

Ecology and Natural History of Dwarf Bearded Dragons (*Pogona minor*) in Australia's Great Victoria Desert

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I have been studying lizard ecology in the Great Victoria Desert in Western Australia since 1966 and have spent a total of about 6 years in the field, mostly during the Austral Springs and Summers of 1966-68, 1978-79, 1992, 1995-96, 1998 and 2003. During this time, I observed and collected 225 *Pogona minor*. I recorded air and body temperatures, times of activity, microhabitat, fresh snout-vent length (SVL), tail length, and weight for each lizard. Stomach contents were identified and prey volumes estimated for 98 lizards. Reproductive condition was also recorded: for males, lengths of testes were measured; for females, egg sizes were measured and numbers were counted, and whether the eggs were ovarian or oviductal was noted [some of these data were summarized in appendices in Pianka (1986)]. Here I present these data with the hope that they will prove useful to herpetoculturists.

The Great Victoria Desert of Australia is predominantly sandy with red sands, and supports a vegetation consisting mainly of so-called "spinifex" or "porcupine" grasses (genus *Triodia*) plus various species of gum trees (*Eucalyptus*), especially Marble Gums (*Eucalyptus gonglyocarpa*). Shrubs including *Eremophila*, *Grevillea*, *Hakea*, and *Thryptomene* also occur. In wetter places and on harder soils, tracts of "mulga" trees (*Acacia aneura*) are found. Occasional

dry lakebeds are inhabited largely by various shrubby chenopod species (including *Atriplex lindleyi*). Stabilized long red sandridges, parallel to prevailing winds are scattered throughout the Great Victoria Desert, particularly in the eastern interior. Extensive areas of flat sandplain occur as well. The region is very heterogeneous and mixed ecotonal habitats of shrubs, *Triodia*, *Acacia*, and *Eucalyptus* occur on desert loams (Beard 1974 and Shephard 1995 describe and illustrate the vegetation of the region). Dwarf Bearded Dragons are ubiquitous throughout the region but are seldom very abundant. The climate is an arid continental regime, with cool usually dry winters and warm springs and autumns but quite hot summers. Most precipitation falls during summer thunderstorms. Wildfires are frequently set by lightning and vegetation biomass and cover vary through time as plants undergo secondary succession following fire (Pianka 1996).

Pogona minor are semi-arboreal, with eclectic spatial requirements (both habitat and microhabitat niche breadths are greater than those of many other sympatric lizard species). For example, at a site with sandridges, 37.5% of 56 lizards were found on interdunal flats, 25% were at the base of sandridges, 17.9% were on slopes, and 19.6% were on sandridge crests. In another sample of 81 *Pogona*, about 41% of the lizards were in vegetation above ground when first sighted. Another 40% were on the ground in the open sun. Some 16% were in the shade when first sighted. They may climb to increase their visual field as well as to avoid high surface temperatures during the heat of the day in summer. When walking

on the open ground, *Pogona* sometimes curl their tails upwards (Fig. 1).



Figure 1. *Pogona* walking on open sand with tail held high.

These lizards are relatively passive thermoconformers. Body temperatures of 90 *Pogona* ranged from 18 to 42.3°C, averaging 34.3°C with a standard deviation of 4.0 (average air temperature was 26.9°C with a standard deviation of 5.5). Body temperature is correlated with air temperature (Fig. 2) and preferred body temperatures lie between 34 and 38°C (Fig. 3). The lizards bask when it is cold, and seek shade when it is warm. During the heat of mid-day, they often climb up a meter or more above ground and face directly into the sun, thereby positioning themselves in cooler air and reducing heat load. Climbing also increases the area of their visual field around them and may help them avoid contact with potential predators.

