flammocaerulea* should result in an increase in calling behaviour in the breeding season directly following the burn. The census data collected for the five populations monitored as a part of the Walpole fire mosaic project suggest that this occurs in some instances, but is **not** a consistent response.<br>• Fire management activities are strictly managed to ensure machinery is NOT used within the swamps, that any prescribed fire is introduced when the swamps are saturated and will not burn, and that any access to the swamps (foot only) is done so following appropriate chytrid hygiene protocols. |
| **Action 5** Habitat management | • Feral pig control efforts are undertaken annually in a buffer area surrounding critical peaty habitat in an effort to prevent/ reduce habitat damage and direct effects of feral pigs.<br>• Fire management activities are strictly managed to ensure machinery is NOT used within the swamps, that any prescribed fire is introduced when the swamps are saturated and will not burn, and that any access to the swamps (foot only) is done so following appropriate Chytrid hygiene protocols.<br>• Perth Zoo have worked cooperatively with DEC to collect and swab Spicospina flammocaerulea for Chytrid and to collect animals for captive breeding research.<br>• Perth Zoo have been researching captive husbandry techniques for *Spicospina flammocaerulea*.<br>• Active Involvement of DEC in the provision of advice for Land Use Planning applications/ proposals, subdivision applications, clearing applications, dam proposals and utility planning (eg Water Corporation dams and groundwater extraction). |
| **Action 6** Liaison with private landowners | • DEC Frankland District sent letters to all Landholders with Spicospina on their properties in 2009.<br>• DEC staff are planning to approach three key landholders in the area to develop management agreements for Spicospina inhabited swamps on their properties. |
| **High Priority Actions Requiring Funding** | |
| **Task** | **Amount needed and what for** |

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| **Feral pig management** | On ground feral pig survey and control activities to remove feral pigs prior to them reaching or causing significant damage to critical *Spicospina* habitat; 100 labour days of survey/ control plus running costs; $40,000 |
| **Active management of Private Property habitat in conjunction with landholder** | Approach key landholders and develop management plans for critical habitat on Private Property (non-secure tenure); 30 man days of field visits, liaison and document preparation plus running costs $12,000 |
| **Habitat Characterisation** | Characterisation of key habitat types, including vegetation, peat chemistry, seasonal groundwater levels and seasonal water chemistry (especially pH) to provide a better understanding of natural environmental conditions and potential threats (eg dropping groundwater levels and increased acidity); 40 man days of university liaison, field data collection, data management and report preparation plus running costs and equipment $20,000 and student stipend if appropriate student can be located for peat components. |
| **Determine the occurrence and impact of chytrid fungus** | Capture and swab frogs in-situ to determine current infection levels and chytrid species present in critical populations; PERTH ZOO 10 nights field sampling, accommodation, transport, PCR equipment and sample costs $15,000 |
| **Husbandry research** | Growth and devt of tadpoles and metamorphs; maintenance of adults in captivity. PERTH ZOO Frog keeper $25000 |
| **Determine range of pH under which Spicospina tadpoles are able to survive and develop (i.e. identify thresholds)** | Captive growth and devt of tadpoles and metamorphs under different pH conditions. PERTH ZOO Frog keeper $25000 |