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DEPARTMENT OF CONSERVATION AND LAND MANAGEMENT



Please address all enquiries to: Regional Manager
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Your Ref: R23.3
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Enquiries:

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PERSONAL

Jim Lane, Woodville

Jim - You may like to keep this if you're still collecting farmer education material. In any case, pls let Andrew Burbidge see it for interest - his information was very helpful.

Dear Paul

MANAGEMENT OF LONG-NECKED TORTOISES

As I discussed with you by telephone recently, the salinity tolerance of long-necked tortoises has not been researched. However, I have discussed the matter with several people and the following information is based on general observations.

Ken Wallace
16/1/92

I must stress that this is best guess information, so use it with caution.

Long-necked tortoises are basically fresh water animals, and they require good quality fresh water to survive and reproduce over long periods.

However, they have been recorded in the Indian Ocean and in the Swan River (Perth Water), so they can tolerate reasonable levels of salt for short periods. Presumably animals found in the Ocean have been washed out by strong currents, and they may not survive for long. In estuarine conditions they seem to be able to survive as adults for two or three months, then move out of estuaries into fresh water with winter rainfall. They probably can't feed in very brackish water, and eventually they need access to fresh, or near fresh, water for food and to flush any build up of salts from their bodies. If they have access to fresh water seeps or drains, this may allow them to persist for longer periods in brackish water.

The owner of "Lazeaway", a farm on the upper reaches of the Hotham River between Narrogin and Pingelly, reports long-necked tortoises living in pools where the river passes through his property. These animals appear to be surviving and reproducing in water which may be saltier than sea water during summer, but is flushed with fresh water during winter and is then potable to stock. However, we don't know if tortoises are using fresh water seeps or farm dams during summer.

We've also had reports of tortoises using a farm dam near Pingelly, but none of my officers have verified this.

The level of salts (not just sodium chloride) they can probably tolerate would be about equal in concentration to their own body fluids (about the same as sea water).

Long-necked tortoises will eat a wide range of foods including plants, carrion, and water animals including insects and crustaceans.

My interpretation of the above information is that, with increasing salinity, the following sequence of events will occur.

1. at low salinities, certainly when waters are potable to stock, tortoises will persist and successfully reproduce.
2. salinity will eventually reach a level at which reproduction ceases, but adults are able to survive. At this point your system has gone too far, and the tortoises will eventually disappear although the adults may persist for quite some time.
3. Once exposure to very brackish waters is prolonged, or the salinities are very high, then the tortoises will all die.

I stress again that the above is a "best guess" based on a collection of observations. We don't know whether animals living for prolonged periods in brackish water are using fresh water seeps; and we don't understand the relationship between the duration of exposure to saline waters, and the actual salt concentration of that water.

The following actions are probably required to successfully manage tortoises.

1. Protect tortoise habitat from rising groundwater. Revegetation around pools used by tortoises should achieve this. However, depending on the particular situation, the width of vegetation required will vary.
2. Maintain or improve the health of the total catchment upstream of your tortoise populations. While revegetation of the drainage line in which tortoises are living will help, some consideration will need to be given to reducing re-charge of the catchment. Someone from the Department of Agriculture would be able to advise you on how to improve the hydrology of your specific catchment.
3. Minimise the surface and groundwater flushing of fertilisers into wetlands used by tortoises. We have some evidence that algal and bacterial "blooms" are increasing in wheatbelt wetlands, and the recent experiences on the Darling River should be a warning to all of us. If concentrations of phosphate and nitrogen increase in dams or other wetlands, then the frequency of massive growths of algae and bacteria will also increase, and the result may be death of tortoises from infection. This process, known as eutrophication, can lead to a number of other problems including botulism.

While the major source of fertilisers will be inorganic chemicals such as superphosphate, Agras, DAP, and urea; organic "fertilisers" such as sheep and pig manure can also

cause problems. Most farmers will, at some stage, have lost a favourite koonac dam after a thunderstorm has caused massive run-off of sheep manure. The Department of Agriculture can advise on minimising fertiliser run-off into dams and wetlands.

4. Provide a fresh water refuge nearby. Given that the animals can travel across land, if there is a dam nearby it may be worth:
 - a. watching to see if they use the dam - if they do then this may be suitable alternative habitat;
 - b. if they are using a nearby dam, then improve this as a tortoise habitat. This may mean protecting the dam from salination and fertilisers. It will also help if the dam has a diverse array of aquatic plants and animals, or some other food source is available. For aquatic plants you would require reasonably clear water, but tortoises themselves can tolerate muddy water.
5. Protect tortoises from foxes. One of my officers recently found a fox den near the Hotham River with 6-8 tortoise shells scattered nearby. This seems to me a high level of predation. If tortoises are moving between pools during summer, they are likely to be particularly vulnerable to foxes. Therefore fox control may be required in the vicinity of pools containing tortoises. Officers from the Agriculture Protection Board can advise concerning fox control. We recommend the use of 1080 dried meat baits as these are least likely to poison native fauna.

For your information I have also included an extract from "Management Guidelines for Remnant Vegetation", which is currently in draft form. Hopefully this will be out towards the end of 1992 if not earlier.

Incidentally, your farm lies just outside my Region. The relevant CALM office for your queries is that at Albany (098 417133).

All the best with your project.



K J Wallace
REGIONAL MANAGER (WHEATBELT)

14 January, 1992

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Long-necked tortoise *Chelodina oblonga*

Relevant information

(Map of present and past distribution)

Habitat requirement: Slow-moving permanent fresh or brackish rivers, lakes and swamps, including farm dams. Well-vegetated banks valuable. Leaves the water to lay eggs in a hole sometimes some distance from the swamp and can travel overland between swamps.

Food: Eats aquatic animals such as insects, crustaceans, tadpoles and small fish. Will also take baby water birds.

Predators: Foxes are the main predators. Young are taken by Water Rats and Snakes.

Plan of action

Suitable habitat: A swamp or lake with permanent fresh water, a good supply of aquatic life and well-vegetated edges.

Predator control: Fox control useful.

Availability of animals

Long-necked Tortoises will often reach suitable habitats if they are not too isolated from existing populations. Alternatively, young animals may sometimes be hatched in large numbers around metropolitan lakes, so that possibly some could be available for translocation to suitable unoccupied habitats within their existing range.

DRAFT