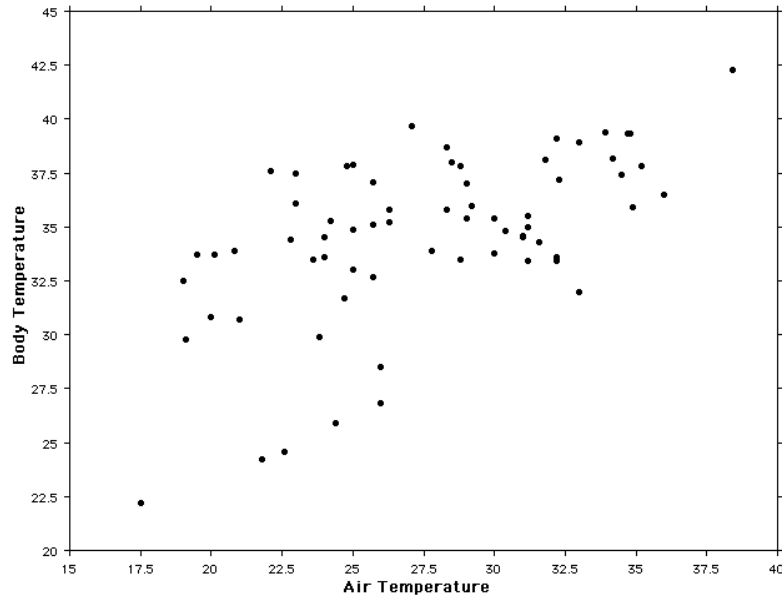


Figure 2. Body temperatures plotted against ambient air temperature for 90 active lizards.

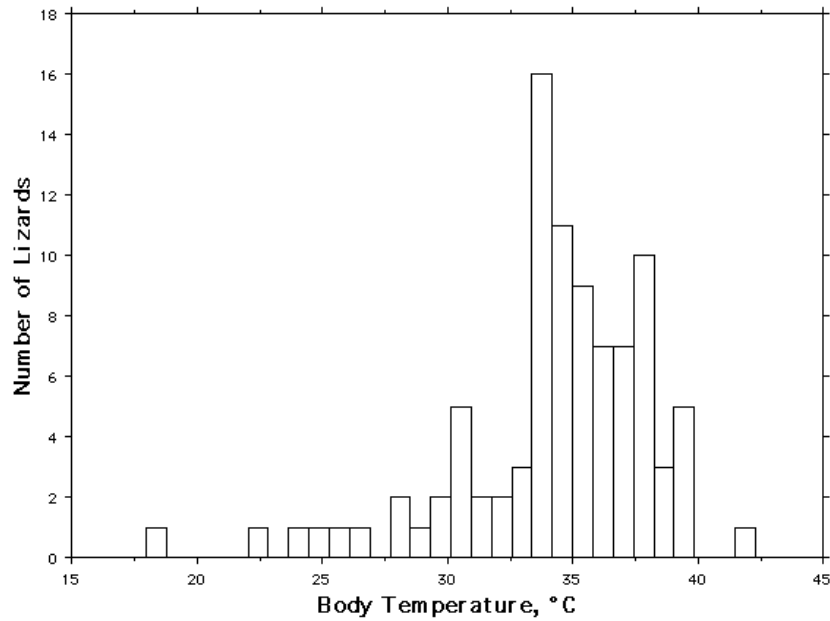


Figure 3. Frequency distribution of active body temperatures.

Duration of activity is limited to mid-day during Winter, but is considerably longer during warmer months. Daily activity is bimodal with lizards active from about 6AM to 8PM (Fig. 4) in the warm Spring and Summer months (October through February).

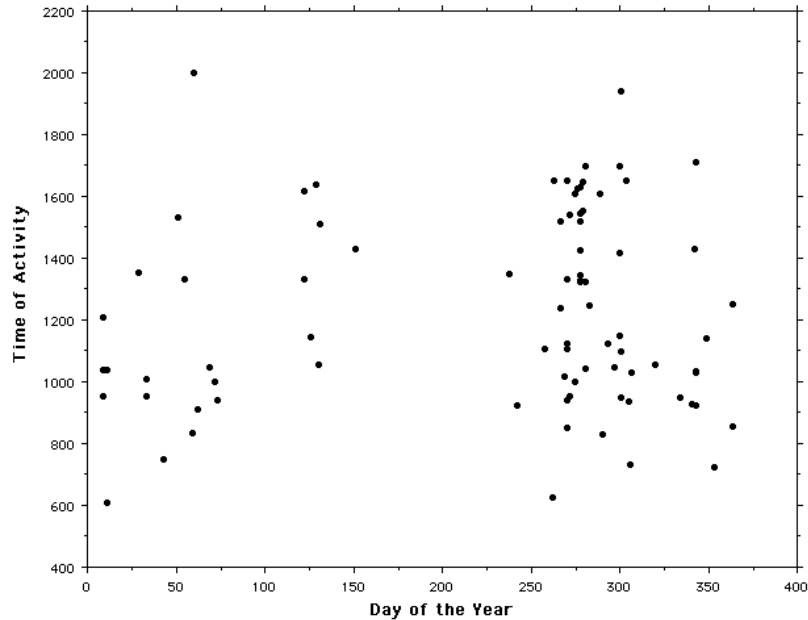


Figure 4. Time of activity plotted against day of the year.

Pogona are sit-and-wait ambush predators with a broad diet. They are omnivorous, eating both plant and animal foods. Major natural animal foods include grasshoppers (30% of the diet by volume), beetles (17.3% of the diet by volume), termites (11.7% of the diet by volume), and various insect larvae (8.1% of the diet by volume). Other minor prey items include ants, wasps, phasmids, and bugs. Plant materials constitute about 21% of the diet by volume (8.8% vegetative including grass and seeds, 7.7% bark, 1.8% flowers, as well as some unidentifiable partially digested plant material).

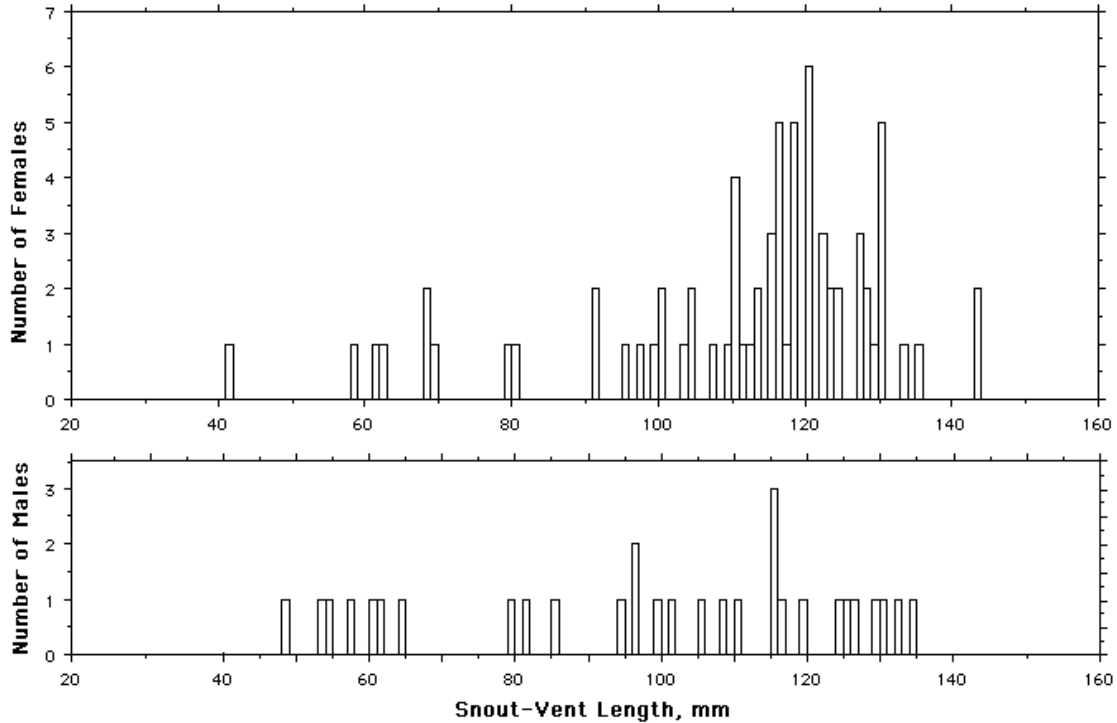


Fig. 5. Histograms of SVLs (females above, males below).

Frequency distributions of snout-vent lengths of females and males are shown in Fig. 5. Females reach sexual maturity at about 90 mm SVL. They attain larger body sizes and heavier weights (110.7 ± 2.4 mm SVL and 51.1 ± 2.7 g) than males (97.7 ± 5.0 mm SVL and 35.9 ± 4.2 g). Males mature at about 80 mm SVL and at a given SVL, they have slightly longer heads than females. Testes are largest during the Spring (September to October), which is also when eggs are laid. Females dig nests in open sandy areas about 15-20 cm deep, but they do not defend their nests, many of which are dug up and eggs eaten by sand monitors *Varanus gouldii*. Clutch size varies from 3 to 12, with larger females laying larger clutches (Fig. 6). Some females lay second clutches. Clutch size averages 7.6 (SD = 2.3, N = 43) and relative clutch mass is 19.5% of female weight (SD = 4.4, N = 27). Hatchlings emerge in summer (December-January)

References

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